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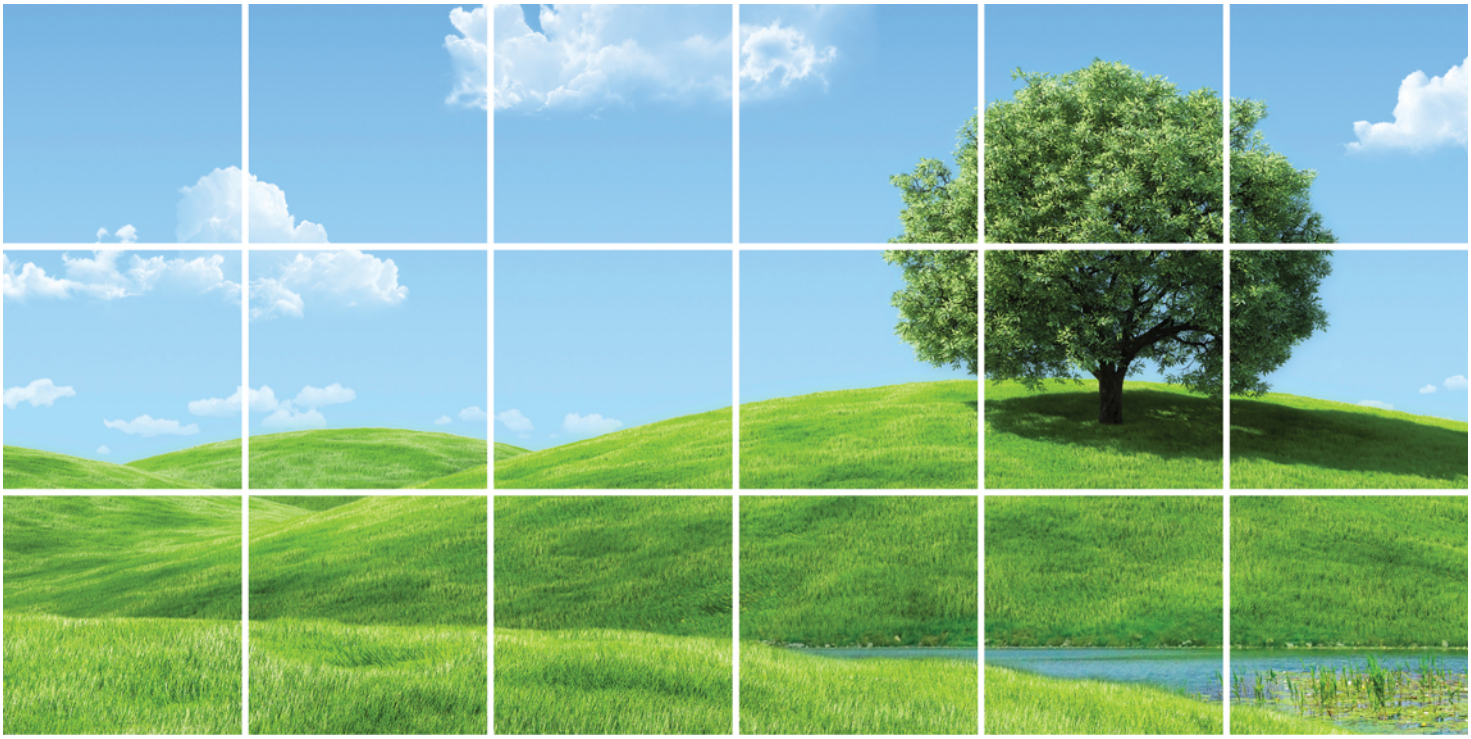

OPERABLE UNIT TWO (OU2)

REMEDIAL INVESTIGATION / FEASIBILITY STUDY (RI/FS) WORK PLAN

Prepared for: South Dayton Dump and Landfill

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1.0 INTRODUCTION

This document is the Operable Unit Two (OU2) Remedial Investigation/Feasibility Study (RI/FS) Work Plan for the South Dayton Dump and Landfill Site (Site). The purpose of this document is to present a summary of available information and identify data needed to further characterize OU2 conditions for the OU2 RI. Conestoga-Rovers & Associates (CRA) has prepared this OU2 RI/FS Work Plan on behalf of the Respondents to the Administrative Settlement Agreement and Order on Consent (ASAOC) for Remedial Investigation/Feasibility Study (RI/FS) of the Site, Docket No. V-W-06-C-852 (Respondents).

The Respondents include Hobart Corporation (Hobart), Kelsey-Hayes Company (Kelsey-Hayes), and NCR Corporation (NCR). These three Respondents are and have been performing the Work required by the ASAOC under the direction and oversight of the United States Environmental Protection Agency (USEPA).

1.1 SITE LOCATION AND BACKGROUND

The Site is located at 1901 through 2153 Dryden Road (sometimes called Springboro Pike) and 2225 East River Road in Moraine, Ohio. The approximately 80-acre Site is a former disposal site and includes areas where municipal, industrial, and residual waste, and construction and demolition debris were disposed. The Site location is shown on Figure 1.1.

The Site is bounded to the north and west by the Miami Conservancy District (MCD) floodway[1] (part of which is included in the definition of the Site), the Great Miami River (GMR) Recreational Trail and the GMR beyond. The Site is bounded to the east by Dryden Road with light industrial facilities beyond, to the southeast by residential and commercial properties along East River Road with a residential trailer park beyond, and to the south by undeveloped land with industrial facilities beyond.

The Site has been defined in the Statement of Work (SOW) as an area of approximately 80 acres, including the Valley Asphalt plant in the northernmost portion of the Site

[1] The MCD defines a floodway as the channel of a river or watercourse and the adjacent land areas that have been reserved in order to pass a specified flood discharge. The floodway is usually characterized by any of the following: moderate to high velocity flood water, high potential for debris and projectile impacts, and moderate to high erosion forces. The MCD floodway is not the same as the 100-year floodway and 100-year floodplain areas at the Site based on FEMA flood insurance maps, which are more extensive than the MCD definition.

(Parcel 5054), an auto salvage yard in the southeast (Parcels 3753 and 4423) and a gravel pit/quarry pond (the Quarry Pond, Parcels 3274 and 5178) in the southern part of the Site. The central 40 acres (described as 23 acres in some documents) of the Site was referred to as the South Dayton Dump and Landfill in some reports. More recent information including an undated tax map in the Montgomery County Health Department (MCHD) files, soil boring logs, drums found at Valley Asphalt, USEPA's aerial photograph analysis, underground storage tank (UST) closure reports, the deposition of Horace (Jack) Boesch Jr., and investigations completed as part of the OU1 RI indicate that landfilling and other waste disposal and handling activities occurred across much of the Site and that the Site extends partially onto the adjacent MCD-owned floodway to the west of the Site.

1.1.1 OWNERSHIP

Cyril Grillot and Horace Boesch acquired interests in portions of the approximately 40-acre central portion of the Site starting in 1936. The properties to the north (currently Valley Asphalt) and the vacant land and Quarry Pond to the south were also owned by Grillot and Boesch. Horace Boesch purchased the land to the north in 1945, (a half interest was subsequently transferred to Cyril Grillot in 1951) and sold it to Valley Asphalt in 1993.

The SOW identifies the following 14 Parcels from the Montgomery County Tax Rolls as part of the Site: 5054, 5171, 5172, 5173, 5174, 5175, 5176, 5177, 5178, 3274, 3753, 4423, 4610, and 3252. Subsequent investigations identified waste and Site-related fill material on adjacent Parcels 3056, 3057, 3058, 3275, and 3278. In correspondence from USEPA (March 15, 2010) and the Respondents (April 1, 2010), these Parcels were added to the definition of the Site.

Seven Parcels are jointly owned by Katherine A. Boesch, widow of Horace J. Boesch, and Margaret C. Grillot, widow of Cyril J. Grillot. Horace J. Boesch and Cyril J. Grillot had jointly owned the seven Parcels (5171, 5172, 5173, 5174, 5175, 5176, and 5177) since at least 1952 and had acquired them in a series of transactions between 1936 and 1952. Parcels 5171 and 5054 were part of two tracts acquired by Horace J. Boesch or Cyril J. Grillot in 1936 and 1952, respectively. Parcel 5171 is part of the Grillot and Boesch Plat and is currently jointly owned by Katherine A. Boesch and Margaret C. Grillot. Parcel 5054 was acquired by Valley Asphalt in 1993; however, lease records suggest that Valley Asphalt's association with the Parcel began in 1956.

The south and southeastern parts of the Site comprise five Parcels 3274, 3753, 4423, 4610, and 3252. Horace J. Boesch or Cyril J. Grillot at one time owned these Parcels. Parcel 3274 is currently owned by the MCD and was acquired from the University of Dayton in 1969. Horace J. Boesch and Cyril J. Grillot gave the property to the University of Dayton in 1968. Boesch and Grillot had held the Parcel since acquiring a 30-acre tract from John Albert Davis in 1945.

The 30-acres also included Parcels 3753, 4423, and 4610. Parcel 3753 was conveyed to Doyle Roberson and Virginia Roberson in 1975, who then conveyed the Parcel to Ollie Lacy in 1988. Following the distribution of property after the death of Horace Boesch, Cyril Grillot and the Boesch heirs conveyed Parcels 4423 and 3252 to Ollie and Judith Lacy in two transactions in 1981. Following the death of Judith Lacey in 1987, Ollie Lacy acquired sole ownership of these Parcels. In 1989, Ollie Lacy conveyed Parcel 4610 to the current owner, Ronald Barnett. Attached to the deed was a legal description of Parcel 4610 that implied that it was originally part of Parcel 4423.

Following Ollie Lacy's death in 1990, his heir conveyed Parcels 3252, 3753, and 4423 to Sharon Roe, who then conveyed Parcel 3252 to Ronald Barnett in 1992 and Parcels 3753 and 4423 to South Dayton Salvage, Inc in 1996. Ronald Barnett is the owner of Parcels 3252 and 4610. South Dayton Salvage, Inc. conveyed both Parcels 4423 and 3753 to Jim City Salvage, Inc. after 1999. The current owner of Jim City Salvage is Jim Worley. Williem Zachar, the previous owner of South Dayton Salvage, signed the Land Installment Agreement for Parcel 3753 in 1978.

The MCD owns Parcels 3056, 3057, 3058, 3207, 3274, 3275, and 3278. MCD acquired Parcel 3056 prior to 1937 and there was no evidence that any member of either the Grillot or the Boesch families ever owned it. While there are some location discrepancies in the records with respect to Parcels 3057 and 3058, ownership by Horace J. Boesch (Parcel 3057) and Cyril J. Grillot (Parcel 3058) is limited to 1 or 2 years in the mid-1930s. Parcel 3275 was acquired by MCD in 1938 and Parcel 3207 was acquired by Walloon Holdings, LLC, from the heirs of John Albert Davis.

1.2 OPERABLE UNITS

In a letter dated January 9, 2008, USEPA proposed that the Site be divided into two operable units, OU1 and OU2. OU1 comprises the "landfill source area of the Site" and OU2 comprises "off-Site areas not addressed by the presumptive remedy". USEPA proposed that the Respondents complete a Streamlined RI/FS report for OU1 and a conventional RI/FS report for OU2.

1.2.1 OPERABLE UNITS LIMITS

OU1 includes the following parcels:

- Parcel 5054 (Valley Asphalt)
- Parcels 5171, 5172, 5173, 5174, 5175, 5176 (Boesch and Grillot)
- Parcel 5177 including road easement but excluding water and submerged portions of the Quarry Pond (Boesch and Grillot)
- Part of Parcels 3278, 3058, 3057, and 3056 including embankments (owned by the MCD) onto which waste extends
- Part of Parcel 5178 containing north Quarry Pond embankment (Boesch and Grillot)
- The unnumbered parcel at the Site entrance

OU1 includes the following areas or media:

- Landfill material, surface and subsurface soil and hot spots
- Leachate
- Landfill gas (LFG) and soil vapor
- Surface water and sediment
- Air

The Site limits of OU2 are depicted on Figure 1.2. OU2 includes the following areas or media, which are not part of OU1:

- Landfill material, surface and subsurface soil, and hot spots outside OU1 (e.g., the floodplain area between the Site and the GMR[2]) attributable to historic Site operations
- Parcel 3274 and parts of Parcels 5177 and 5178 not addressed in OU1, including submerged portions of the Quarry Pond
- Parcels 3753, 4423, 4610, and 3252, including active businesses along the southeast portion of the Site

2 The MCD defines a floodplain as a strip of relatively flat and normally dry land alongside a stream, river or lake that is covered by water during a flood. The floodplain area between the Site and the GMR is not the same as the 100-year floodway and 100-year floodplain areas at the Site based on Federal Emergency Management Agency (FEMA) flood insurance maps, which are more extensive than the MCD definition.

- Portions of Parcel 3275, which are owned by MCD, upon which waste has been placed
- Shallow groundwater (i.e., nominally at elevations above 675 feet above mean sea level [ft AMSL]), within and outside OU1
- Deeper groundwater (i.e., nominally at elevations below 675 ft AMSL), within and outside OU1
- Leachate outside OU1 (e.g., the floodplain area between the Site and the GMR
- Landfill gas (LFG) and soil vapor outside OU1
- Surface water and sediment outside OU1 (e.g., in the Quarry Pond and in the GMR adjacent to and downstream of the Site)
- Air outside OU1

These areas and media, which are not addressed by the Presumptive Remedy, are the Site areas or media in which it is not clear that there is a basis for remedial action and whether a Presumptive Remedy approach is appropriate. Therefore, the Respondents will address these areas and media through a conventional (i.e., not streamlined) RI/FS, human health risk assessment, and ecological risk assessment.

Figure 1.2 depicts the on-Site OU2 Parcels. As discussed by USEPA and the Respondents during a conference call held on May 23, 2013, OU2 includes any area, outside of OU1, where OU1 contamination has come to be located. Thus, OU2 potentially includes any area outside of the OU1 boundary that contains Site-related contamination.

1.3 REPORT OBJECTIVES AND ORGANIZATION

The objective of this document is to provide the basis for determining the field data collection activities that are needed to characterize OU2 conditions for the OU2 RI. The field data collection procedures will be detailed in individual OU2 Work Plans, to be developed following agency review and approval of this RI/FS Work Plan.

This document is organized as follows:

- Section 1.0 provides an introduction, including Site background, a discussion of operable units, report objectives and organization
- Section 2.0 provides information regarding previous investigations, including analytical data and sampling locations, and identified data gaps

- Section 3.0 provides a conceptual site model (CSM)
- Section 4.0 provides the remedial action objectives, remedial technologies, and applicable or relevant and appropriate requirements
- Section 5.0 provides a description of the proposed field data collection activities and data quality objectives
- Section 6.0 provides background comparison procedures
- Section 7.0 provides risk assessment procedures
- Section 8.0 provides references for previous investigations and other documents

2.0 SUMMARY OF OU2 INVESTIGATION RESULTS

This section presents a summary of the investigation results for the OU2 Parcels that are part of the Site. The Quarry Pond, Jim City, and Ron Barnett Parcels are collectively referred to herein as the OU2 Southern Site Parcels. The Quarry Pond Parcels occupy Parcels 3274, portions of Parcel 3275 upon which waste has been placed, and parts of Parcels 5177 and 5178 not addressed in OU1, including submerged portions of the Quarry Pond. Jim City occupies Parcels 3753 and 4423. Ron Barnett occupies Parcels 4610 and 3252. The OU2 Southern Site Parcels are shown on Figure 1.2.

The following also presents a summary of available information related to the history of the OU2 Southern Site Parcels, and a visual description[3] of the nature of the material encountered at OU2 investigative locations. This discussion is based on a review of historic documents, a review of aerial photographs, and several intrusive investigations, including historical investigations, borehole advancement, test pit and test trench excavation, and soil and groundwater sample collection. Data gaps based on the available information are also presented in this section.

2.1 QUARRY POND PARCELS

The investigations and sample collection activities completed by CRA and others in the Quarry Pond Parcels include the following:

- Geophysical investigations (EM31 conductivity, EM61 metal detection, and total field magnetic anomaly surveys). See Figure 2.1 for areas of identified anomalies.
- Test trenches excavated based on the results of the geophysical surveys and other field observations. These are identified as TT-16, TT-16A, TT-17, and TT-18 on Figure 2.1.
- Soil/fill material samples from selected test trenches. The analytical results are summarized in Table 2.1.
- Surface water samples from three locations as shown on Figure 2.2. The analytical results are summarized in Table 2.2.
- Sediment samples from eight locations (during earlier investigations by others) as shown on Figure 2.2. The analytical results are summarized in Table 2.3.

[3] Waste classifications as described in OAC 3745-27, 29, 30, and 400, are based on visual observations. OAC waste classifications do not require analytical characterization.

- Radiation screening of soil/fill (at ground surface). The results are shown on Figure 2.3.
- Vertical Aquifer Samples (VAS) from three locations (VAS-13, VAS-19, and VAS-20) as shown on Figure 2.4. The analytical results are summarized in Table A-1 of Appendix A.
- Groundwater samples from monitoring wells (MW-209, MW-209A, MW-212, MW-218A, and MW-218B) as shown on Figure 2.4. The analytical results are summarized in Table A-2 of Appendix A.

Overview of OU2 Quarry Pond Parcels History and Fill Material Information

Based on the USEPA Aerial Photographic Analysis of South Dayton Dump Site and CRA's analysis of the available aerial photos, the area south of the east-west access road (portions of Parcels 3274 and 5178) was excavated from the 1950s to 1970s for a gravel extraction operation. The northeastern portion of Parcel 5178 appears to have been partially filled in by 1981. There are no data to indicate whether the area of the present Quarry Pond below the water level was filled beyond the material placed in the northeastern portion of the Quarry Pond or beyond the current extent of the northern, eastern, and western embankments of the Quarry Pond.

There are no data to indicate how far the material placed in the northeastern portion of the Quarry Pond extends into the pond or whether the material placed along the embankments extends into the Quarry Pond. CRA did not observe non-native soil material during drilling VAS-20, located in the center of the southern Quarry Pond embankment. However, there are no data to indicate how far the landfill material observed during drilling of VAS-13 at the western corner of the southern Quarry Pond embankment, or TT-18 on Parcel 3753 extends towards VAS-20. CRA observed traces of glass and concrete debris in the top two feet of fill from VAS-13.

There is debris in the Quarry Pond that appears to have either been dumped by third parties or trespassers, after the Site operations ceased, into the pond or washed there during storm events. At the time of CRA's November 17 and 18, 2005 inspections, CRA observed four partially submerged drums that appeared to be empty in the northeastern part of the Quarry Pond. Ohio EPA, Ohio Department of Natural Resources (DNR) and the District Attorney's Office completed a sonar and underwater camera investigation of the Quarry Pond on November 9, 2012. The sonar survey identified tires and 25 to 30 objects of a size and shape that may be indicative of drums; these possible drums were dispersed throughout the Quarry Pond but were most prevalent at the north edge of the pond, below the east-west access road that transects the Site. The Ohio DNR

observed a mound of submerged tires as well as multiple tires along the embankment leading from the Jim City Parcels.

The geophysical survey results for the Quarry Pond floodplain (northeastern portion of Parcel 5178) indicate that anomalous EM61 responses were detected in areas where reinforced concrete was observed at ground surface. CRA observed coincident EM61 and magnetic anomalies in the vicinity of TT-16 and TT-16A. CRA encountered metal rods and rebar in the upper 5 feet of waste at these locations, consistent with EM31 and EM61 readings for these anomalies.

CRA excavated four test trenches (TT-16, TT-16A, and TT-17), installed VAS boreholes at three locations (VAS-13, VAS-19, and VAS-20), and installed three monitoring wells (MW-209A, MW-218A, and MW-218B) on Quarry Pond Parcels 3274 and 5178. Historic investigations included one soil boring, GT-212, and installation of two monitoring wells (MW-209 and MW-212) in this area. At these 12 test trench and soil boring locations in the northeast portion of Parcel 5178, and in the embankment surrounding the Quarry Pond, CRA and previous consultants visually identified mainly fill and residual waste (i.e., foundry sand) as well as construction and demolition debris (e.g., concrete, brick, asphalt, rebar, and roofing shingles). Due to the lack of anomalies, CRA did not excavate trenches or advance any soil borings on Parcel 3275.

Based on field screening, CRA collected three soil samples from two locations on Parcel 5178: TT-16 and TT-17). The concentrations of PAHs and metals in soil samples collected from these two test trench locations were greater than Industrial Soil USEPA Regional Screening Levels (RSLs).

The Quarry Pond itself encompasses approximately 15 acres of the 20-acre Quarry Pond Parcels. CRA has not collected any samples for USEPA Target Compound List (TCL) or Target Analyte List (TAL) analyses from Parcel 3274, and CRA has not completed any installations nor has any analytical data for the subsurface material present on Parcel 3275.

Analytical data for eight sediment samples Ohio EPA and the Payne Firm Inc. (PFI) collected between 1996 and 2000 are available for the Quarry Pond. Ohio EPA collected two sediment samples 15 to 18 feet below the water surface of the Quarry Pond, 150 and 350 feet west of the northeast corner of the Quarry Pond in 1996 (samples S15OEPA and S16OEPA). The concentrations of PAHs and metals in the Ohio EPA sediment samples were greater than Industrial Soil RSLs. PFI collected three sediment samples during each of their 1999 and 2000 sampling events (Sediment-1, Sediment-2, Sediment-3, SED-1, SED-2, and SED-3) for VOC analyses. The depths of the PFI sediment samples

are unknown. The concentrations of VOCs in the PFI samples, if detected, were less than Industrial Soil RSLs.

The observed depths of fill and waste beneath the Quarry Pond Parcels range from 0 to 36 feet.

Data Gaps

CRA has identified the following data gaps in the Quarry Pond area:

- Characterization of the fill material (surface and sub-surface) surrounding the Quarry Pond within Parcels 3274, 3275, and 5178
- Further characterization of groundwater conditions below the fill material and along the perimeter of the Quarry Pond Parcels
- Based on data collected from the soil and groundwater investigation, soil gas monitoring within the fill material and along the southern and western perimeters of the Quarry Pond Parcels may be warranted
- Determination of the presence of non-native material at the base of the Quarry Pond
- Characterization of the soil/sediment at the base of the Quarry Pond
- Characterization of surface water quality within the Quarry Pond

2.2 OU2 JIM CITY AND RON BARNETT PARCELS

The investigations and sample collection activities completed by CRA on the Jim City and Ron Barnett Parcels (Parcels 3753, 4423, 4610, and 3252) include the following:

- Geophysical investigations (EM31 conductivity, EM61 metal detection, and total field magnetic anomaly surveys). See Figure 2.1 for areas of identified anomalies.
- Test trenches based on the results of the geophysical surveys and other field observations. These are identified as TT-17 and TT-18 on Figure 2.1.
- Soil/fill material samples from both test trenches. The analytical results are summarized in Table 2.1.
- Soil gas probes at four locations (GP07-09, GP08-09, GP09-09, and GP10-09) and one location (GP06-09) on adjacent Parcel 3261, as shown on Figure 2.2. The monitoring results are shown on Table 2.4 (VOCs) and Table 2.5 (field parameters).

- Radiation screening of soil/fill (at ground surface). The results are shown on Figure 2.3.
- VAS groundwater samples from one location (VAS-22), as shown on Figure 2.4. The analytical results are summarized in Table A-1 of Appendix A.

Overview of OU2 Jim City and Ron Barnett Parcels History and Fill Material Information

The USEPA Aerial Photographic Analysis of South Dayton Dump Site include aerial photographs taken between the 1950s and 2000 that show portions of the area south of the east-west access road and east of the Quarry Pond (portions of Parcels 3753 and 4423 and the western portion of Parcel 4610) were excavated between the 1950s and 1970s. The ground surface in the eastern portions of these parcels appears to have been disturbed during the same time period; however, it is unclear in the aerial photographs, whether the excavation extended across the entirety of these parcels. Based on aerial photographs and Site documents, the eastern portion of Parcels 3753, 4423, and 4610, appears to have been re-graded and was filled during the 1970s and 1980s. Filling commenced at the eastern side of Parcel 3753 and progressed westward, resulting in the filling of Parcels 3753 and 4423 to current grades.

Based on information from Ohio EPA records and a review of aerial photographs, Mantle Oil Service, formerly located at 2227 East River Road, operated on Parcel 4610 between 1971 and 1986/7. The aerial photographs indicate buildings were constructed on Parcel 4610 sometime between September 1970 and April 1973. Additional buildings and ASTs are visible in the 1975 aerial photograph.

During the geophysical investigation, CRA detected metallic anomalies associated with scrap metal and partially buried car parts on Parcels 3753 and 4423 (Jim City Salvage property). The EM61 metal results for Parcels 3753 and 4423 (Jim City Salvage property) indicate that the majority of the responses can likely be attributed to metallic objects, relating the scrap metal operations at or near ground surface.

CRA identified two areas of greater conductivity on the Jim City Salvage property. A summary of the geophysical anomalies is provided on Figure 2.1. CRA did not identify any significant magnetic or EM61 metallic responses in the northernmost elevated EM31 conductivity anomaly on Jim City property Parcel 4423, which indicates the anomalies are likely the result of conductive fill or waste, rather than buried metal objects, such as drums or tanks. CRA encountered rebar and scrap metal in the upper 5 feet of waste during the excavation of TT-17, which was located 38 feet south of the EM31 anomaly

that had a conductivity response of 50 milliSiemens per meter (mS/m). On Parcel 4423, CRA encountered foundry sands during the drilling of VAS-22, which was located within the southern conductive anomaly. The identified material and associated depths are consistent with EM31 and EM61 readings for these anomalies. It is not possible to say whether TT-18 and GP07-09 were located within or outside of conductive anomalies, as Parcel 3753 was not included in the EM31 Electromagnetic Survey because the Parcel could not be surveyed, due to the presence of surface material (e.g., manhole lids, tire rims, mechanical equipment) that could not be moved.

CRA identified two areas of conductive areas on Parcel 4610 (one of the Ron Barnett Construction Parcels). The EM31 conductivity anomalies on Parcel 4610 contained a lack of magnetic or EM61 metal detection responses, which indicates the anomalies may be the result of conductive fill or waste, rather than buried metal objects, such as drums or tanks. CRA encountered dark gray/black sand and silt during the advancement of GP10-09, located within the larger of the two conductive anomalies on Parcel 4610. The identified material and associated depths are consistent with EM31 and EM61 readings for these anomalies.

CRA excavated two test trenches (TT-17 and TT-18), installed one VAS boring (VAS-22), and installed four soil gas probes (GP07-09 to GP10-09) on the Jim City and Ron Barnett Parcels. The soil gas sample collected from GP08-09 contained chloroform at a concentration greater than the residential soil vapor screening level (SVSL). The soil gas samples collected from GP09-09 and GP10-09 contained VOCs (chloroform, naphthalene, tetrachloroethene, and/or trichloroethene) at concentrations greater than residential and/or industrial SVSLs. At these seven locations on the Jim City and Ron Barnett Parcels, CRA encountered residual waste (foundry sand) and construction and demolition debris (concrete, wood, brick, and railroad ties), to depths of 14 feet below ground surface (bgs).

Where present the observed depth of fill beneath the Jim City and Ron Barnett Parcels ranges from greater than 12 feet to greater than 25 feet. The fill on these parcels ranges in thickness from greater than 12 feet to 26 feet.

Data Gaps

CRA has identified the following data gaps in the Jim City and Ron Barnett Parcels:

- Characterization of the fill material (surface and sub-surface) within Parcels 3753, 4423, 4610, and 3252

- Further characterization of groundwater conditions below the fill material and along the eastern perimeter of the Jim City and Ron Barnett Parcels
- Based on the results of the soil and groundwater investigation, the Respondents will complete soil gas monitoring within the fill material and along the eastern perimeter of the Jim City and Ron Barnett Parcels if warranted

2.3 GREAT MIAMI RIVER AND FLOODPLAIN AREA

Investigations of the floodplain area have involved examining the fill material conditions adjacent to the floodplain, delineated as shown on Figure 2.5. CRA has not identified any evidence of leachate seeps along the embankment of the fill material adjacent to, and nearby areas within the floodplain during Site inspections completed from September 2008 to November 2009.

The investigations and sample collection activities completed by CRA and others for the GMR and floodplain area include the following:

- Two soil samples (S08 and S10) collected from locations along the fill material boundary as shown on Figure 2.5. The analytical results are summarized in Table 2.1. The results indicate that select polycyclic aromatic hydrocarbons, thallium, lead, iron, arsenic and polychlorinated biphenyls were present at concentrations greater than USEPA Residential and/or Industrial RSLs.

Ohio EPA collected three sediment samples (S17, S18, and S19) from the GMR as shown on Figure 2.5. The analytical results are summarized in Table 2.3. The results indicate that select polycyclic aromatic hydrocarbons, thallium, and arsenic exceed USEPA Soil Residential and/or Industrial RSLs. CRA notes that comparison to Soil RSLs is not directly applicable to sediment.

A heavily vegetated man-made embankment, which according to Jack Boesch was constructed of fill materials, including material resembling slag, ash, and foundry-type sands, by the Site owners/operators, is present along the central (Parcel 5177) portion of the Site, and extends past the northern and western boundary of Parcel 5054, along the GMR. Portions of the berm are located on the MCD property. The grassy area between the berm and the GMR is part of the 100-year floodway and is owned by the MCD.

In November 2005, CRA observed slag and metal debris across the western surface of the embankment slope, and discrete piles of wastes consisting mostly of construction

and demolition debris with insignificant amounts of municipal-type wastes on the surface at a few locations.

Data Gaps

CRA has identified the following data gaps in the GMR and floodplain area:

- Characterization of the soil conditions adjacent to the fill material boundary and the recreational trail
- Characterization of background soil conditions within the floodplain area
- Characterization of surface water quality and sediment conditions within the GMR adjacent to, and immediately downstream of, the Site
- Characterization of background surface water quality and sediment conditions within the GMR upstream of the Site

2.4 GROUNDWATER

The results of groundwater investigations conducted to date are documented in multiple reports. The analytical data for groundwater at the OU2 Southern Site Parcels are contained in Appendix A.

CRA will complete further investigations to characterize groundwater conditions within the limits of the OU1 and OU2 Parcels and, as necessary, beyond the limits of the OU2 Southern Site Parcels (see data gaps noted in Sections 2.1 and 2.2).

CRA will fully identify and address the groundwater data gaps following completion of the current groundwater investigation as agreed to by USEPA in periodic conference calls to discuss the scope of the OU2 RI/FS.

3.0 CONCEPTUAL SITE MODEL

The following presents a summary of the preliminary CSM for the Site based on human health exposure and ecological receptors. Appendix B contains the CSM.

In order to evaluate the significance of the impacted media at the Site, the potential pathways by which individuals may come in contact with the media must be determined. The combination of factors (chemical source, media of concern, release mechanisms, and potential receptors) that could produce a complete exposure pathway and lead to human uptake of chemicals at the site is assessed in the CSM.

For purposes of the preliminary CSM, two primary source areas and five potential exposure areas were considered based on current conditions.

The two primary source areas include:

- The landfill contents within the OU1 Parcels, also referred to as the Presumptive Remedy Area
- The landfill contents outside of OU1, within the OU2 Parcels

The five potential exposure areas are referenced as:

- OU1 Parcels
- OU2 Parcels
- Quarry Pond (part of OU2)
- Off-Site properties (part of OU2)
- GMR/floodplain (part of OU2)

As indicated above, the OU1 Parcels and OU2 Parcels represent both source areas and potential exposure areas. Potential receptors may include full-time workers, temporary (e.g., construction) workers, residents, and trespassers.

Other potentially exposed receptors for constituents of concern (COCs) that may migrate from the source areas include adjacent (off-Site) properties located east and south of the source areas; and the GMR/floodplain area located west and north of the source areas. This may include residents, workers, trespassers, and recreation users.

The preliminary CSM is illustrated on Appendix B. Figures B.1 and B.2 show the CSM for human health baseline conditions for OU1 and OU2 source areas, respectively. Figure B.3 shows the CSM for ecological receptors for both source areas.

Each figure shows the primary source area, release mechanisms, secondary and tertiary sources, the exposure route, and the potentially exposed receptors. The figures also indicate the designations for operable units, in terms of which potentially complete pathways are addressed by either OU1 or OU2. In addition, the pathways being addressed by current vapor intrusion studies are also indicated.

The preliminary CSM for human health is intended to be updated and refined as additional information is collected during the RI/FS. This will include assessment of current and future conditions, and ecological receptors as necessary.

4.0 PRELIMINARY IDENTIFICATION OF RESPONSE OBJECTIVES AND REMEDIAL TECHNOLOGIES

4.1 PRELIMINARY REMEDIATION OBJECTIVES

The preliminary objectives for the remedial action at the Site[4] are identified in the SOW, which is appended to the ASAOC. As stated in the SOW, the strategy for achieving the remedial objectives and general management of the Site will include the following:

- *Conduct a remedial investigation to fully determine the nature and extent of the release of hazardous substances, pollutants, or contaminants in all Site areas and/or media not addressed by the Presumptive Remedy approach, and in all Site areas and/or media where the Respondents have not clearly indicated that there is a basis for remedial action and that a Presumptive Remedy approach is appropriate*
- *Perform a conventional feasibility study to identify and evaluate a full range alternatives for the appropriate extent of remedial action to meet the remedial action objectives, and to prevent or mitigate the migration or the release or threatened release of hazardous substances, pollutants, or contaminants of concern from the Site*
- *Gather sufficient data, samples, and other information to fully characterize Site geology, hydrogeology, the nature and extent of contamination at the Site, contaminant fate and transport mechanisms, and to support the human health and ecological risk assessments conducted for the Site*

Task 1 in the SOW identifies preliminary objectives for the remedial action at the Site.

Respondents propose the following objectives for contaminant sources and affected media in OU2.

- Minimize direct contact with solid waste and surface and subsurface soil that pose an unacceptable current or potential future risk to potential receptors
- Minimize exposure to Site-related groundwater contaminated above MCLs that poses an unacceptable current or potential future risk to potential receptors

[4] The Site has been defined in the SOW as an area of approximately 80 acres, including Valley Asphalt plant in the northernmost portion of the Site (Parcels 5171 through 5175), an auto salvage yard in the southeast (Parcels 753 and 4423) and a gravel pit/quarry pond (the Quarry Pond, Parcels 3274 and 5178) in the southern part of the Site.

- Minimize, to the extent practicable, exposure to contaminated surface water and sediments that pose an unacceptable current or potential future risk to the extent practicable
- Reduce potential for exposure to Site wetland areas that pose an unacceptable current or potential future risk to potential receptors
- Minimize infiltration and resulting contaminant leaching to groundwater and surface water in areas where Site-related contaminants are currently leaching, or have the potential to leach, at concentrations that pose or would pose an unacceptable current or potential future risk to potential receptors
- Reduce Site-related hazardous substances, pollutants, or contaminants in areas that are defined as "hot spots" in accordance with USEPA guidance to the extent practicable and necessary to protect potential receptors
- Control migration of contaminated groundwater or leachate that poses an unacceptable current or potential future risk to potential receptors
- Control Site-related landfill gas and soil vapors that pose an unacceptable current or potential future risk to potential receptors

4.2 PRELIMINARY REMEDIAL TECHNOLOGIES

In accordance with USEPA guidance, the following subsection presents preliminary general response actions and a preliminary list of remedial technology types for the Site.

4.3 PRELIMINARY GENERAL RESPONSE ACTIONS

In accordance with USEPA guidance (1988) general response actions are initially defined during scoping and are refined throughout the RI/FS as information is gained and action-specific ARARs are identified. General response actions for the Site may include no action/institutional actions, containment, collection, excavation, treatment, disposal, or a combination of these.

4.4 PRELIMINARY REMEDIAL TECHNOLOGY TYPES

CRA identified several remedial technology types and process options for each applicable general response action to satisfy the objectives discussed in Section 4.1.

Following the OU2 remedial investigation, CRA will screen process options relative to technical implementability based on the OU2 Site-related contaminant types and concentrations, and other Site characteristics.

The preliminary remedial technology types and general process options are presented as follows:

No Action / Institutional Options

- No action
- Zoning restrictions
- Deed/use restrictions
- Restrictive covenants
- Fencing/signs/markers
- Groundwater use restrictions

Containment Technologies

- Cap
- Stabilization/Solidification

Removal and Extraction Technologies

- Excavation
- Drum removal
- Extraction wells
- Interceptor trenches
- LFG venting, collection, or flaring

Treatment Technologies

- Physical or Chemical Separation
- Enhanced in situ biodegradation
- Activated carbon adsorption
- Air sparging
- Permeable treatment barrier (PTB)/permeable reactive barrier (PRB)
- Biological treatment
- Chemical/ultraviolet (UV) oxidation

Discharge/Disposal Technologies

- On-Site disposal
- Off-Site disposal
- Ambient air discharge
- Reinjection
- Surface water discharge

Other Technologies

- Monitoring
- Well Abandonment
- Wetland Mitigation
- Monitored Natural Attenuation

As the OU2 RI progresses, the list of remedial technology types and process options will be refined for each medium of interest. In the FS, the options will be screened to identify those technologies to be further evaluated and combined as appropriate to develop remedial alternatives.

4.5 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

As stated in USEPA, 1988, "Section 121(d)(2)(A) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) specifies that Superfund RAs meet any Federal standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate requirements (ARARs)." Further, "State ARARs must be met if they are more stringent than Federal requirements" (USEPA, 1988)[5].

[5] Section 121 (d)(2)(A) of CERCLA states "With respect to any hazardous substance, pollutant or contaminant that will remain onsite, if – (i) any standard, requirement, criteria, or limitation under any Federal environmental law...; or (ii) any promulgated standard, requirement, or limitation under a State environmental or siting law that is more stringent than any Federal standard, requirement, criteria, or limitation ... and that has been identified ... in a timely manner, is legally applicable to the hazardous substance or pollutant or contaminant concerned or is relevant and appropriate under the circumstances of the release or threatened of such hazardous substance or pollutant or contaminant, the remedial action selected ... shall require, at the completion of the remedial action, a level or standard of control for such hazardous or pollutant or contaminant which at least attains such legally applicable or relevant or appropriate standard, requirement, criteria, or limitation."

Ohio law does not include a parallel ARAR process; however, the Ohio EPA Division of Environmental Response and Revitalization's administrative orders for Site cleanup require that remedial actions (RAs) be undertaken in a manner consistent or not inconsistent with the National Contingency Plan (NCP, 40 *Code of Federal Regulations* [CFR], Part 300). Therefore, in order to maintain consistency with the NCP, Ohio EPA follows the federal ARARs process. In spite of a permit exemption under CERCLA law, there is no exemption under state law and it has been Division of Emergency and Remedial Response's policy to require responsible parties to acquire and comply with all necessary permits, including all substantive and administrative requirements.

ARARs and To-Be-Considered (TBC) criteria are defined as follows:

- Applicable Requirements are cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or state environmental laws that specifically address a hazardous substance, pollutant, contaminant, RA, location, or other circumstance found at a CERCLA site.
- Relevant and Appropriate Requirements are cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or state environmental laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, RA, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site and are well-suited to the particular site.
- To-Be-Considered Criteria consist of advisories, criteria, or guidance that were developed by USEPA, other federal agencies, or states that may be useful in developing CERCLA remedies and include non-promulgated guidance or advisories that are not legally binding and that do not have the status of potential ARARs. TBCs generally fall within three categories: health effects information with a high degree of credibility, technical information on how to perform or evaluate Site investigations or response actions, and policy.

USEPA has divided ARARs into three categories: chemical-specific, location-specific, and action-specific, described as follows:

- Chemical-Specific ARARs are usually health- or risk-based numerical values or methodologies, which, when applied to Site-specific conditions, result in the establishment of numerical values. These values establish the acceptable amount or

concentration of a chemical that may be found in, or discharged to, the ambient environment.

- Location-Specific ARARs apply to the geographical or physical location of the Site. These requirements limit where and how the RA can occur.
- Action-Specific ARARs include performance, design, or other controls on the specific activities to be performed as part of the RA for a site.

Potential ARARs and To-Be-Considered Criteria, along with a brief description of each are provided in Appendix D. The potential ARARs and TBC criteria in Appendix D are based on determinations made following OU1 RI/FS Investigations. During the OU2 RI/FS, information will be collected to assist in finalizing the preliminary evaluation of potential ARARs.

As specified in the NCP under 40 CFR Section 300.430(f)(1)(i), six circumstances under which ARARs may be waived are as follows:

(1) The alternative is an interim measure and will become part of a total remedial action that will attain the applicable or relevant and appropriate federal or state requirement

(2) Compliance with the requirement will result in greater risk to human health and the environment than other alternatives

(3) Compliance with the requirement is technically impracticable from an engineering perspective

(4) The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach

(5) With respect to a state requirement, the state has not consistently applied, or demonstrated the intention to consistently apply, the promulgated requirement in similar circumstances at other remedial actions within the state

(6) For Fund-financed response actions only, an alternative that attains the ARAR will not provide a balance between the need for protection of human health and the environment at the Site and the availability of Fund monies to respond to other sites that may present a threat to human health and the environment

5.0 PROPOSED FIELD INVESTIGATION ACTIVITIES

5.1 DATA QUALITY OBJECTIVES

USEPA Data Quality Objectives (DQOs) are a flexible and iterative planning process used to determine the type, quantity, and quality of data required in order to obtain defensible decisions. The DQO process consists of seven iterative steps, as follows:

- Step 1: State the Problem. Define the problem that necessitates the study: identify the planning team, examine budget and schedule.
- Step 2: Identify the Goal of the Study. State how environmental data will be used in meeting objectives and solving the problem, identify study questions, define alternative outcomes.
- Step 3: Identify Information Inputs. Identify data & information needed to answer study questions.
- Step 4: Define the Boundaries of the Study. Specify the target population and characteristics of interest, define spatial and temporal limits, scale of inference.
- Step 5: Develop the Analytic Approach. Define the parameter of interest, specify the type of inference, and develop the logic for drawing conclusions from findings.
- Step 6: Specify Performance or Acceptance Criteria.
- Step 7: Develop the Plan for Obtaining Data. Select the resource-effective sampling and analysis plan that meets the performance criteria.

CRA developed DQOs for OU2, based on results of previous investigations, and data gaps. All data collected will ultimately be used in the Baseline Risk Assessment for OU2. The DQO development process is detailed in Tables 3.1 through 3.6 and summarized in the following sections. The Respondents propose to complete a series of phased investigations to assist in the characterization of various OU2 media and identify data requirements for subsequent assessment and delineation. The first phase will include investigations to determine the nature and extent of contamination, while the second phase will focus on determination of risks to human health and the environment. Respondents will prepare and submit separate letter work plans for the investigations proposed in the following sections.

5.2 OU2 PARCELS FILL INVESTIGATION

The objectives of the Fill Investigation within the OU2 Parcels include:

- Determination of the lateral and vertical extent of the fill material to support the overall site assessment
- Characterization of the fill material (surface and subsurface) to identify direct contact risks, for input to the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA)
- Determine if potential impacts are the result of historic operations, current business operations or the result of off-Site sources
- Based on results of the overlying fill investigation, characterization of groundwater quality below the fill material to assess potential groundwater impacts due to the presence of the fill
- Based on the results of the soil and groundwater investigation, characterization of soil gas conditions within the fill material to assess potential impacts to ambient air and nearby occupied structures

DQOs for fill (soil), groundwater, and soil gas within OU2 are presented in Tables 3.1, 3.2, and 3.3, respectively.

The Phase 1A investigation of the fill within OU2 will include surface and subsurface soil and groundwater sample collection and analyses to identify direct contact risks and risks to groundwater as outlined below:

- Completion of approximately 40 soil borings within the Quarry Pond Parcels at the approximate locations shown on Figure 3.1.
- Collection of continuous samples to log the subsurface conditions, through the entire thickness of the fill material and up to approximately 5 feet into the underlying native material.
- Collection and analyses of soil/fill samples for laboratory analysis (Target compound list (TCL) volatile organic compounds (VOCs), TCL semi-VOCs (SVOCs), TCL pesticides/polychlorinated biphenyls (PCBs), TCL herbicides, TAL metals, and cyanide) from each soil boring from the following intervals:
  - 0 to 2 feet bgs
  - One discrete sample interval selected from the fill material, if found, below 2 feet bgs, based on field screening results

- Collection and analysis of groundwater samples for laboratory analysis (TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, TAL metals and cyanide) from each soil boring where groundwater is encountered, using a temporary well screen positioned at the depth of the water table. These data will serve to provide an indication of potential impacts to groundwater related to infiltration of surface water through the fill material.
- Completion of soil gas monitoring if required based on conditions determined from soil borings, as discussed in Section 5.2.1.

Phase 1B consists of an off-Site background soil investigation that will be completed concurrently with Phase 1A. The Respondents will collect background soil samples from nearby properties, if accessible, and which are not associated with industrial activity. The data collected from the soil sampling locations in the OU2 Parcels (Phase 1A) will be compared to background conditions to determine if there are any measureable inputs of contaminants from the Site, or if contaminant concentrations are due to naturally occurring background concentrations.

Phase 2 consists of additional sampling, if necessary, to develop risk assessment exposure estimates. If soil containing contaminant concentrations greater than performance and/or acceptance criteria is found in Phases 1A and 1B, additional soil samples will be collected to delineate soil impacts or to remove data gaps.

5.2.1 SOIL VAPOR MONITORING

CRA and USEPA completed vapor intrusion studies in 2012 and 2013 to assess potential effects of soil vapor on occupied buildings located on and in the immediate Site vicinity. In order to further assess soil gas conditions within the OU2 fill material, CRA will install temporary soil gas probes at selected locations, dependent on the observations CRA makes during the drilling of the soil boring specifically, if CRA identifies evidence of waste or chemically-impacted material. CRA will provide a description of the proposed probe locations to USEPA for review, if they are needed, prior to implementing the work. The probes will be used for soil gas monitoring, augmenting the existing probes located within the OU2 Parcels, to determine the presence of VOCs and explosive gases using field instruments. CRA will assess the need for further soil gas monitoring within or beyond the fill material limits, based on the results of the initial monitoring.

5.3 QUARRY POND INVESTIGATION

The objectives of the Quarry Pond investigation include:

- Determination if non-native material exists at the base of the Quarry Pond (to determine if the operators filled the area in prior to constructing the pond)
- Characterization of surface water quality as input to the HHRA and ERA
- Characterization of sediment quality as input to the HHRA and ERA

DQOs for surface water and sediment are presented in Tables 3.4 and 3.5, respectively.

The Phase 1A investigation of the Quarry Pond will include surface water and sediment sampling to identify direct contact risks and risks to potential ecological receptors as outlined below:

- Sediment samples will be collected at approximately nine locations, as shown on Figure 3.3. The sample locations may be adjusted based on the locations of intermittent drainage pathways, storm water runoff pathways, if any are identified, and the results of underwater survey inspections conducted by Ohio EPA, Ohio DNR and the District Attorney's office, to include consideration of any areas where foreign objects may have been deposited and the likelihood of sediment contamination may be greater.
- Each sediment sample will be collected from the upper 6 inches of the sediment material and analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, TAL metals and cyanide parameters.
- Surface water samples will be collected at approximately five locations as shown on Figure 3.3. The surface water sample locations will be adjusted based on the location of intermittent drainage pathways from storm water runoff, if any are identified.
- Each sample will be collected from approximately the mid-point of the water column and analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, TAL metals and cyanide parameters.

Based on the results of the Phase 1A investigations discussed above, CRA will determine the need for additional (Phase 1B) data collection. This may include, for example, collection of surface water and sediment samples from background locations; and additional sample collection from the Quarry Pond to refine the distribution of COCs.

Phase 2 consists of additional sampling, if necessary, to develop risk assessment exposure estimates. If surface water and sediment containing contaminant concentrations greater than performance and/or acceptance criteria is found in Phases 1A and 1B, additional samples will be collected to delineate surface water and/or sediment impacts or to remove data gaps.

5.4 FLOODPLAIN INVESTIGATION

The objectives of the Floodplain investigation include:

- Characterization of the surface soil as input to the HHRA and ERA
- Determine if potential Floodplain soil contamination is a result of migration from the Site

DQOs for soil within the Floodplain are presented in Table 3.6.

The Phase 1 investigation of the GMR floodplain will include soil sample collection and analyses from the floodplain to identify direct contact risks as outlined below:

- Surface soil samples will be collected at approximately 15 locations within the floodplain adjacent to the OU1 Presumptive Remedy Area (PRA) and OU2 Parcels as shown on Figure 3.2
- At each location soil samples will be collected from two depth increments, i.e., 0 to 0.5 feet bgs and 1 to 2 feet bgs, which is relevant for data use in the OU2 RI Report and in the HHRA and ERA
- Samples will be submitted for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, TAL metals, and cyanide analyses

Phase 1B consists of an off-Site background soil investigation that will be completed concurrently with Phase 1A. Surface soil samples will be collected at approximately ten locations within the floodplain upstream of the Site to establish local background locations. The data collected from the soil sampling locations in the floodplain (Phase 1A) will be compared to background conditions to determine if there are any measureable inputs of contaminants from the Site, or if contaminant concentrations are due to naturally occurring background concentrations.

Phase 2 consists of additional sampling, if necessary, to develop risk assessment exposure estimates. If soil contains contaminants at concentrations greater than

performance and/or acceptance criteria is found in Phases 1A and 1B, additional soil samples will be collected to delineate soil impacts or to remove data gaps.

5.5 GMR INVESTIGATION

The objectives of the GMR investigation include:

- Determine if the Site significantly adds to contaminants in sediment and surface water in the GMR
- Characterization of the surface water quality as an input to the HHRA and ERA
- Characterization of sediment quality as an input to the HHRA and ERA

DQOs for surface water and sediment are presented in Tables 3.4 and 3.5, respectively.

The Phase 1A investigation of the GMR will include surface water and sediment sampling to identify direct contact risks and risks to potential ecological impacts as outlined below:

- Sediment samples from approximately 12 locations within the GMR adjacent to the PRA and OU2 Parcels as shown on Figure 3.4. The sediment sample locations may be adjusted based on the location of intermittent drainage pathways (if any).
  - CRA will collect each sediment sample from the upper 6 inches of the sediment material and analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, TAL metals, and cyanide parameters
- Surface water samples from approximately 12 locations within the GMR adjacent to the PRA and OU2 Parcels as shown on Figure 3.4. The surface water sample locations will be adjusted based on the location of intermittent drainage pathways and GMR discharge points, if any are identified.
  - CRA will collect each surface water sample from approximately the mid-point of the water column and analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TCL herbicides, and TAL metals parameters

Phase 1B consists of an upstream background GMR surface water and sediment investigation that will be completed concurrently with Phase 1A. Sediment samples from three transects and surface water samples collected from two transects regularly space upstream of the Site will be collected on two separate sampling rounds. The data collected from the GMR surface water and sediment sampling locations (Phase 1A) will

be compared to background conditions to determine if there are any measureable inputs of contaminants from the Site, or if contaminant concentrations are due to naturally occurring background concentrations. Upstream background sample locations will be collected along transects regularly spaced upstream of the Site and downstream of the dam.

Phase 2 consists of additional sampling, if necessary, to develop risk assessment exposure estimates. Based on the results of the Phase 1A and 1B investigations discussed above, CRA will determine the need for additional data collection. This may include, for example, additional surface water or sediment sampling in the river to refine the distribution of COCs; and benthic studies to assess possible ecological receptors.

5.6 GROUNDWATER INVESTIGATION

CRA will propose the scope of, and DQOs for, the final OU2 Groundwater Investigation following completion of the current preliminary Groundwater Investigation. Also, the final OU2 Groundwater Investigation scope will be developed based on data collected from the initial phases of the OU2 investigation. OU2 groundwater investigative locations (i.e., temporary monitoring wells; permanent monitoring wells; VAS locations) will be installed based on the results of the current preliminary Groundwater Investigation and all existing data, including hydrostratigraphic and groundwater/surface water flow data.

6.0 BACKGROUND COMPARISONS

For elements of the investigation requiring a comparison to background (e.g., upgradient or upstream) conditions, the following methodology will be used. Such comparisons are noted particularly for the following investigation elements, but the methodology presented herein may also be applied to additional items, if identified during the course of the investigation.

- Soil and Fill on Southern Parcels, Phase 1B (Comparison to Background)
- Groundwater, Phase 1B (Comparison of Soil to Background)
- Surface Water, Phase 1B (Comparison to Upstream)
- GMR Sediment, Phase 1B (Comparison to Upstream)
- GMR Sediment, Phase 2 (if required) (Comparison to Upstream)

6.1 BACKGROUND COMPARISON APPROACHES

Evaluation of site vs. background conditions using environmental quality data is typically carried out using either group-based or individual-based statistical comparisons. Group-based comparisons pool the data from a number of samples collected at a site (e.g., from within an area of interest) and contrast these against a pooled set of background samples. In such a case, a determination may be made as to whether or not the site area of interest as a whole is consistent with or above background conditions. In contrast, individual-based comparisons make a decision (i.e., consistent with or above background) for each investigative location at the site. In terms of the different elements of the proposed investigations, group-based background comparisons may be applicable for portions of the baseline risk assessment, but the majority of testing will consider individual point comparisons (site vs. background) for the purposes of identifying and delineating potential areas of the site that appear to have contaminants present above background conditions.

For individual-based comparisons against background, the statistical approaches employed typically establish an expected range (e.g., 95th or 99th percentile) of contaminant concentrations based on the background sample results, against which the site data compared. A site result falling outside of the expected background range is identified as being potentially impacted, and is further evaluated to confirm this finding (e.g., using confirmatory sampling or considering the spatial patterns of results in other site samples collected nearby). Confirmation is required due to the statistical nature of the background expected range calculations, which result in infrequent occurrence of

background conditions outside of the range (e.g., 1 in 20 background samples for a 95th percentile range, or 1 in 100 for a 99th percentile range).

For group-based comparisons against background, the statistical approaches employed typically compare the site and background groups based on distributional characteristics (e.g., mean, median, or percentile values) through the use of hypothesis testing. In carrying out such tests, statistically-significant findings provide strong evidence that contaminant concentrations found in the area of the site considered are different than those present in background areas.

When designing and implementing an environmental investigation where background comparisons are to be made, it is important to try to match background sampling media to those present at the site, as far as is possible. That is, matching soil types/textures, including multiple soil types if necessary due to site stratigraphy, groundwater aquifers, etc. This prevents the finding of differences between site and background conditions due to factors unrelated to activities at the site (e.g., different native mineralogy in different soil layers under a site).

6.2 RELEVANT GUIDANCE AND REFERENCES

The issue of appropriate background comparison techniques is discussed in numerous guidance and environmental statistic texts. The methods proposed for the investigations have been selected for consistency with the following documents.

- USEPA, June 1994. Statistical Methods for Evaluating the Attainment of Cleanup Standards. Volume 3: Reference-Based Standards for Soil and Solid Media. Environmental Statistics and Information Division (2163), Office of Policy, Planning, and Evaluation. EPA 230-R-94-004.
- NAVFAC, 2004. Guidance for Environmental Background Analysis. Volume III: Groundwater. Naval Facilities Engineering Command. User's Guide UG-2059-ENV. Port Hueneme, California.
- USEPA, September 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites (OSWER 9285.7-41). Office of Emergency and Remedial Response, United States Environmental Protection Agency, Washington, DC. EPA/540/R-01/003.
- USEPA, February 2006. Data Quality Assessment: Statistical Methods for Practitioners (EPA QA/G-9S). Office of Environmental Information, United States Environmental Protection Agency, Washington, DC. EPA/240/B-06/003. [Available

at http://www.epa.gov/QUALITY/qs-docs/g9s-final.pdf]. [Section 3.3 in particular].

- USEPA, March 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance. Office of Resource Conservation and Recovery, Program Implementation and Information Division, United States Environmental Protection Agency Washington, DC. EPA 530-R-09-007. [Chapter 5 and elsewhere].
- USEPA, May 2010. ProUCL Version 4.1.00 Technical Guide (Draft). United States Environmental Protection Agency, Office of Research and Development, Washington, DC. EPA/600/R-07/041. [Chapters 3 and 5].
- USGS, 2002. Statistical Methods in Water Resources. By D.R. Helsel and R.M. Hirsch. Chapter A3 of Book 4, Hydrologic Analysis and Interpretation in Techniques of Water-Resources Investigations of the United States Geological Survey. [Available at http://pubs.usgs.gov/twri/twri4a3/]. [Chapter 3].

For the purposes of individual-based background comparisons (e.g., used in detection monitoring or for delineation of contamination), a general approach found though these references is to use a statistical tolerance or prediction limit to establish a background threshold value (BTV), which is the upper[6] expected range of background concentrations given by a certain percentile of background (e.g., 95th or 99th). Consequently, for elements in the present investigation where individual-based background comparisons are required, BTVs based on statistical upper tolerance limits (UTLs) for the 95th and/or 99th percentile of background have been selected for use. A detailed discussion of UTL calculation methods is found in Chapters 3 and 5 of USEPA's ProUCL version 4.1.00 technical guide (2010, see list above).

For the purposes of group-based background comparisons (e.g., when comparing contaminant concentration within an area of concern vs. background as part of a risk assessment), different hypothesis tests are available in the references above. Where certain statistical assumptions are met by the data sets considered (e.g., normal distribution, homogeneity of variance), parametric statistical tests are available (e.g., analysis of variance, Student *t*-test). Where these assumptions are not met by the available data, analogous non-parametric (rank-based) statistical methods are available (e.g., Mann-Whitney/Wilcoxon Rank-Sum test, modified Quantile test). Where required for the present investigation, statistical group comparisons will be carried out using the

6 In certain cases, a lower limit may also be considered, e.g., for pH or oxygen content in water, but upper limits are much more commonly encountered.

Mann-Whitney/Wilcoxon Rank-Sum test and modified Quantile test, supplemented by the Student *t*-test where assumptions of the parametric test are met.

6.3 STATISTICAL CONSIDERATIONS

In order to achieve an appropriate and successful statistical comparison of site and background conditions, a number of factors will be considered during sampling design and data analysis. These factors include:

- Background sample size – a minimum of eight to ten background samples will be collected for each environmental medium (soil, groundwater, sediment and/or surface water), and/or stratum within the medium (e.g., different soil types and/or aquifers).
- The desired minimum confidence level to be used in the statistical comparisons is 95 percent (i.e., statistical significance of $\alpha = 0.05$).
- The specific statistical method used needs to be appropriate for the observed characteristics of the site and/or background data sets obtained. This requires assessing each data set for the following statistical parameters:
  - Percentage of non-detect values
  - Statistical data distribution (e.g., testing for normal, gamma and lognormal distributions, per USEPA's ProUCL version 4.1.01 software's approach)
  - Statistical outliers (particularly in background data sets)
- QA/QC samples – where field duplicate samples are collected and submitted for laboratory analysis, the resulting data will be averaged prior to statistical calculations in order to avoid over-weighting the sampling location where duplicates were collected.
- Confirmatory analysis and/or resampling – for point-based background comparisons using BTVs, it is recognized that periodic occurrence of parameter concentrations above a BTV are expected by natural variation in the background population (e.g., 1 in 20 samples for a 95th percentile based BTV). Where a site observation exceeds the 95th percentile BTV, it will additionally be compared to a 99th percentile BTV. If the result falls below the 99th percentile BTV, and no spatially- adjacent observations also exceed the 95th percentile BTV, the site observation will be considered to not indicate a site-related effect. However, if the site result exceeds the 99th percentile BTV or another adjacent site result also is above the 95th percentile BTV, then it will be considered to indicate an

above-background condition, unless a confirmatory resample is collected and found to not be above the BTV.

6.4 SUMMARY OF STATISTICAL METHODS SELECTED FOR BACKGROUND COMPARISONS

In consideration of the information presented above, as well as the objectives of the present investigation as detailed in the DQO tables, the following methods will be used for comparing contaminant concentrations in environmental samples collected at the site against concentrations observed in ambient background samples.

1. For point-based comparisons (i.e., as described for Phases 1B of the different investigations described in the DQO tables for all media except soil gas), BTVs will be calculated using the available background data:
    - If greater than half of the background data are non-detects, or if a background data set is not found to follow a discernible statistical distribution, then a non-parametric UTL on the 95th percentile of background (with 95 percent confidence) will be generated for use as the BTV. This will be done following the methods in USEPA's ProUCL version 4.1.01 software (USEPA, 2010).
    - If no more than half of the background data are detects and a discernible statistical distribution (normal, gamma or lognormal) is found, then a parametric UTL on the 95th percentile of background (with 95 percent confidence) will be generated for use as the BTV. This will be done following the methods in USEPA's ProUCL version 4.1.01 software (USEPA, 2010).
    - Individual site data will be compared against the BTVs:
        - Where a site observation exceeds the 95th percentile BTV, it will additionally be compared to a 99th percentile BTV
        - If the result falls below the 99th percentile BTV, and no spatially-adjacent observations also exceed the 95th percentile BTV, the site observation will be considered to not indicate a site-related effect
        - However, if the site result exceeds the 99th percentile BTV or another adjacent site result also is above the 95th percentile BTV, then it will be considered to indicate an above-background condition, unless a confirmatory resample is collected and found to not be above the BTV

2. For group-based comparisons (i.e., as described for Phase 2 of the GMR sediment investigation, if necessary, and potentially as well a part of the baseline risk assessment):

- If both the site and background data sets contain few non-detects (less than 10 to 15 percent), and follow a common discernible data distribution (normal, gamma or lognormal), the non-detects will be substituted with a value of one-half their detection limit and the two groups compared using a Student's t-test at 95 percent confidence.
- If one or both of the site and background data sets contain a moderate proportion of non-detects (between 15 and 50 percent), and follow a common discernible data distribution (normal, gamma or lognormal), a Student's t-test at 95 percent confidence will be carried out using the Kaplan-Meier (KM, see USEPA, 2010) adjusted estimates of the means and standard deviations for the two groups of data.
- In all cases where the site and background data sets combined contain up to 50 percent non-detects, non-parametric testing will be carried out contrasting the two groups using the Mann-Whitney/Wilcoxon Rank-Sum test and the modified Quantile test. For cases where a Student t-test has already been performed, this will be considered as a confirmatory test.
- For cases where a particular analyte has not been detected in either background or site samples, no statistical testing will be carried out.
- For the remaining cases (detected, but in less than half of the samples in the pooled site and background data sets), alternate statistical comparisons will be carried sought on a case-by-case basis. This could include procedures such as a test of proportions in conjunction with the modified quantile test.

7.0 BASELINE RISK ASSESSMENT AND ECOLOGICAL RISK ASSESSMENT

Major components of the Baseline Risk Assessment (BRA) include constituents of potential concern identification, exposure assessment, toxicity assessment, and human health and ecological risk characterization.

Baseline Human Health Risk Assessment

CRA proposes to conduct the HHRA (or BRA) in accordance with *Risk Assessment Guidance for Superfund (RAGS Parts A-F)*. These guidance documents, along with the *Exposure Factors Handbook* and recent *Cancer Risk Assessment* guidelines, are the default guidance documents for risk assessment under CERCLA. There are four key steps to the HHRA process: Data Collection and Evaluation, and Hazard Identification; Exposure Assessment; Toxicity Assessment; and Risk Characterization.

Data Collection and Evaluation, and Hazard Identification

Adequate definition of the Site characteristics and the nature and extent of impacts is an integral component of any risk assessment and is required to reduce uncertainty in the risk assessment findings. The selection of chemicals of potential concern (COPCs) will follow USEPA RAGS Part A, and all chemicals will be screened against the USEPA Region 9 RSLs. For each medium, chemicals with maximum concentrations less than their respective screening value will not be identified as COPCs, and will not be retained in the HHRA quantitative process.

Exposure Assessment and Documentation

In the exposure assessment, analysis of contaminants through various exposure pathways will be conducted to determine which pathways and routes of exposure are the most significant. This will include an analysis of the presence, fate, and transport of contaminants, and a discussion of the potential exposure pathways, routes of exposure, exposure media, and receptors to be considered in the HHRA, which will be used to refine the CSM discussed in the Work Plan. The exposure assessment will include the identification of receptor exposure variables such as exposure frequency, exposure duration, absorption factors, and intake rates. In accordance to guidance, both Reasonable Maximum Exposure (RME) and Central Tendency (CT) exposure scenarios will be applied and evaluated in the HHRA.

Toxicity Assessment and Documentation

The toxicity assessment will identify the types of adverse health effects a COPC may potentially cause, and to define the relationships between the magnitude of exposure (dose) and the occurrence of specific health effects for a receptor (response). For the HHRA, CRA follows USEPA's process of estimating risk for both potential cancer and non-cancer effects. The dose-response factors for potential carcinogenic compounds are termed Cancer Slope Factors (CSFs), and dose-response factors for potential non-carcinogenic compounds are termed Reference Doses (RfDs). The USEPA guidance provides a hierarchy for the selection of dose-response values in the risk assessment process. The USEPA Integrated Risk Information System (IRIS) is by far the best source of these values because of its high level of peer review. USEPA's Provisional Peer Reviewed Toxicity Values (PPRTVs) from the National Center for Environmental Assessment (NCEA) will be applied as a second tier source. These values are based upon revised values from HEAST tables. The California Environmental Protection Agency (Cal EPA), the Agency for Toxic Substances and Disease Registry (ATSDR), and HEAST tables will be consulted as third tier sources. As toxicological information becomes available on chemical compounds and elements the USEPA will update its IRIS database by withdrawing toxicity values and listing new ones. Occasionally toxicity values are withdrawn before a replacement value is approved through the extensive peer review process used by USEPA.

Risk Characterization

For the risk characterization, estimates of potential carcinogenic and non-carcinogenic risks will be quantified for each evaluated exposure pathway based on the exposure and toxicity assessments. Estimated cancer risks for identified exposure pathways will be considered significant when greater than the identified acceptable risk level or range (1.0E-04 to 1.0E-06), while non-carcinogenic hazard estimates will be considered significant when greater than 1. As part of the risk characterization, potential risk from background Site conditions may be estimated through a risk assessment using analytical data from background media samples. The background risk determination will be used to qualify the risk estimates for COPCs identified in Site media where applicable. Following risk characterization, an assessment of the uncertainty associated with the assumptions used throughout the HHRA process will be conducted to determine the level of confidence attributed to the characterization of risk.

Ecological Risk Assessment

The ERA will be completed in accordance with *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (USEPA, 1997) and the guidance listed in the SOW. This guidance, which is the standard by which ecological risk assessments are conducted under Superfund and other federal and state programs, is based on an 8-step process. Steps 1 and 2 are the screening or preliminary assessment and can end the process if justification can be provided. If the screening-level assessment identifies an unacceptable potential for ecological risk then a more detailed site-specific assessment following steps 3 through 8 should be conducted.

The screening-level assessment, (Steps 1 and 2 of the 8-step process) will identify constituents with concentrations above ecologically-based benchmarks (constituents of potential ecological concern [COPCs or COECs]), those media (i.e., surface water, sediments, soil) with elevated concentrations of COECs, and those ecological receptors (e.g., fish and macroinvertebrate community) most likely to have an unacceptable potential for risk.

The first step in the ERA is problem formulation. In this step, CRA will review available documents to identify those chemical constituents that are known or expected to be present and define the environmental setting (i.e., types of cover types/habitats present and potentially complete exposure pathways). In addition, CRA will identify the fate and transport characteristics and mechanisms of ecotoxicity of the COECs. Assessment endpoints for the problem formulation will also be identified. The problem formulation step will include a one-day site inspection by an experienced ecologist. In addition to facilitating characterization of the environmental setting, the site inspection will allow CRA to identify Site-specific receptors, critical habitats, and other environmentally sensitive areas on and adjacent to the site. Furthermore, the Site inspection will be useful in identifying complete and eliminating incomplete exposure pathways for evaluation in the screening-level ERA.

The second step in the screening-level ERA is the ecological effects evaluation. In this step, CRA will identify screening ecotoxicological values, and compare them to on-Site concentrations of the COECs. For surface water, sediments, and soils, the maximum concentration of each COC detected in each media will be compared to its screening ecotoxicological value. If characterization of the environmental setting and Site inspection indicate that higher trophic level receptors (e.g., fish, eating birds, and mammals) may be impacted by the COECs, then CRA will utilize a simple food chain model to estimate intake of COECs for representative upper-level receptors. As required by USEPA guidance, CRA will use conservative assumptions and conservative

screening ecotoxicological values will be used. For each receptor evaluated, the estimated intake of COECs will be compared to appropriate screening toxicological values.

Upon completion of Step 2, CRA will prepare a memorandum to USEPA documenting the methods and results of the screening-level ERA. CRA's memorandum will identify the COECs, media with elevated concentrations of COECs, and potentially affected ecological receptors. Based on the extremely conservative nature of the screening-level ERA, CRA believes there is a high probability that one or more of the COECs will exceed their screening eco-toxicological values, indicating the need for further evaluation of ecological risk. CRA's memo will include a section that discusses the sources of uncertainty in the screening-level ERA and the likelihood that any identified risks are real, as opposed to an artifact of the conservative nature of the screening-level assessment. The memo will include recommendations and strategies on how to proceed with the ecological risk assessment, if the screening-level ERA suggests further evaluation is warranted. CRA will identify types of investigations that could be used in Steps 3 through 8 of the ERA to best characterize risk and to develop appropriate site-specific remedial goals.

8.0 REFERENCES

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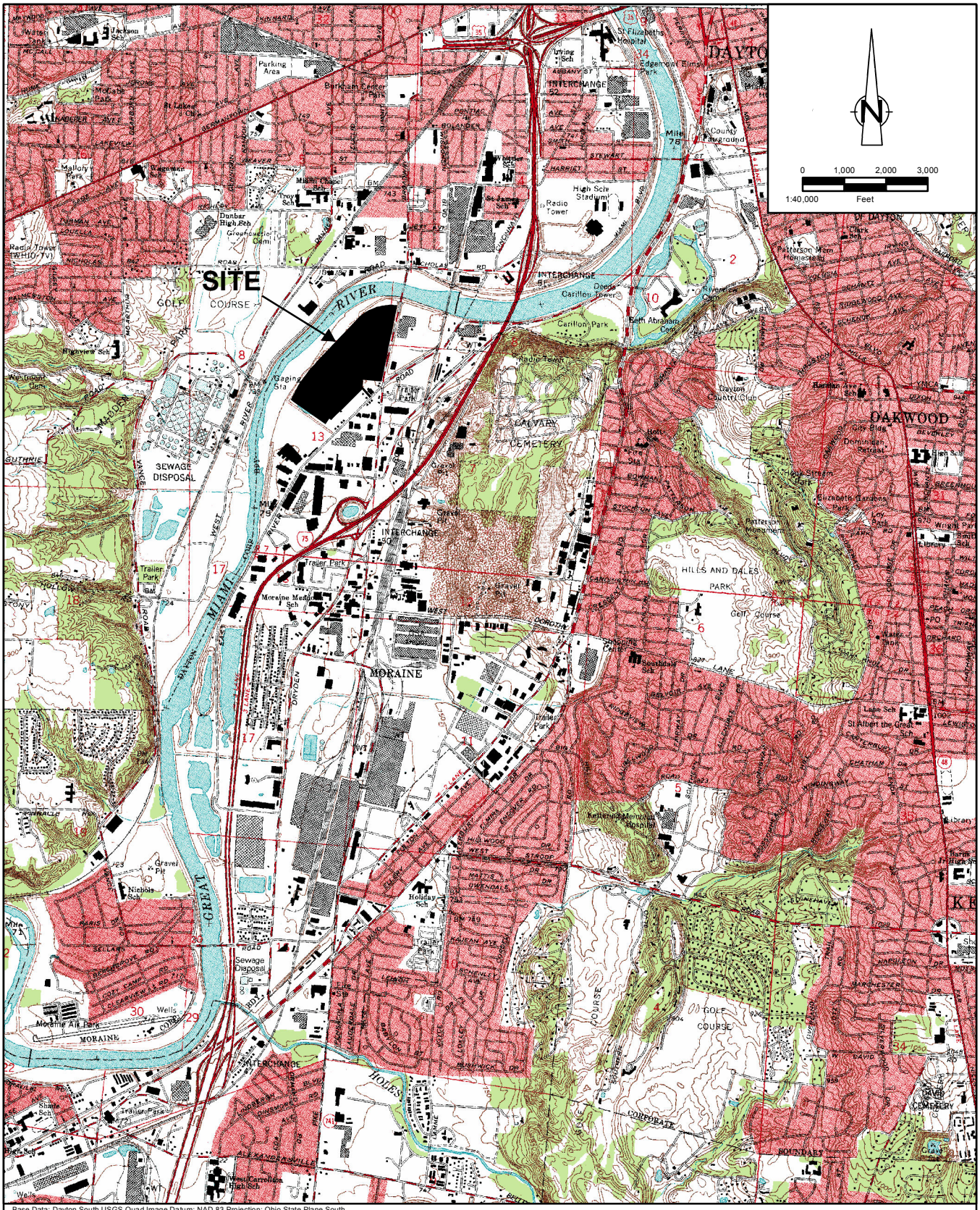
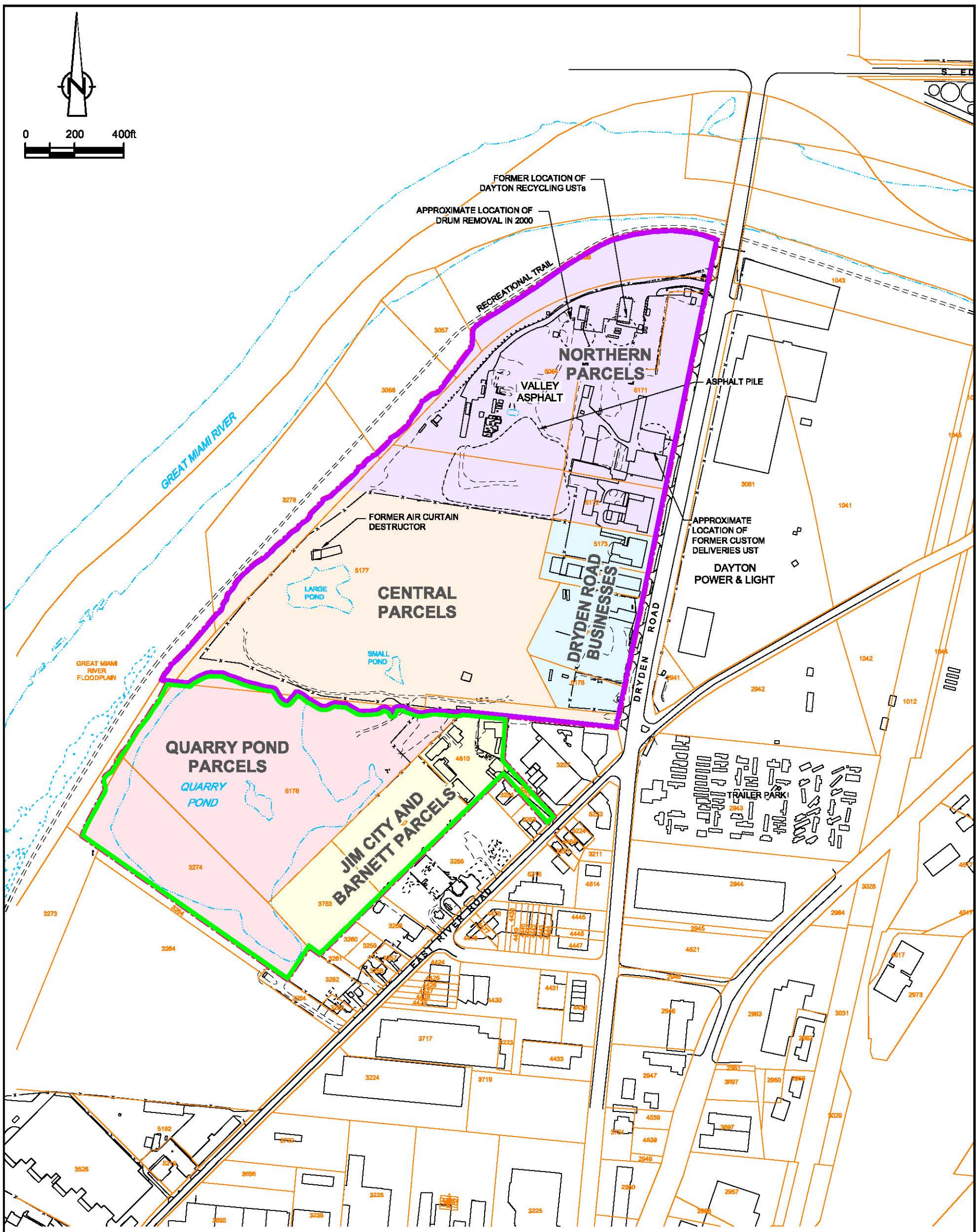


Base Data: Dayton South USGS Quad Image Datum: NAD 83 Projection: Ohio State Plane South

figure 1.1

SITE LOCATION MAP
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

38443(REP019)GIS-WA001 Monday, April 08, 2013



LEGEND

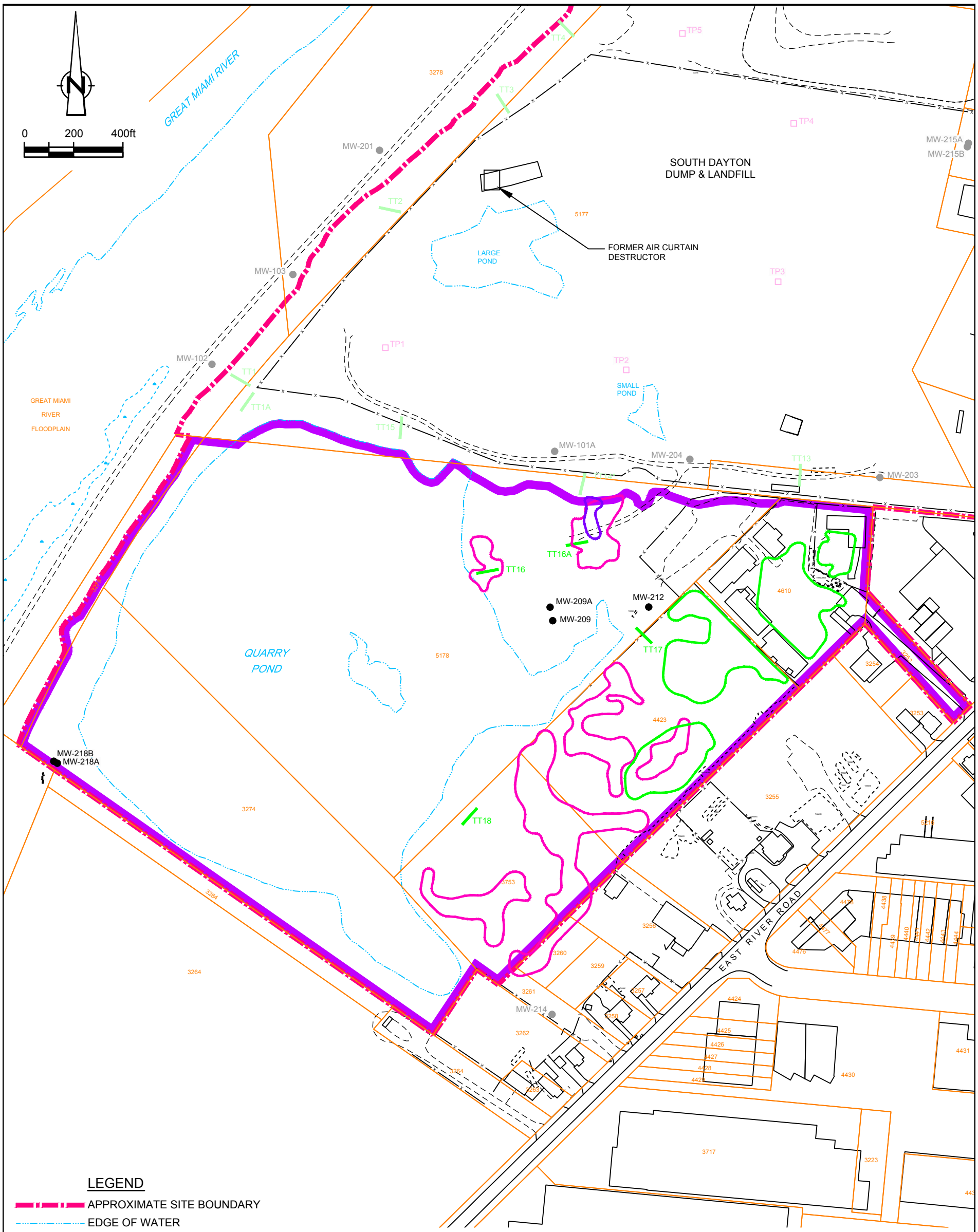
- APPROXIMATE SITE BOUNDARY
- EDGE OF WATER
- PARCEL BOUNDARY
- 3224 PARCEL NUMBER
- OPERABLE UNIT ONE (OU1) : PRESUMPTIVE REMEDY AREA
- OPERABLE UNIT TWO (OU2) : SOUTHERN SITE PARCELS

figure 1.2

SITE LIMITS AND LAYOUT
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

38443-14(019)GN-WA001 JUN 28/2013



LEGEND

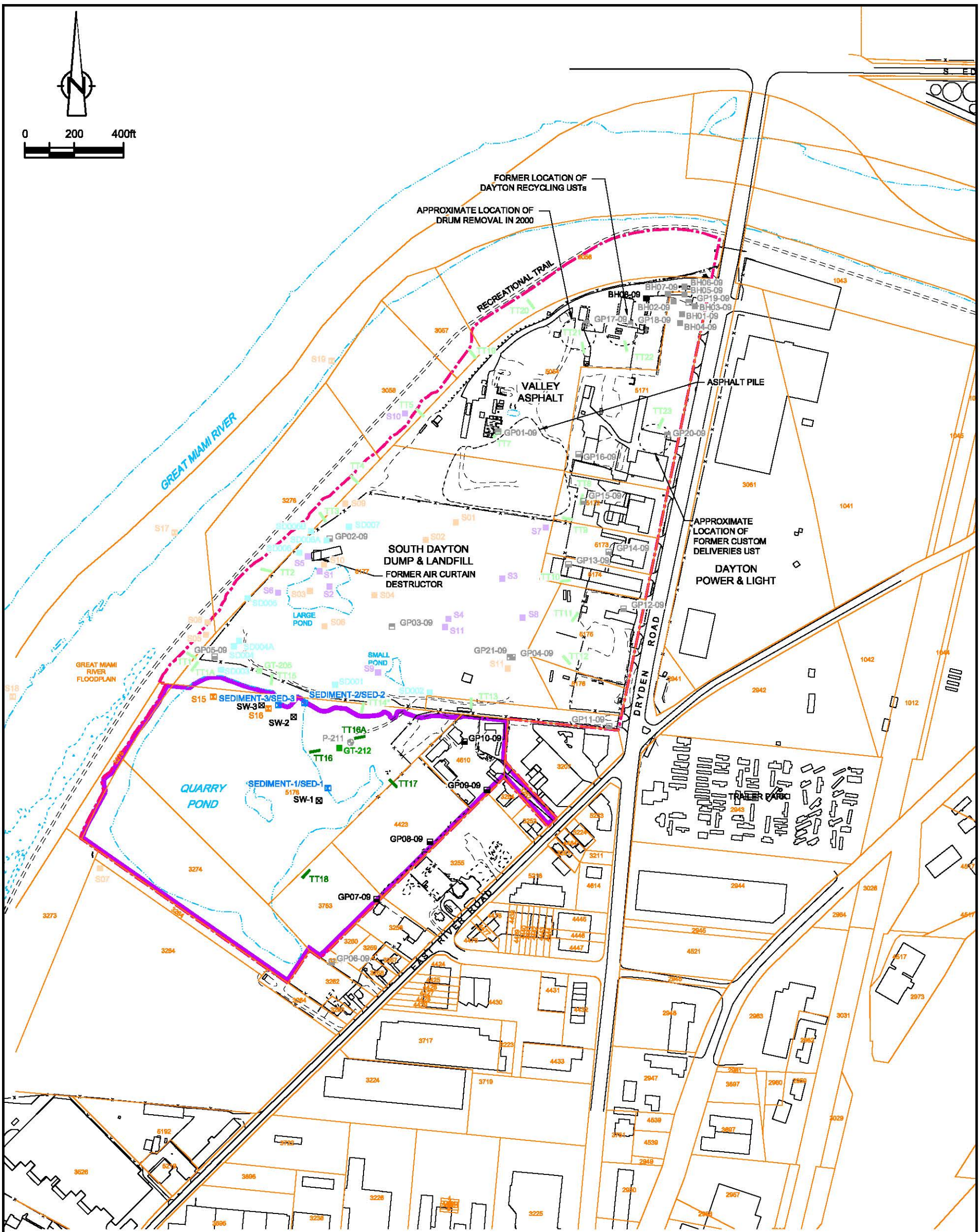
- APPROXIMATE SITE BOUNDARY
- EDGE OF WATER
- PARCEL BOUNDARY
- 3224 PARCEL NUMBER
- OPERABLE UNIT TWO (OU2) : SOUTHERN SITE PARCELS
- MW-206 MONITORING WELL LOCATION
- TP3 TEST PIT LOCATION
- TT1 TEST TRENCH LOCATION
- TOTAL FIELD MAGNETIC ANOMALY
- EM31 CONDUCTIVITY ANOMALY
- EM61 METAL DETECTION ANOMALY

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

figure 2.1

OU2 GEOPHYSICAL ANOMALIES
AND TEST TRENCH INVESTIGATIVE LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

38443-14(019)GN-WA002 APR 26/2013



LEGEND

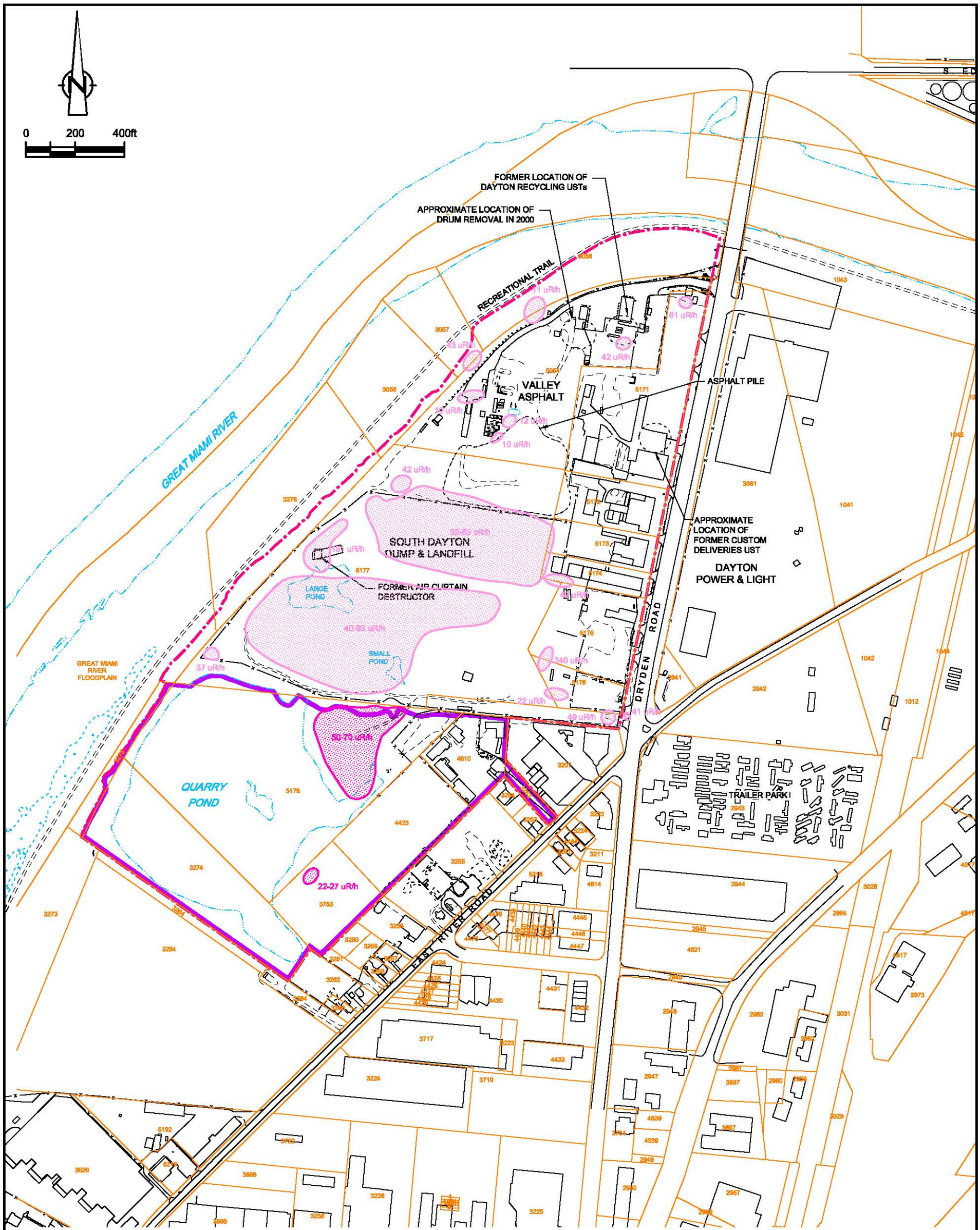
- APPROXIMATE SITE BOUNDARY
- EDGE OF WATER
- PARCEL BOUNDARY
- PARCEL NUMBER
- OPERABLE UNIT TWO (OU2) : SOUTHERN SITE PARCELS
- P-211 PIEZOMETER LOCATION
- SEDIMENT-1/SED-1 PFI 1999 & 2000 SEDIMENT SAMPLING LOCATION (APPROXIMATE)
- S15 OHIO EPA SEDIMENT SAMPLE LOCATION (APPROXIMATE)
- SW-1 PFI 1999 & 2000 SURFACE WATER SAMPLE LOCATION (APPROXIMATE)
- BH01-09 SOIL BORING LOCATION
- SD003 PSARA SOIL BORING LOCATION (APPROXIMATE)
- S01 OHIO EPA SOIL BORING LOCATION (APPROXIMATE)
- S1 EPA SOIL BORING LOCATION (APPROXIMATE)
- GT-205 PFI GEOTECHNICAL SOIL BORING LOCATION (APPROXIMATE)
- GP01-09 SHALLOW LANDFILL GAS PROBE
- GP02-09 DEEP LANDFILL GAS PROBE

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

figure 2.2

SOIL, SEDIMENT, SOIL GAS, AND SURFACE WATER SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

38443-14(019)GN-WA003 APR 18/2013



LEGEND

- APPROXIMATE SITE BOUNDARY
- EDGE OF WATER
- PARCEL BOUNDARY
- 3224 PARCEL NUMBER
- OPERABLE UNIT TWO (OU2) : SOUTHERN SITE PARCELS
- AREA SCREENED FOR RADIATION LEVELS

figure 2.3

RADIATION SCREENING RESULTS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
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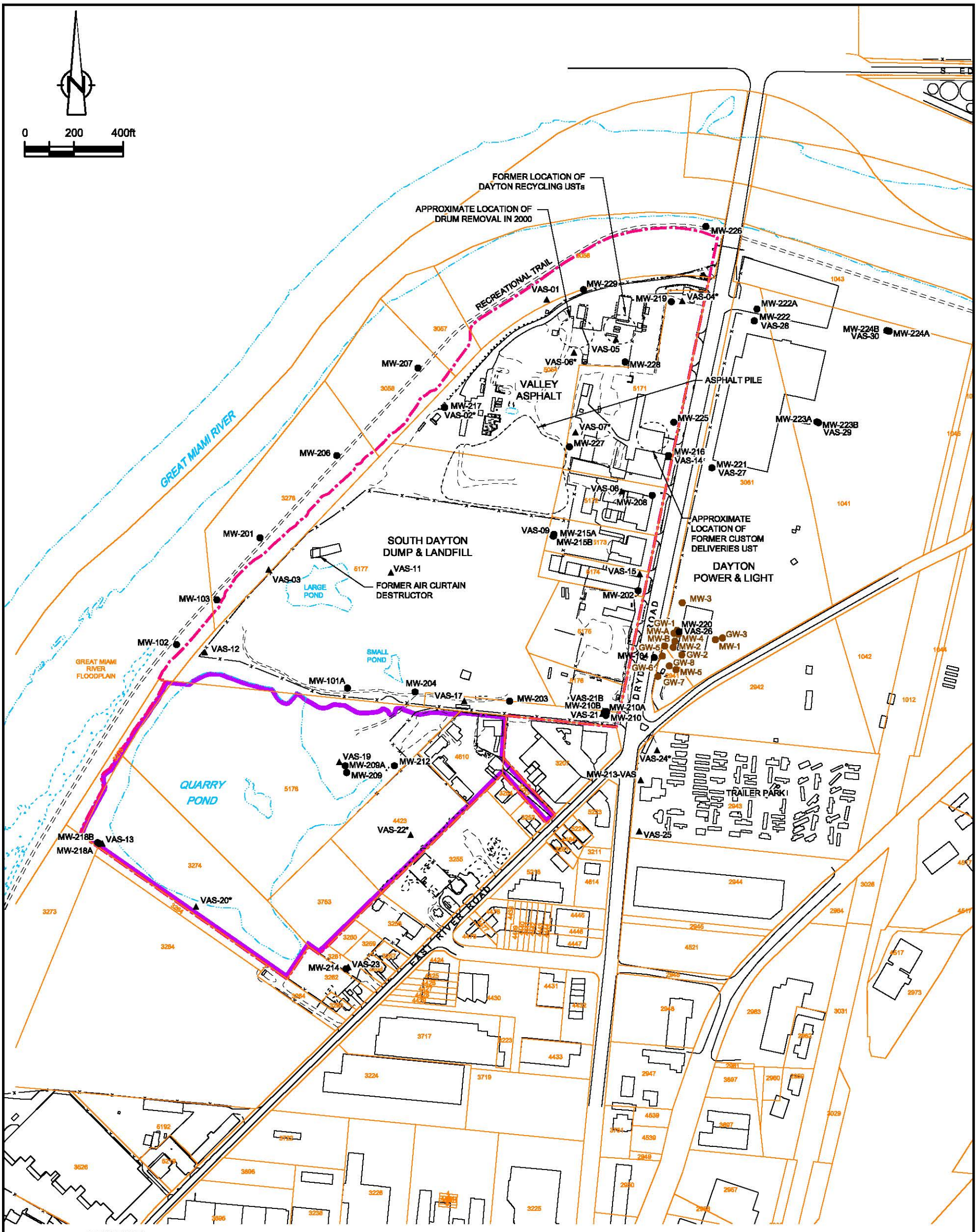
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

38443-14(019)GN-WA009 APR 11/2013



LEGEND

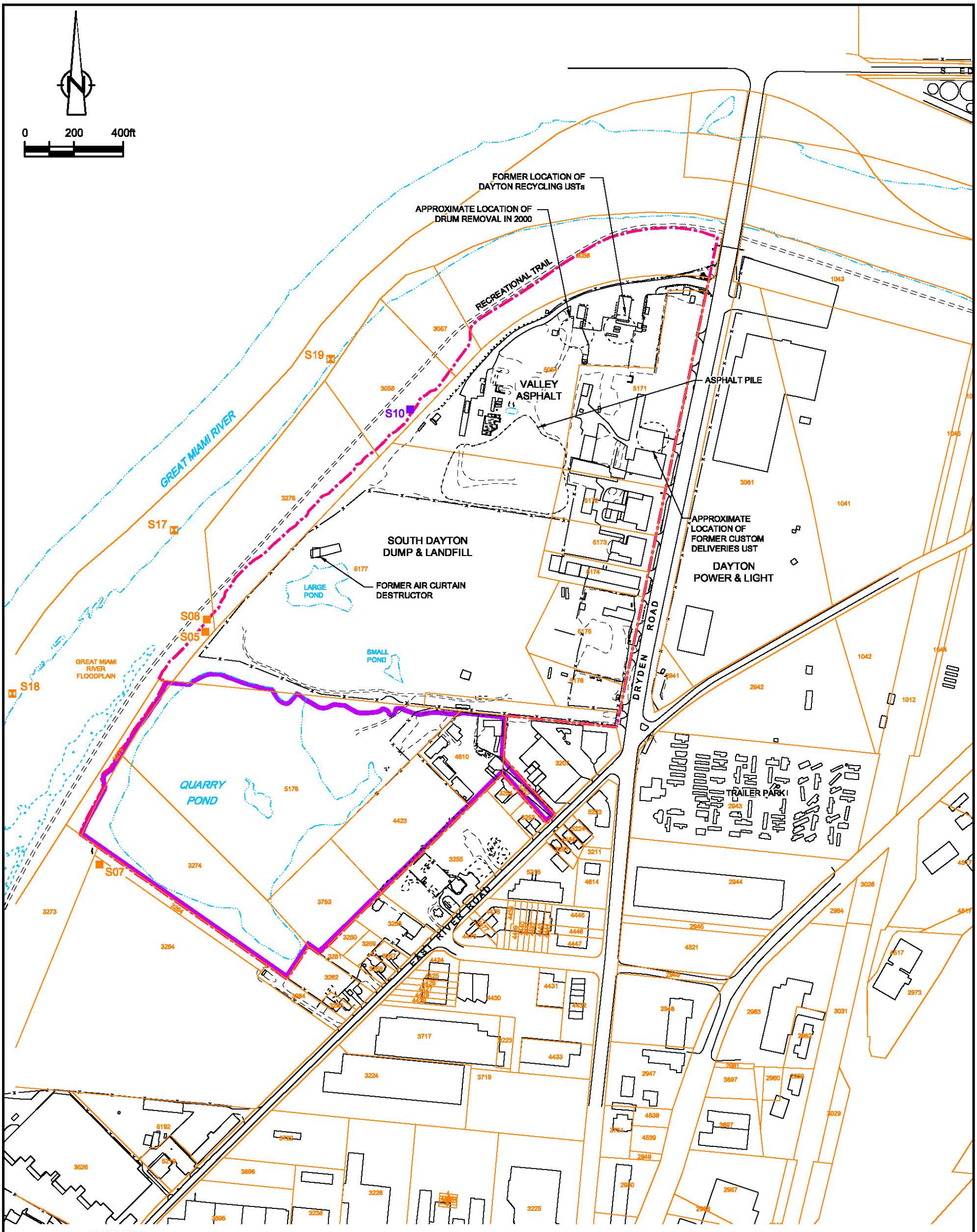
- APPROXIMATE SITE BOUNDARY
- EDGE OF WATER
- PARCEL BOUNDARY
- 3224 PARCEL NUMBER
- OPERABLE UNIT TWO (OU2) : SOUTHERN SITE PARCELS
- MW-206 ● UPPER AQUIFER MONITORING WELL LOCATION
- MW-1 ● HISTORIC DP&L MONITORING WELL LOCATION
- VAS-01 ▲ VERTICAL AQUIFER SAMPLING LOCATION
- • VAS LOCATION COMPLETED TO 70 FEET BELOW GROUND SURFACE OR LESS

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

figure 2.4

GROUNDWATER SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

38443-14(019)GN-WA010 APR 18/2013



LEGEND

- APPROXIMATE SITE BOUNDARY
- EDGE OF WATER
- PARCEL BOUNDARY
- 3224 PARCEL NUMBER
- OPERABLE UNIT TWO (OU2) : SOUTHERN SITE PARCELS
- S15 OHIO EPA SEDIMENT SAMPLE LOCATION (APPROXIMATE)
- S01 OHIO EPA SOIL BORING LOCATION (APPROXIMATE)
- S1 EPA SOIL BORING LOCATION (APPROXIMATE)

figure 2.5

GREAT MIAMI RIVER SOIL AND SEDIMENT SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
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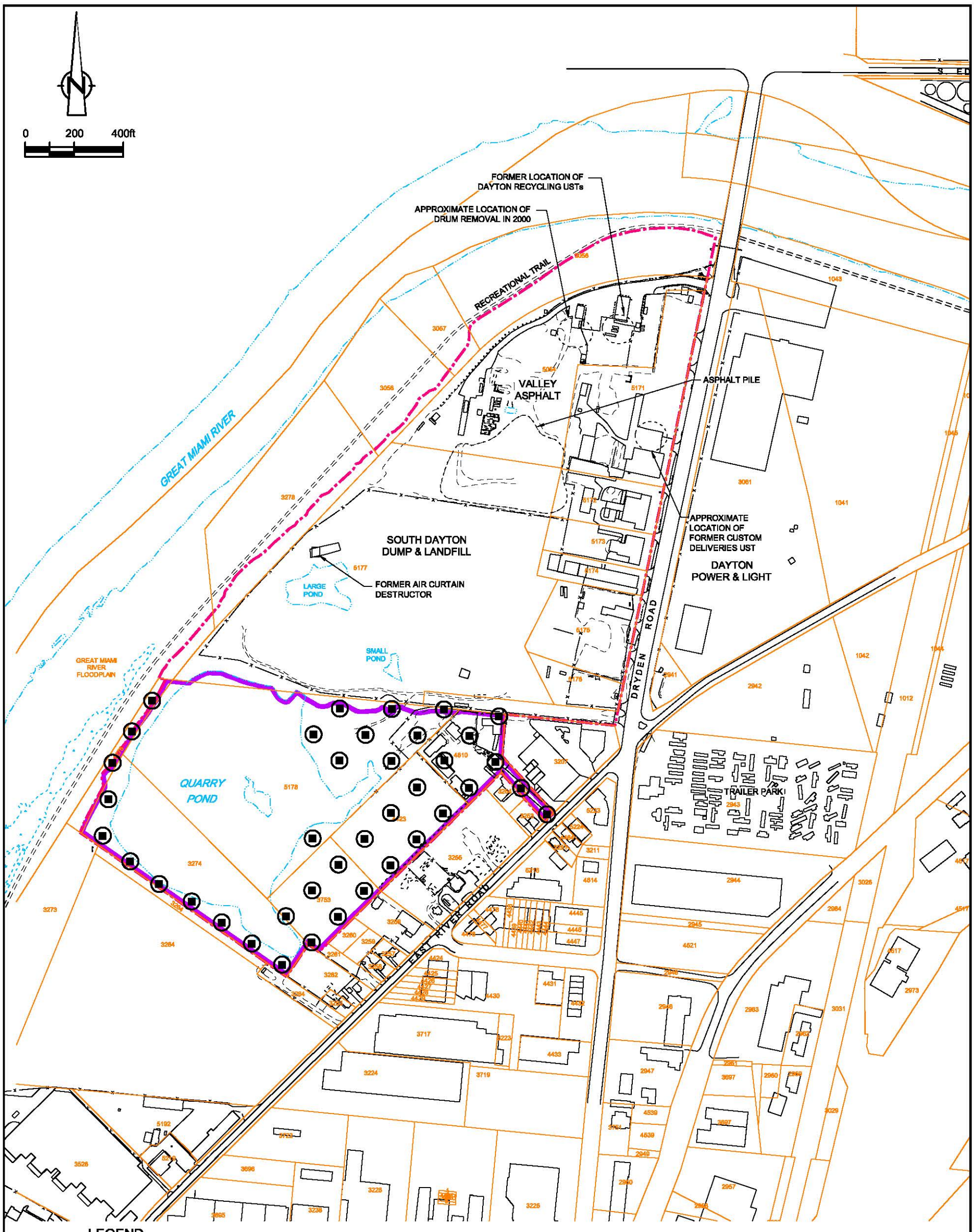


LEGEND

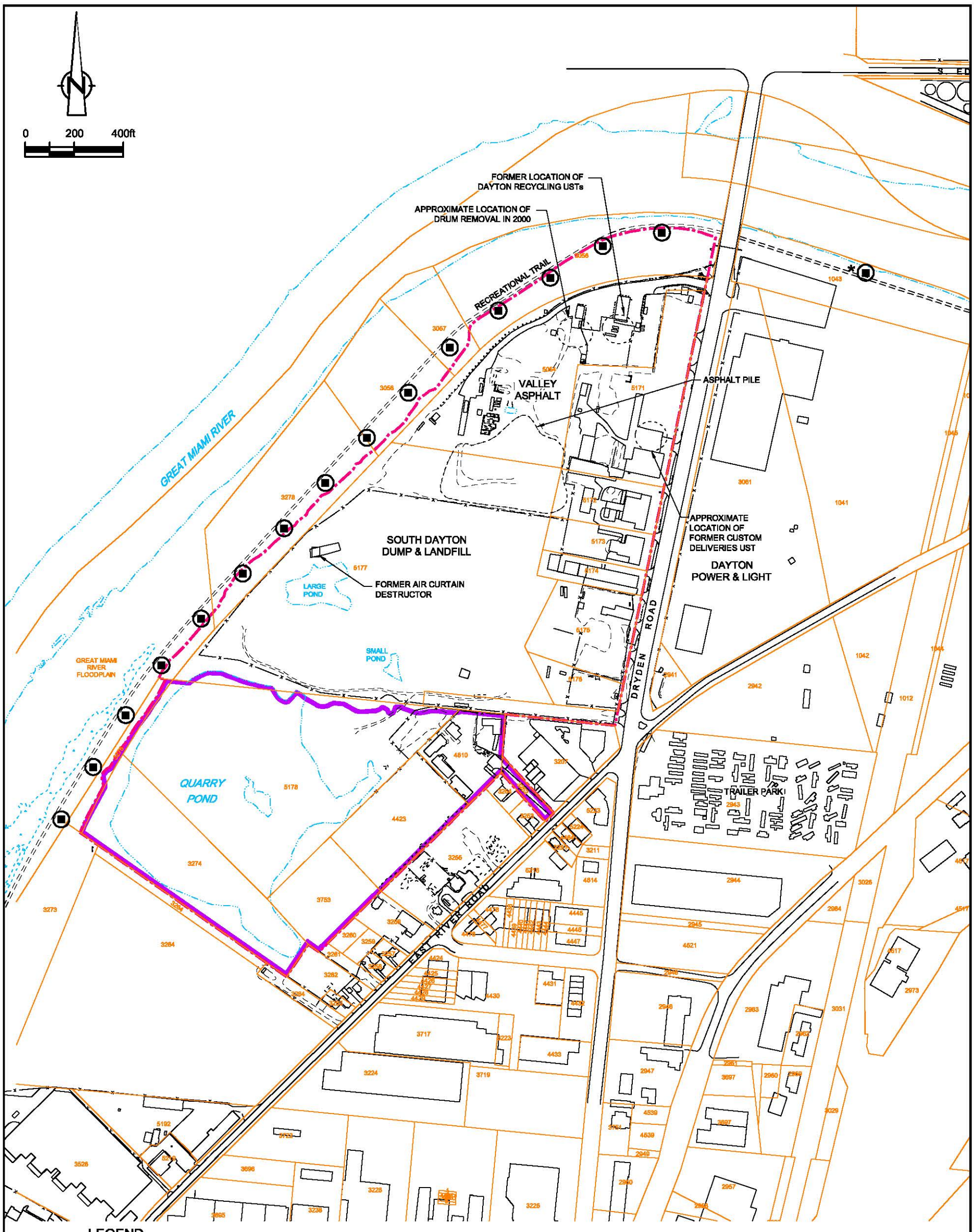
- APPROXIMATE SITE BOUNDARY
- EDGE OF WATER
- PARCEL BOUNDARY
- 3224 PARCEL NUMBER
- OPERABLE UNIT TWO (OU2) : SOUTHERN SITE PARCELS
- PROPOSED SOIL SAMPLE LOCATION

figure 3.1

PROPOSED SOUTHERN PARCELS SOIL SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 8/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

38443-14(019)GN-WA005 APR 9/2013



LEGEND

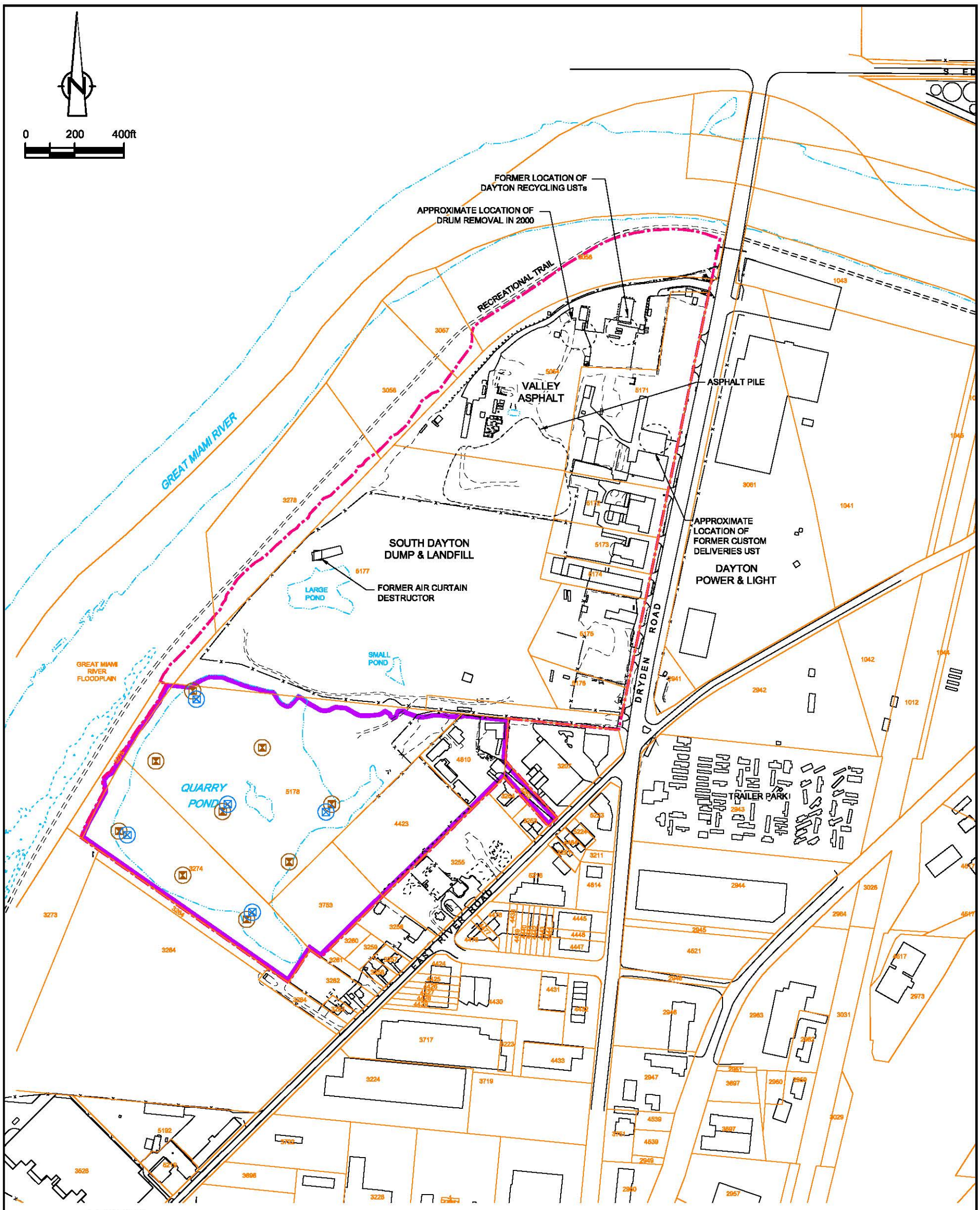
- APPROXIMATE SITE BOUNDARY
- EDGE OF WATER
- PARCEL BOUNDARY
- 3224 PARCEL NUMBER
- OPERABLE UNIT TWO (OU2) : SOUTHERN SITE PARCELS
- PROPOSED SOIL SAMPLING LOCATION (HAND-DUG DUE TO PRESENCE OF HIGH PRESSURE GAS LINE)
- * PROPOSED UPGRADIENT BACKGROUND SOIL SAMPLE LOCATIONS (10 DISCRETE SAMPLES WILL BE COLLECTED)

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 8/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

figure 3.2

PROPOSED FLOODPLAIN SOIL SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

38443-14(019)GN-WA006 APR 9/2013



LEGEND

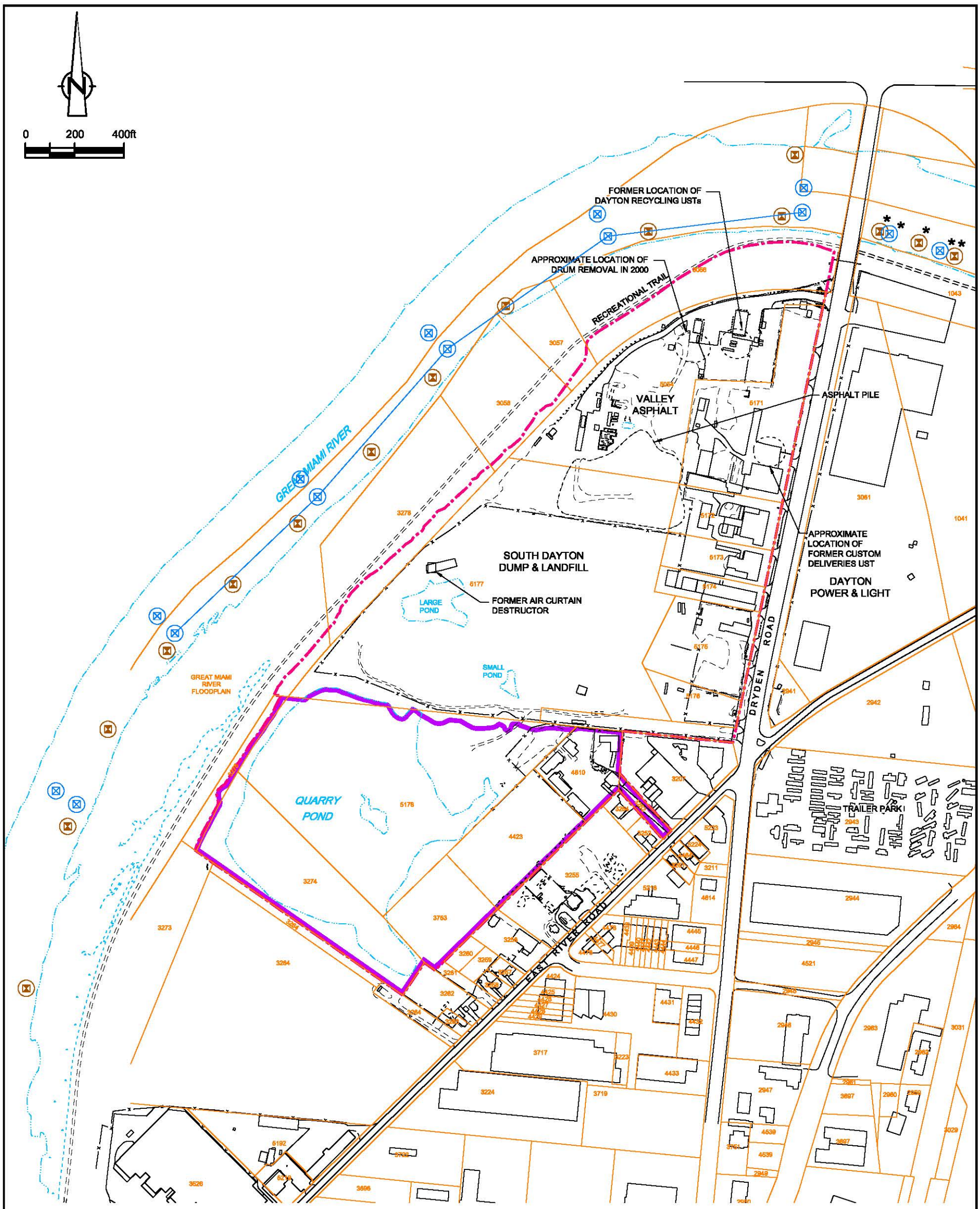
- APPROXIMATE SITE BOUNDARY
- EDGE OF WATER
- PARCEL BOUNDARY
- 3224 PARCEL NUMBER
- OPERABLE UNIT TWO (OU2) : SOUTHERN SITE PARCELS
- PROPOSED SEDIMENT SAMPLING LOCATION
- PROPOSED SURFACE WATER SAMPLE LOCATION

figure 3.3

PROPOSED QUARRY POND SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 8/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

38443-14(019)GN-WA007 APR 18/2013



LEGEND

- APPROXIMATE SITE BOUNDARY
- EDGE OF WATER
- PARCEL BOUNDARY
- 3224 PARCEL NUMBER
- OPERABLE UNIT ONE (OU2)
- PROPOSED SEDIMENT SAMPLING LOCATION
- PROPOSED SURFACE WATER SAMPLE LOCATION
- * PROPOSED UPGRADIENT BACKGROUND SAMPLE LOCATIONS WILL CONSIST OF TRANSECTS OF TWO (SW) / THREE (SEDIMENT) SAMPLES REGULARLY SPACED UPSTREAM OF THE SITE AND DOWNSTREAM OF THE DAM OVER 2 SAMPLING ROUNDS

SOURCES:
THE PAYNE FIRM, INC., PROJECT 0279.44.05, FIGURE 1, DATED 9/12/05;
TETRA TECH EM INC., PROJECT L0312006-SOUTH DAYTON DUMP, FIGURE 2, SITE LAYOUT, 05/25/2004;
CITY OF MORAINE.
ABRAMS AERIAL SURVEY INC. PROJECT 38443, AASI 29610, 04/02/2008

figure 3.4

PROPOSED GREAT MIAMI RIVER SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS
OU2 RI SCOPING DOCUMENT
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

38443-14(019)GN-WA008 APR 18/2013

TABLE 2.1

HISTORIC SOIL SAMPLING ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINE, OHIO

Sample Location:			*S10(EPA)*	*S07(OEPA)*	*S08(OEPA)*	*TT-16*	*TT-17*	*TT-17*	*TT-18*	*TT-18*
Sample ID:			*S10*	*96-DV-03-S07*	*96-DV-03-S08*	*S-38443-093008-KMV-033*	*S-38443-093008-KMV-034*	*S-38443-093008-KMV-035*	*S-38443-100108-KMV-036*	*S-38443-100108-KMV-037*
Sample Date:	*USEPA Regional Screening Levels [1]*		*10/23/1990*	*7/9/1996*	*7/9/1996*	*9/30/2008*	*9/30/2008*	*9/30/2008*	*10/1/2008*	*10/1/2008*
Sample Depth:			*0-1 ft BWS*	*0-0.2 ft BWS*	*0.2-0.3 ft BWS*	*2 ft BWS*	*5 ft BWS*	*14 ft BWS*	*5 ft BWS*	*12 ft BWS*
Parameter	*Residential Soil Criteria a*	*Industrial Soil Criteria b*								
Volatiles										
1,1,1-Trichloroethane	8700	38000	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,1,2,2-Tetrachloroethane	0.56	2.8	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,1,2-Trichloroethane	1.1	5.3	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,1-Dichloroethane	3.3	17	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,1-Dichloroethene	240	1100	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,2,4-Trichlorobenzene	22	99	-	-	-	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0054	0.069	-	-	-	0.0094 U	0.01 U	0.012 U	R	0.0098 U
1,2-Dibromoethane (Ethylene dibromide)	0.034	0.17	-	-	-	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,2-Dichlorobenzene	1900	9800	-	-	-	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,2-Dichloroethane	0.43	2.2	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,2-Dichloroethene (total)	700	9200	0.005 U	0.011 U	0.011 U	-	-	-	-	-
1,2-Dichloropropane	0.94	4.7	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,3-Dichlorobenzene	-	-	-	-	-	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
1,4-Dichlorobenzene	2.4	12	-	-	-	0.0047 U	0.005 U	0.0061 U	0.023 J	0.0049 U
2-Butanone (Methyl ethyl ketone) (MEK)	28000	200000	0.01 U	0.011 U	0.011 U	0.0047 J	0.02 U	0.024 U	R	0.02 U
2-Hexanone	210	1400	-	0.011 U	0.011 U	0.019 U	0.02 U	0.024 U	R	0.02 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	5300	53000	0.01 U	0.011 U	0.011 U	0.019 U	0.02 U	0.024 U	R	0.02 U
Acetone	61000	630000	0.005 U	0.011 U	0.011 U	0.013 J	0.02 U	0.024 U	R	0.02 U
Benzene	1.1	5.4	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Bromodichloromethane	0.27	1.4	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Bromoform	62	220	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Bromomethane (Methyl bromide)	7.3	32	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Carbon disulfide	820	3700	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Carbon tetrachloride	0.61	3	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Chlorobenzene	290	1400	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Chloroethane	15000	61000	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Chloroform (Trichloromethane)	0.29	1.5	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Chloromethane (Methyl chloride)	120	500	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
cis-1,2-Dichloroethene	160	2000	-	-	-	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
cis-1,3-Dichloropropene	-	-	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Cyclohexane	7000	29000	-	-	-	0.0094 U	0.01 U	0.012 U	0.21 J	0.0098 U
Dibromochloromethane	0.68	3.3	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Dichlorodifluoromethane (CFC-12)	94	400	-	-	-	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Ethylbenzene	5.4	27	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Isopropyl benzene	2100	11000	-	-	-	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Methyl acetate	78000	1000000	-	-	-	0.0094 U	0.01 U	0.012 U	R	0.0098 U
Methyl cyclohexane	-	-	-	-	-	0.0094 U	0.01 U	0.012 U	0.41 J	0.00074 J
Methyl tert butyl ether (MTBE)	43	220	-	-	-	0.019 U	0.02 U	0.024 U	R	0.02 U
Methylene chloride	56	960	-	0.011 JBU	0.016	0.0047 U	0.005 U	0.0061 U	0.5 J	0.0049 U
Styrene	6300	36000	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Tetrachloroethene	22	110	0.005 U	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Toluene	5000	45000	0.005 U	0.011 U	0.01 J	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
trans-1,2-Dichloroethene	150	690	-	-	-	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
trans-1,3-Dichloropropene	-	-	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Trichloroethene	0.91	6.4	0.005 U	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U

TABLE 2.1

HISTORIC SOIL SAMPLING ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINE, OHIO

Sample Location:			*S10(EPA)*	*S07(OEPA)*	*S08(OEPA)*	*TT-16*	*TT-17*	*TT-17*	*TT-18*	*TT-18*
Sample ID:			*S10*	*96-DV-03-S07*	*96-DV-03-S08*	*S-38443-093008-KMV-033*	*S-38443-093008-KMV-034*	*S-38443-093008-KMV-035*	*S-38443-100108-KMV-036*	*S-38443-100108-KMV-037*
Sample Date:	*USEPA Regional Screening Levels [1]*		*10/23/1990*	*7/9/1996*	*7/9/1996*	*9/30/2008*	*9/30/2008*	*9/30/2008*	*10/1/2008*	*10/1/2008*
Sample Depth:			*0-1 ft BWS*	*0-0.2 ft BWS*	*0.2-0.3 ft BWS*	*2 ft BWS*	*5 ft BWS*	*14 ft BWS*	*5 ft BWS*	*12 ft BWS*
Parameter	*Residential Soil Criteria a*	*Industrial Soil Criteria b*								
Trichlorofluoromethane (CFC-11)	790	3400	-	-	-	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Trifluorotrichloroethane (Freon 113)	43000	180000	-	-	-	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Vinyl chloride	0.06	1.7	-	0.011 U	0.011 U	0.0047 U	0.005 U	0.0061 U	R	0.0049 U
Xylenes (total)	630	2700	0.005 U	0.011 U	0.011 U	0.0094 U	0.01 U	0.012 U	R	0.0021 J
Semi-Volatiles										
1,2,4-Trichlorobenzene	22	99	-	0.38 U	0.37 U	-	-	-	-	-
1,2-Dichlorobenzene	1900	9800	-	0.38 U	0.37 U	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	0.38 U	0.37 U	-	-	-	-	-
1,4-Dichlorobenzene	2.4	12	-	0.38 U	0.37 U	-	-	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	4.6	22	-	-	-	0.24 U	0.11 U	0.5 U	0.14 U	0.11 U
2,4,5-Trichlorophenol	6100	62000	-	0.94 U	0.92 U	0.36 U	0.16 U	0.75 U	0.2 U	0.16 U
2,4,6-Trichlorophenol	44	160	-	0.38 U	0.37 U	0.36 U	0.16 U	0.75 U	0.2 U	0.16 U
2,4-Dichlorophenol	180	1800	-	0.38 U	0.37 U	0.36 U	0.16 U	0.75 U	0.2 U	0.16 U
2,4-Dimethylphenol	1200	12000	-	0.38 U	0.37 U	0.36 U	0.16 U	0.75 U	0.2 U	0.16 U
2,4-Dinitrophenol	120	1200	-	0.94 U	0.92 U	0.79 U	0.36 U	1.6 U	0.45 U	0.35 U
2,4-Dinitrotoluene	1.6	5.5	-	0.38 U	0.37 U	0.48 U	0.22 U	1 U	0.27 U	0.21 U
2,6-Dinitrotoluene	61	620	-	0.38 U	0.37 U	0.48 U	0.22 U	1 U	0.27 U	0.21 U
2-Chloronaphthalene	6300	82000	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
2-Chlorophenol	390	5100	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
2-Methylnaphthalene	230	2200	0.33 U	0.38 U	0.39	0.016 U	0.0073 U	0.042	0.01	0.062
2-Methylphenol	3100	31000	-	0.38 U	0.37 U	0.48 U	0.22 U	1 U	0.27 U	0.21 U
2-Nitroaniline	610	6000	-	0.94 U	0.92 U	0.48 U	0.22 U	1 U	0.27 U	0.21 U
2-Nitrophenol	-	-	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
3,3'-Dichlorobenzidine	1.1	3.8	-	-	-	0.24 U	0.11 U	0.5 U	0.14 U	0.11 U
3-Nitroaniline	-	-	-	0.94 U	0.92 U	0.48 U	0.22 U	1 U	0.27 U	0.21 U
4,6-Dinitro-2-methylphenol	4.9	49	-	0.94 U	0.92 U	0.36 U	0.16 U	0.75 U	0.2 U	0.16 U
4-Bromophenyl phenyl ether	-	-	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
4-Chloro-3-methylphenol	6100	62000	-	0.38 U	0.37 U	0.36 U	0.16 U	0.75 U	0.2 U	0.16 U
4-Chloroaniline	2.4	8.6	-	0.38 U	0.37 U	0.36 U	0.16 U	0.75 U	0.2 U	0.16 U
4-Chlorophenyl phenyl ether	-	-	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
4-Methylphenol	6100	62000	-	0.38 U	0.37 U	0.48 U	0.22 U	1 U	0.27 U	0.21 U
4-Nitroaniline	24	86	-	0.94 U	0.92 U	0.48 U	0.22 U	1 U	0.27 U	0.21 U
4-Nitrophenol	-	-	-	0.94 U	0.92 U	0.79 U	0.36 U	1.6 U	0.45 U	0.35 U
Acenaphthene	3400	33000	0.11 J	0.38 U	0.091 J	0.045	0.0085	0.25	0.0091 U	0.14
Acenaphthylene	-	-	-	0.38 U	0.37 U	0.087	0.0073 U	0.033 U	0.0091 U	0.008
Acetophenone	7800	100000	-	-	-	0.24 U	0.11 U	0.5 U	0.14 U	0.11 U
Anthracene	17000	170000	0.34 J	0.38 U	0.29 J	0.19	0.018	0.37	0.0091 U	0.05
Atrazine	2.1	7.5	-	-	-	0.48 U	0.22 U	1 U	0.27 U	0.21 U
Benzaldehyde	7800	100000	-	-	-	0.24 U	0.11 U	0.5 U	0.14 U	0.11 U
Benzo(a)anthracene	0.15	2.1	**1.8[a]**	0.058 J	**1.1[a]**	**0.7[a]**	0.084	**1.2[a]**	0.0091 U	0.078
Benzo(a)pyrene	0.015	0.21	**1.2[ab]**	**0.062 J[a]**	**0.82[ab]**	**0.87[ab]**	**0.089[a]**	**0.99[ab]**	0.0091 U	**0.073[a]**
Benzo(b)fluoranthene	0.15	2.1	**2.5[ab]**	0.38 U	**1[a]**	**1.1[a]**	0.12	**1.3[a]**	0.0091 U	0.1
Benzo(g,h,i)perylene	-	-	0.99	0.38 U	0.16 J	0.63	0.067	0.56	0.0091 U	0.05
Benzo(k)fluoranthene	1.5	21	0.4 J	0.38 U	0.95	0.4	0.059	0.6	0.0091 U	0.042
Biphenyl (1,1-Biphenyl)	51	210	-	-	-	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U

TABLE 2.1

HISTORIC SOIL SAMPLING ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINE, OHIO

Sample Location:			*S10(EPA)*	*S07(OEPA)*	*S08(OEPA)*	*TT-16*	*TT-17*	*TT-17*	*TT-18*	*TT-18*
Sample ID:			*S10*	*96-DV-03-S07*	*96-DV-03-S08*	*S-38443-093008-KMV-033*	*S-38443-093008-KMV-034*	*S-38443-093008-KMV-035*	*S-38443-100108-KMV-036*	*S-38443-100108-KMV-037*
Sample Date:	*USEPA Regional Screening Levels [1]*		*10/23/1990*	*7/9/1996*	*7/9/1996*	*9/30/2008*	*9/30/2008*	*9/30/2008*	*10/1/2008*	*10/1/2008*
Sample Depth:			*0-1 ft BWS*	*0-0.2 ft BWS*	*0.2-0.3 ft BWS*	*2 ft BWS*	*5 ft BWS*	*14 ft BWS*	*5 ft BWS*	*12 ft BWS*
Parameter	*Residential Soil Criteria a*	*Industrial Soil Criteria b*								
bis(2-Chloroethoxy)methane	180	1800	-	0.38 U	0.37 U	0.24 U	0.11 U	0.5 U	0.14 U	0.11 U
bis(2-Chloroethyl)ether	0.21	1	-	0.38 U	0.37 U	0.24 U	0.11 U	0.5 U	0.14 U	0.11 U
bis(2-Ethylhexyl)phthalate (DEHP)	35	120	0.33 U	0.032 J	0.23 J	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Butyl benzylphthalate (BBP)	260	910	0.096 J	0.026 J	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Caprolactam	31000	310000	-	-	-	0.79 U	0.36 U	1.6 U	0.45 U	0.35 U
Carbazole	-	-	-	0.38 J	0.28 J	0.09 J	0.055 U	0.4	0.068 U	0.053 U
Chrysene	15	210	0.33 U	0.083 J	1.2	0.82	0.11	1.4	0.0091 U	0.08
Dibenz(a,h)anthracene	0.015	0.21	**0.11 J[a]**	0.38 U	**0.31 J[ab]**	**0.15[a]**	0.014	**0.14[a]**	0.0091 U	0.011
Dibenzofuran	78	1000	0.33 U	0.38 U	0.16 J	0.12 U	0.055 U	0.18 J	0.068 U	0.084
Diethyl phthalate	49000	490000	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Dimethyl phthalate	-	-	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Di-n-butylphthalate (DBP)	6100	62000	0.33 U	0.028 J	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Di-n-octyl phthalate (DnOP)	730	7400	-	0.38 U	0.019 J	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Fluoranthene	2300	22000	2.5	0.11 J	2	1.7	0.23	3.7	0.0091 U	0.19
Fluorene	2300	22000	0.12 J	0.38 U	0.087 J	0.064	0.0085	0.25	0.0091 U	0.1
Hexachlorobenzene	0.3	1.1	-	0.38 U	0.37 U	0.016 U	0.0073 U	0.033 U	0.0091 U	0.0071 U
Hexachlorobutadiene	6.2	22	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Hexachlorocyclopentadiene	370	3700	-	0.38 U	0.37 U	0.79 U	0.36 U	1.6 U	0.45 U	0.35 U
Hexachloroethane	12	43	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Indeno(1,2,3-cd)pyrene	0.15	2.1	**0.97[a]**	0.048 J	**0.48[a]**	**0.54[a]**	0.055	**0.53[a]**	0.0091 U	0.045
Isophorone	510	1800	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Naphthalene	3.6	18	0.33 U	0.38 U	0.25 J	0.016 U	0.0073 U	0.11	0.0091 U	0.046
Nitrobenzene	4.8	24	-	0.38 U	0.37 U	0.24 U	0.11 U	0.5 U	0.14 U	0.11 U
N-Nitrosodi-n-propylamine	0.069	0.25	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
N-Nitrosodiphenylamine	99	350	0.33 U	0.38 U	0.027 J	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Pentachlorophenol	0.89	2.7	-	0.94 U	0.92 U	0.36 U	0.16 U	0.75 U	0.2 U	0.16 U
Phenanthrene	-	-	1.8	0.063 J	1.7	0.85	0.14	3.4	0.0091 U	0.25
Phenol	18000	180000	-	0.38 U	0.37 U	0.12 U	0.055 U	0.25 U	0.068 U	0.053 U
Pyrene	1700	17000	3.4	0.13 J	1.9	1.4	0.18	2.9	0.0091 U	0.16
Metals										
Aluminum	77000	990000	10600	6890	14300	5270	6830	3180	5680	2310
Antimony	31	410	2.4 U	0.68 U	**278[a]**	7.2 UJ	6.6 UJ	0.65 J	0.78 J	6.4 U
Arsenic	0.39	1.6	**8.1[ab]**	**6.0[ab]**	**141[ab]**	**5.5[ab]**	**6.8[ab]**	**10.9[ab]**	**17.7[ab]**	**2.9[ab]**
Barium	15000	190000	120	112	13000	53.8	78.0	73.0	389	17.8 J
Beryllium	160	2000	0.35 B	0.62 B	0.77 B	0.24 J	0.33 J	0.36 J	0.97	0.099 J
Cadmium	70	800	1 U	0.57 B	0.69 B	0.29 J	0.18 J	0.11 J	0.68 U	0.10 J
Calcium	-	-	83700	12900	5410	91200 J	50600 J	27500 J	5650	142000
Chromium	-	-	27.6	17.3	62.0	7.8	10.4	8.1	11.7	4.6
Cobalt	23	300	4.7 B	6.6 B	17.5	4.8 J	6.3	2.6 J	4.5 J	2.8 J
Copper	3100	41000	37.6 EJ	22.5	1830	12.6	12.3	21.3	17.2	8.6
Iron	55000	720000	16300	13200	**59500[a]**	11200	14200	12000	9890	6040
Lead	400	800	94.8	31.5	**652[a]**	18.4 J	14.9 J	7.5 J	6.4 J	9.1 J
Magnesium	-	-	28000	6100	2480	44300	13800	13400	1290	53600
Manganese	1800	23000	446	681	614	624 J	441 J	76.0 J	84.9	297
Mercury	10	43	0.008 U	0.18	0.11 U	0.035 J	0.040 J	0.054 J	0.14 U	0.11 U

TABLE 2.1

HISTORIC SOIL SAMPLING ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINE, OHIO

Sample Location:			*S10(EPA)*	*S07(OEPA)*	*S08(OEPA)*	*TT-16*	*TT-17*	*TT-17*	*TT-18*	*TT-18*
Sample ID:			*S10*	*96-DV-03-S07*	*96-DV-03-S08*	*S-38443-093008-KMV-033*	*S-38443-093008-KMV-034*	*S-38443-093008-KMV-035*	*S-38443-100108-KMV-036*	*S-38443-100108-KMV-037*
Sample Date:	*USEPA Regional Screening Levels [1]*		*10/23/1990*	*7/9/1996*	*7/9/1996*	*9/30/2008*	*9/30/2008*	*9/30/2008*	*10/1/2008*	*10/1/2008*
Sample Depth:			*0-1 ft BWS*	*0-0.2 ft BWS*	*0.2-0.3 ft BWS*	*2 ft BWS*	*5 ft BWS*	*14 ft BWS*	*5 ft BWS*	*12 ft BWS*
Parameter	*Residential Soil Criteria a*	*Industrial Soil Criteria b*								
Nickel	1500	20000	23.1	12.9	78.3	10.7	11.0	7.5	8.8	7.4
Potassium	-	-	1190 B	886 B	1400	960 J	725 J	399 J	1070	365 J
Selenium	390	5100	2.6	0.90 U	2.1	30.0 U	27.5 U	1.1 J	3.7 J	26.6 U
Silver	390	5100	1.1 B	0.45 B	0.23 B	1.2 U	1.1 U	1.2 U	1.4 U	1.1 U
Sodium	-	-	136 B	207 B	254 B	162 J	550 U	625 U	130 J	177 J
Thallium	0.78	10	2 U	2.2 B[a]	4.0[a]	0.14 U	0.15 U	0.46	0.54	0.11 U
Vanadium	390	5200	24.3	17.4	18.5	14.5 J	18.1 J	13.8 J	28.2	6.2
Zinc	23000	310000	126	76.9	286	42.4 J	40.0 J	27.3 J	10.3	23.2
PCBs										
Aroclor-1016 (PCB-1016)	3.9	21	-	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.041 U	0.045 UJ	0.035 UJ
Aroclor-1221 (PCB-1221)	0.14	0.54	-	0.076 U	0.074 U	0.04 UJ	0.036 UJ	0.041 U	0.045 UJ	0.035 UJ
Aroclor-1232 (PCB-1232)	0.14	0.54	-	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.041 U	0.045 UJ	0.035 UJ
Aroclor-1242 (PCB-1242)	0.22	0.74	-	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.041 U	0.045 UJ	0.035 UJ
Aroclor-1248 (PCB-1248)	0.22	0.74	1.4 X[ab]	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.059	0.045 UJ	0.035 UJ
Aroclor-1254 (PCB-1254)	0.22	0.74	-	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.041 U	0.045 UJ	0.035 UJ
Aroclor-1260 (PCB-1260)	0.22	0.74	0.41 X[a]	0.038 U	0.037 U	0.04 UJ	0.036 UJ	0.041 U	0.045 UJ	0.035 UJ
Pesticides										
4,4'-DDD	2	7.2	-	0.00065 J	0.0037 U	0.1 UJ	0.19 UJ	0.042 UJ	0.023 UJ	0.036 UJ
4,4'-DDE	1.4	5.1	-	0.0038 U	0.0024 PJ	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
4,4'-DDT	1.7	7	-	0.0016 PJ	0.0088 P	0.1 UJ	0.19 UJ	0.042 UJ	0.023 UJ	0.036 UJ
Aldrin	0.029	0.1	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
alpha-BHC	0.077	0.27	-	0.0019 U	0.00071 PJ	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
alpha-Chlordane	-	-	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
beta-BHC	0.27	0.96	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
delta-BHC	-	-	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
Dieldrin	0.03	0.11	-	0.0038 U	0.0037 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
Endosulfan I	-	-	-	0.00042 PJ	0.0019 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
Endosulfan II	-	-	-	0.0014 J	0.0054	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
Endosulfan sulfate	-	-	-	0.0038 U	0.0037 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
Endrin	18	180	-	0.0038 U	0.0037 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
Endrin aldehyde	-	-	-	0.0064 P	0.0037 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
Endrin ketone	-	-	-	0.0038 U	0.0037 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
gamma-BHC (lindane)	0.52	2.1	-	0.0019 U	0.0018 J	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
gamma-Chlordane	-	-	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
Heptachlor	0.11	0.38	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
Heptachlor epoxide	0.053	0.19	-	0.0019 U	0.0019 U	0.1 U	0.19 U	0.042 U	0.023 U	0.036 U
Methoxychlor	310	3100	-	0.019 U	0.019 U	0.2 UJ	0.36 UJ	0.082 UJ	0.045 UJ	0.07 UJ
Toxaphene	0.44	1.6	-	0.19 U	0.19 U	4 UJ	7.4 UJ	1.7 UJ	0.91 UJ	1.4 UJ

TABLE 2.1

HISTORIC SOIL SAMPLING ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OPERABLE UNIT 2
MORAINE, OHIO

Sample Location:			*S10(EPA)*	*S07(OEPA)*	*S08(OEPA)*	*TT-16*	*TT-17*	*TT-17*	*TT-18*	*TT-18*
Sample ID:			*S10*	*96-DV-03-S07*	*96-DV-03-S08*	*S-38443-093008-KMV-033*	*S-38443-093008-KMV-034*	*S-38443-093008-KMV-035*	*S-38443-100108-KMV-036*	*S-38443-100108-KMV-037*
Sample Date:	*USEPA Regional Screening Levels [1]*		*10/23/1990*	*7/9/1996*	*7/9/1996*	*9/30/2008*	*9/30/2008*	*9/30/2008*	*10/1/2008*	*10/1/2008*
Sample Depth:			*0-1 ft BWS*	*0-0.2 ft BWS*	*0.2-0.3 ft BWS*	*2 ft BWS*	*5 ft BWS*	*14 ft BWS*	*5 ft BWS*	*12 ft BWS*
Parameter	*Residential Soil Criteria a*	*Industrial Soil Criteria b*								
Herbicides										
2,4,5-TP (Silvex)	490	4900	-	-	-	0.024 U	0.022 U	0.025 U	0.027 U	0.021 U
2,4-Dichlorophenoxyacetic acid (2,4-D)	690	7700	-	-	-	0.096 U	0.088 U	0.1 U	0.11 U	0.085 U
General Chemistry										
Cyanide (total)	22	140	-	0.30 B	2.3	0.60 U	0.55 U	0.25 J	0.68 U	0.52 J
Total solids (%)	-	-	-	-	-	83.3	91.0	80.1	73.2	94.1

Notes:

All concentrations are expressed in units of milligrams per kilogram (mg/kg) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

ft BWS - Feet below water surface

B - Compound is found in the associated blank as well as in the sample (Organics).

E - Estimated or not reported due to interference. (Inorganics)

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument. (Organics)

J - Indicates an estimated value.

P - Indicates there is a greater than 25% difference for detected concentrations between two GC columns. The lower of the two values is reported.

R - The parameter was rejected.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

X - Denotes manually entered data. This always occurs on multi-component quantitations and sometimes occurs on individual pesticides when the analyst had to correct the integration of a peak.

- - Not applicable.

TABLE 2.2

HISTORIC SURFACE WATER ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OU2 RI/FS WORK PLAN
MORAINE, OHIO

Sample Location:					*SW-1-99*	*SW-1-00*	*SW-2-99*	*SW-2-00*	*SW-3-99*	*SW-3-00*
Sample ID:					*SW-1*	*SW-1*	*SW-2*	*SW-2*	*SW-3*	*SW-3*
Sample Date:					*4/16/1999*	*5/12/2000*	*4/16/1999*	*5/12/2000*	*4/16/1999*	*5/12/2000*
	USEPA Regional Screening Levels [1]		*Ecological Screening Value*	*Ecological Screening Value Reference [2]*						
Parameter	*MCL a*	*TapWater b*	*c*							
Volatiles										
1,1,1-Trichloroethane	0.2	7.5	0.076	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1,2,2-Tetrachloroethane	-	0.000066	0.26	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1,2-Trichloroethane	0.005	0.00024	0.74	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1-Dichloroethane	-	0.0024	0.047	EPA R V	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1-Dichloroethene	0.007	0.26	0.21	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloroethane	0.005	0.00015	2	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloroethene (total)	-	0.13	-	-	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloropropane	0.005	0.00038	0.36	EPA R V	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	22	O OMZA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2-Hexanone	-	0.034	-	-	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.17	EPA R V	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Acetone	-	12	1.7	EPA R V	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Benzene	0.005	0.00039	0.16	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Bromodichloromethane	0.08	0.00012	-	-	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Bromoform	0.08	0.0079	0.23	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Bromomethane (Methyl bromide)	-	0.007	0.016	EPA R V	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Carbon disulfide	-	0.72	0.015	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Carbon tetrachloride	0.005	0.00039	0.24	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chlorobenzene	0.1	0.072	0.047	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chloroethane	-	21	1.1	M. C	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Chloroform (Trichloromethane)	0.08	0.00019	0.14	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chloromethane (Methyl chloride)	-	0.19	-	-	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
cis-1,3-Dichloropropene	-	-	-	-	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Dibromochloromethane	0.08	0.00015	-	-	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Ethylbenzene	0.7	0.0013	0.061	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Methylene chloride	0.005	0.0099	1.9	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Styrene	0.1	1.1	0.032	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Tetrachloroethene	0.005	0.0097	0.053	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Toluene	1	0.86	0.062	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
trans-1,3-Dichloropropene	-	-	-	-	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Trichloroethene	0.005	0.00044	0.22	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Vinyl chloride	0.002	0.000015	0.93	O OMZA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Xylenes (total)	10	0.19	0.027	O OMZA	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.
MCL - Maximum contaminant level.
U - Compound was analyzed for but not detected.
[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012
[2] - Ohio OMZA: Ohio River Basin Aquatic Life and Human Health Tier I Criteria and Tier II Values, Outside Mixing Zone Area OAC 3745-1-32, July 27, 2005.
USEPA NRWQC: National Recommended Water Quality Criteria, EPA-822-R-02-047, Continuous Chronic Concentration, Office of Water, November 2002.
EPA Region V: Ecological Data Quality Levels, August 22, 2003. Available on the Internet at http://www.epa.gov/Region5/rcraca/edql.html

TABLE 2.3

HISTORIC SEDIMENT ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OU2 RI/FS WORK PLAN
MORAINE, OHIO

Sample Location: [2]			*S15(OEPA)*	*S16(OEPA)*	*S17(OEPA)*	*S17(OEPA)*	*S18(OEPA)*	*S19(OEPA)*	*SEDIMENT-1*	*SED-1*	*SEDIMENT-2*	*SED-2*	*SEDIMENT-3*	*SED-3*
Sample ID: [2]			*96-DV-03-S15*	*96-DV-03-S16*	*96-DV-03-S17*	*96-DV-03-D17*	*96-DV-03-S18*	*96-DV-03-S19*	*SEDIMENT-1*	*SED-1*	*SEDIMENT-2*	*SED-2*	*SEDIMENT-3*	*SED-3*
Sample Date:			*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*4/16/1999*	*5/12/2000*	*4/16/1999*	*5/12/2000*	*4/16/1999*	*5/12/2000*
Sample Depth:			*15-18 ft BWS*	*15-18 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*-*	*-*	*-*	*-*	*-*	*-*
Sample Location:	*USEPA Regional Screening Levels [1]*		*Quarry Pond*	*Quarry Pond*	*GMR*	*Duplicate GMR*	*GMR*	*GMR*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*
Parameter	*Residential Soil Criteria a*	*Industrial Soil Criteria b*												
Volatiles														
1,1,1-Trichloroethane	8700	38000	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1,2,2-Tetrachloroethane	0.56	2.8	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1,2-Trichloroethane	1.1	5.3	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1-Dichloroethane	3.3	17	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,1-Dichloroethene	240	1100	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloroethane	0.43	2.2	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloroethene (total)	700	9200	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloropropane	0.94	4.7	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
2-Butanone (Methyl ethyl ketone) (MEK)	28000	200000	0.026 U	0.01 J	0.015 U	0.014 U	0.005 J	0.018 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2-Hexanone	210	1400	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	5300	53000	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Acetone	61000	630000	0.047	0.043	0.015 U	0.014 U	0.033	0.019	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.037
Benzene	1.1	5.4	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Bromodichloromethane	0.27	1.4	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Bromoform	62	220	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Bromomethane (Methyl bromide)	7.3	32	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Carbon disulfide	820	3700	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Carbon tetrachloride	0.61	3	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chlorobenzene	290	1400	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chloroethane	15000	61000	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Chloroform (Trichloromethane)	0.29	1.5	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chloromethane (Methyl chloride)	120	500	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
cis-1,3-Dichloropropene	-	-	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Dibromochloromethane	0.68	3.3	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Ethylbenzene	5.4	27	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Methylene chloride	56	960	0.026 BUJ	0.029 BUJ	0.015 BUJ	0.014 BUJ	0.018 BUJ	0.018 BUJ	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Styrene	6300	36000	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Tetrachloroethene	22	110	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Toluene	5000	45000	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.001 J	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.014
trans-1,3-Dichloropropene	-	-	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Trichloroethene	0.91	6.4	0.0008 J	0.029 U	0.0007 J	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Vinyl chloride	0.06	1.7	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Xylenes (total)	630	2700	0.026 U	0.029 U	0.015 U	0.014 U	0.018 U	0.018 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Semi-Volatiles														
1,2,4-Trichlorobenzene	22	99	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
1,2-Dichlorobenzene	1900	9800	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
1,4-Dichlorobenzene	2.4	12	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
2,4,5-Trichlorophenol	6100	62000	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-	-
2,4,6-Trichlorophenol	44	160	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
2,4-Dichlorophenol	180	1800	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
2,4-Dimethylphenol	1200	12000	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
2,4-Dinitrophenol	120	1200	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-	-
2,4-Dinitrotoluene	1.6	5.5	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
2,6-Dinitrotoluene	61	620	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
2-Chloronaphthalene	6300	82000	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
2-Chlorophenol	390	5100	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
2-Methylnaphthalene	230	2200	0.12 J	0.075 J	0.023 J	0.019 J	0.016 J	0.031 J	-	-	-	-	-	-
2-Methylphenol	3100	31000	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-

TABLE 2.3

HISTORIC SEDIMENT ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OU2 RI/FS WORK PLAN
MORAINE, OHIO

Sample Location: [2]			*S15(OEPA)*	*S16(OEPA)*	*S17(OEPA)*	*S17(OEPA)*	*S18(OEPA)*	*S19(OEPA)*	*SEDIMENT-1*	*SED-1*	*SEDIMENT-2*	*SED-2*	*SEDIMENT-3*	*SED-3*
Sample ID: [2]			*96-DV-03-S15*	*96-DV-03-S16*	*96-DV-03-S17*	*96-DV-03-D17*	*96-DV-03-S18*	*96-DV-03-S19*	*SEDIMENT-1*	*SED-1*	*SEDIMENT-2*	*SED-2*	*SEDIMENT-3*	*SED-3*
Sample Date:			*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*4/16/1999*	*5/12/2000*	*4/16/1999*	*5/12/2000*	*4/16/1999*	*5/12/2000*
Sample Depth:			*15-18 ft BWS*	*15-18 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*-*	*-*	*-*	*-*	*-*	*-*
Sample Location:	*USEPA Regional Screening Levels [1]*		*Quarry Pond*	*Quarry Pond*	*GMR*	*Duplicate GMR*	*GMR*	*GMR*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*
Parameter	*Residential Soil Criteria a*	*Industrial Soil Criteria b*												
2-Nitroaniline	610	6000	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-	-
2-Nitrophenol	-	-	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
3,3'-Dichlorobenzidine	1.1	3.8	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
3-Nitroaniline	-	-	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	4.9	49	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-	-
4-Bromophenyl phenyl ether	-	-	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
4-Chloro-3-methylphenol	6100	62000	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
4-Chloroaniline	2.4	8.6	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
4-Methylphenol	6100	62000	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
4-Nitroaniline	24	86	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-	-
4-Nitrophenol	-	-	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-	-
Acenaphthene	3400	33000	0.059 J	0.092 J	0.021 J	0.015 J	0.04 J	0.089 J	-	-	-	-	-	-
Acenaphthylene	-	-	0.85 U	0.061 J	0.16 J	0.15 J	0.014 J	0.022 J	-	-	-	-	-	-
Anthracene	17000	170000	0.11 J	0.23 J	0.4 J	0.39 J	0.075 J	0.17 J	-	-	-	-	-	-
Benzo(a)anthracene	0.15	2.1	**0.49 J[a]**	**1.5[a]**	**2.2[ab]**	**2.1[a]**	**0.6[a]**	**1.3[a]**	-	-	-	-	-	-
Benzo(a)pyrene	0.015	0.21	**0.46 J[ab]**	**1.8[ab]**	**2.1[ab]**	**2.1[ab]**	**0.58[ab]**	**1.1[ab]**	-	-	-	-	-	-
Benzo(b)fluoranthene	0.15	2.1	**0.8 J[a]**	**2.5[ab]**	**2.7[ab]**	**2.3[ab]**	**1[a]**	**1.8[a]**	-	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	0.49 J	2	2.2	1.6	0.66	1.4	-	-	-	-	-	-
Benzo(k)fluoranthene	1.5	21	0.3 J	0.95	0.93	0.93	0.41 J	0.69	-	-	-	-	-	-
bis(2-Chloroethoxy)methane	180	1800	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
bis(2-Chloroethyl)ether	0.21	1	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	35	120	0.85 U	0.47 J	0.5 U	0.084 J	0.33 J	0.36 J	-	-	-	-	-	-
Butyl benzylphthalate (BBP)	260	910	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.084 J	-	-	-	-	-	-
Carbazole	-	-	0.085 J	0.11 J	0.02 J	0.015 J	0.084 J	0.19 J	-	-	-	-	-	-
Chrysene	15	210	0.55 J	1.5	2.5	2.1	0.71	1.5	-	-	-	-	-	-
Dibenz(a,h)anthracene	0.015	0.21	**0.12 J[a]**	**0.48 J[ab]**	**0.43 J[ab]**	**0.32 J[ab]**	**0.15 J[a]**	**0.31 J[ab]**	-	-	-	-	-	-
Dibenzofuran	78	1000	0.07 J	0.095 J	0.011 J	0.007 J	0.034 J	0.1 J	-	-	-	-	-	-
Diethyl phthalate	49000	490000	0.85 U	0.039 J	0.024 J	0.027 J	0.051 J	0.033 J	-	-	-	-	-	-
Dimethyl phthalate	-	-	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
Di-n-butylphthalate (DBP)	6100	62000	0.85 BUJ	0.94 BUJ	0.5 BUJ	0.46 BUJ	0.58 BUJ	0.6 BUJ	-	-	-	-	-	-
Di-n-octyl phthalate (DnOP)	730	7400	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
Fluoranthene	2300	22000	1.1	2.6	2	2	1.4	2.2	-	-	-	-	-	-
Fluorene	2300	22000	0.076 J	0.16 J	0.053 J	0.043 J	0.06 J	0.13 J	-	-	-	-	-	-
Hexachlorobenzene	0.3	1.1	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
Hexachlorobutadiene	6.2	22	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
Hexachlorocyclopentadiene	370	3700	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
Hexachloroethane	12	43	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	0.15	2.1	**0.46 J[a]**	**1.9[a]**	**1.9[a]**	**1.4[a]**	**0.65[a]**	**1.4[a]**	-	-	-	-	-	-
Isophorone	510	1800	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
Naphthalene	3.6	18	0.07 J	0.077 J	0.031 J	0.025 J	0.018 J	0.063 J	-	-	-	-	-	-
Nitrobenzene	4.8	24	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	0.069	0.25	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
N-Nitrosodiphenylamine	99	350	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
Pentachlorophenol	0.89	2.7	2.1 U	2.4 U	1.3 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-	-
Phenanthrene	-	-	0.89	1.5	0.7	0.61	0.83	1.9	-	-	-	-	-	-
Phenol	18000	180000	0.85 U	0.94 U	0.5 U	0.46 U	0.58 U	0.6 U	-	-	-	-	-	-
Pyrene	1700	17000	1.3	3	4.7 E	3.7 E	1.4	2.7	-	-	-	-	-	-

TABLE 2.3

HISTORIC SEDIMENT ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OU2 RI/FS WORK PLAN
MORAINE, OHIO

Sample Location: [2]			*S15(OEPA)*	*S16(OEPA)*	*S17(OEPA)*	*S17(OEPA)*	*S18(OEPA)*	*S19(OEPA)*	*SEDIMENT-1*	*SED-1*	*SEDIMENT-2*	*SED-2*	*SEDIMENT-3*	*SED-3*
Sample ID: [2]			*96-DV-03-S15*	*96-DV-03-S16*	*96-DV-03-S17*	*96-DV-03-D17*	*96-DV-03-S18*	*96-DV-03-S19*	*SEDIMENT-1*	*SED-1*	*SEDIMENT-2*	*SED-2*	*SEDIMENT-3*	*SED-3*
Sample Date:			*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*4/16/1999*	*5/12/2000*	*4/16/1999*	*5/12/2000*	*4/16/1999*	*5/12/2000*
Sample Depth:			*15-18 ft BWS*	*15-18 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*-*	*-*	*-*	*-*	*-*	*-*
Sample Location:	*USEPA Regional Screening Levels [1]*		*Quarry Pond*	*Quarry Pond*	*GMR*	*Duplicate GMR*	*GMR*	*GMR*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*
Parameter	*Residential Soil Criteria a*	*Industrial Soil Criteria b*												
Metals														
Aluminum	77000	990000	2750	6590	9750	8450	8940	8600	-	-	-	-	-	-
Antimony	31	410	9.1 U	13.5 U	7.9 U	8.1 U	10 U	10.1 U	-	-	-	-	-	-
Arsenic	0.39	1.6	**10.3[ab]**	**12.6[ab]**	**9.2[ab]**	**9.2[ab]**	**6.0[ab]**	**9[ab]**	-	-	-	-	-	-
Barium	15000	190000	73.0	137	128	125	117	130	-	-	-	-	-	-
Beryllium	160	2000	0.28 B	0.35 B	0.54 B	0.48 B	0.5 B	0.47 B	-	-	-	-	-	-
Cadmium	70	800	1.0 U	1.5 U	0.89 U	0.91 U	1.1 U	1.1 U	-	-	-	-	-	-
Calcium	-	-	53600	11800	61700	58100	81900	74900	-	-	-	-	-	-
Chromium	-	-	23.1	17.2	14.9	13.7	18	22.3	-	-	-	-	-	-
Cobalt	23	300	3.7 B	6.7 B	6.6 B	6.2 B	6.5 B	7.2 B	-	-	-	-	-	-
Copper	3100	41000	29.3	24.7	29.3	29.0	26	33.5	-	-	-	-	-	-
Iron	55000	720000	11300	13500	16400	15500	15000	15800	-	-	-	-	-	-
Lead	400	800	33.7	42.0	51.6	47.2	30.5	47.9	-	-	-	-	-	-
Magnesium	-	-	13600	21600	17200	16100	24200	20600	-	-	-	-	-	-
Manganese	1800	23000	205	545	299	258	330	420	-	-	-	-	-	-
Mercury	10	43	0.08 U	0.12 U	0.63	0.65	0.09 U	0.13 B	-	-	-	-	-	-
Nickel	1500	20000	13.4	18.7 B	16.2	17.9	19.9	23.7	-	-	-	-	-	-
Potassium	-	-	297 B	736 B	812 B	709 B	1090 B	991 B	-	-	-	-	-	-
Selenium	390	5100	1.1 B	0.59 B	0.4 B	0.59 B	0.73 B	0.59 B	-	-	-	-	-	-
Silver	390	5100	1.4 U	2.1 U	1.2 U	1.2 U	1.5 U	1.5 U	-	-	-	-	-	-
Sodium	-	-	165 B	206 B	144 B	131 B	191 B	183 B	-	-	-	-	-	-
Thallium	0.78	10	0.68 B	0.98 U	**1.0 B[a]**	0.66 B	**0.84 B[a]**	**0.9 B[a]**	-	-	-	-	-	-
Vanadium	390	5200	9.6 B	16.8 B	21.8	19.2	20.2	20	-	-	-	-	-	-
Zinc	23000	310000	80.7	143	93.6 B	80.4	114	132	-	-	-	-	-	-
PCBs														
Aroclor-1016 (PCB-1016)	3.9	21	0.087 U	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-	-
Aroclor-1221 (PCB-1221)	0.14	0.54	0.18 U	0.19 U	0.1 U	0.093 U	0.12 U	0.12 U	-	-	-	-	-	-
Aroclor-1232 (PCB-1232)	0.14	0.54	0.087 U	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-	-
Aroclor-1242 (PCB-1242)	0.22	0.74	0.087 U	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-	-
Aroclor-1248 (PCB-1248)	0.22	0.74	0.087 U	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-	-
Aroclor-1254 (PCB-1254)	0.22	0.74	**0.66[a]**	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-	-
Aroclor-1260 (PCB-1260)	0.22	0.74	0.087 U	0.094 U	0.05 U	0.046 U	0.058 U	0.06 U	-	-	-	-	-	-
Pesticides														
4,4'-DDD	2	7.2	0.0017 JP	0.0094 U	0.0022 JP	0.0049	0.0034 JP	0.0036 JP	-	-	-	-	-	-
4,4'-DDE	1.4	5.1	0.0087 U	0.0022 JP	0.0050 U	0.0046 U	0.0026 JP	0.0024 JP	-	-	-	-	-	-
4,4'-DDT	1.7	7	0.0044 JP	0.0024 JP	0.0021 JP	0.0022 JP	0.0027 JP	0.0023 JP	-	-	-	-	-	-
Aldrin	0.029	0.1	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0013 JP	-	-	-	-	-	-
alpha-BHC	0.077	0.27	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-	-	-
alpha-Chlordane	-	-	0.012	0.0018 JP	0.00072 JP	0.0024 U	0.0070 P	0.0066 P	-	-	-	-	-	-
beta-BHC	0.27	0.96	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-	-	-
delta-BHC	-	-	0.0045 U	0.0049 U	0.0014 JP	0.0015 JP	0.0030 U	0.0031 U	-	-	-	-	-	-
Dieldrin	0.03	0.11	0.0096 P	0.0026 JP	0.00086 JP	0.0046 U	0.0025 JP	0.0040 JP	-	-	-	-	-	-
Endosulfan I	-	-	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-	-	-
Endosulfan II	-	-	0.0087 U	0.0094 U	0.0050 U	0.0046 U	0.0058 U	0.0060 U	-	-	-	-	-	-
Endosulfan sulfate	-	-	0.0037 JP	0.0094 U	0.0050 U	0.0046 U	0.0030 JP	0.0060 U	-	-	-	-	-	-
Endrin	18	180	0.034	0.0094 U	0.0034 JP	0.0048 P	0.0024 JP	0.0060 U	-	-	-	-	-	-
Endrin aldehyde	-	-	0.0079 JP	0.0094 U	0.0050 U	0.0046 U	0.0058 U	0.0060 U	-	-	-	-	-	-
Endrin ketone	-	-	0.0087 U	0.0049 J	0.0032 JP	0.0040 JP	0.0058 U	0.0025 JP	-	-	-	-	-	-

TABLE 2.3

HISTORIC SEDIMENT ANALYTICAL RESULTS
SOUTH DAYTON DUMP AND LANDFILL SITE
OU2 RI/FS WORK PLAN
MORAINE, OHIO

Sample Location: [2]			*S15(OEPA)*	*S16(OEPA)*	*S17(OEPA)*	*S17(OEPA)*	*S18(OEPA)*	*S19(OEPA)*	*SEDIMENT-1*	*SED-1*	*SEDIMENT-2*	*SED-2*	*SEDIMENT-3*	*SED-3*
Sample ID: [2]			*96-DV-03-S15*	*96-DV-03-S16*	*96-DV-03-S17*	*96-DV-03-D17*	*96-DV-03-S18*	*96-DV-03-S19*	*SEDIMENT-1*	*SED-1*	*SEDIMENT-2*	*SED-2*	*SEDIMENT-3*	*SED-3*
Sample Date:			*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*7/9/1996*	*4/16/1999*	*5/12/2000*	*4/16/1999*	*5/12/2000*	*4/16/1999*	*5/12/2000*
Sample Depth:			*15-18 ft BWS*	*15-18 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*0-0.5 ft BWS*	*-*	*-*	*-*	*-*	*-*	*-*
Sample Location:	*USEPA Regional Screening Levels [1]*		*Quarry Pond*	*Quarry Pond*	*GMR*	*Duplicate GMR*	*GMR*	*GMR*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*	*Quarry Pond*
Parameter	*Residential Soil Criteria a*	*Industrial Soil Criteria b*												
gamma-BHC (lindane)	0.52	2.1	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-	-	-
gamma-Chlordane	-	-	0.0049 P	0.0032 J	0.0014 J	0.0024 U	0.0069	0.0056 P	-	-	-	-	-	-
Heptachlor	0.11	0.38	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-	-	-
Heptachlor epoxide	0.053	0.19	0.0045 U	0.0049 U	0.0026 U	0.0024 U	0.0030 U	0.0031 U	-	-	-	-	-	-
Methoxychlor	310	3100	0.018 J	0.017 JP	0.05	0.065	0.0089 JP	0.012 JP	-	-	-	-	-	-
Toxaphene	0.44	1.6	0.45 U	0.49 U	0.26 U	0.24 U	0.3 U	0.31 U	-	-	-	-	-	-
General Chemistry														
Cyanide (total)	22	140	0.27 B	0.17 U	0.19 B	0.21 B	0.23 B	0.32 B	-	-	-	-	-	-
Percent moisture (%)	-	-	-	-	-	-	-	-	13.5	15	15.0	13	20.3	32
Total organic carbon (TOC)	-	-	-	-	-	-	-	-	390	-	550	-	100 U	-

Notes:

All concentrations are expressed in units of milligrams per kilogram (mg/kg) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

[2] - Sample IDs and locations SEDIMENT-1, SEDIMENT-2, SEDIMENT-3 are equivalent to SED-1, SED-2 and SED-3, respectively

ft BWS - Feet below water surface

GMR - Great Miami River

B - Value is real, but above instrument detection limit and below contract-required detection limit (Inorganics).

B - Compound is found in the associated blank as well as in the sample (Organics).

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument.

J - Indicates an estimated value.

P - Indicates there is a greater than 25% difference for detected concentrations between two GC columns. The lower of the two values is reported.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

U - Compound was analyzed for but not detected.

- - Not applicable.

TABLE 2.4

HISTORIC SOIL VAPOR VOC ANALYTICAL RESULTS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Sample Location:					*GP06-09*	*GP07-09*	*GP08-09*	*GP09-09*	*GP10-09*
Sample ID:					*A-038443-091609-NH-019*	*A-038443-091609-GL-020*	*A-038443-091709-NH-021*	*A-038443-091509-NH-009*	*A-038443-091509-GL-010*
Sample Date:					*9/16/2009*	*9/16/2009*	*9/17/2009*	*9/15/2009*	*9/15/2009*
	RESIDENTIAL SVSL		*INDUSTRIAL SVSL*						
Parameter	*ELCR*	*HI*	*ELCR*	*HI*					
	a	*b*	c	d					
Volatiles									
1,1,1-Trichloroethane	-	52000	-	220000	1.6 U	55 U	0.93 J	18	14
1,1,2,2-Tetrachloroethane	0.42	-	2.1	-	2.1 U	70 U	2.1 U	2.1 U	2.1 U
1,1,2-Trichloroethane	1.5	2.1	7.7	8.8	1.6 U	55 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	15	-	77	-	1.2 U	41 U	1.2 U	1.2 U	2.1
1,1-Dichloroethene	-	2100	-	8800	0.79 U	40 U	0.79 U	0.79 U	0.79 U
1,2,4-Trichlorobenzene	-	21	-	88	5.9 U	190 U	5.9 U	5.9 U	5.9 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0016	2.1	0.02	8.8	9.7 UJ	490 UJ	9.7 UJ	9.7 UJ	9.7 UJ
1,2-Dibromoethane (Ethylene dibromide)	0.041	94	0.20	390	3.1 U	78 U	3.1 U	3.1 U	3.1 U
1,2-Dichlorobenzene	-	2100	-	8800	2.4 U	61 U	2.4 U	2.4 U	2.4 U
1,2-Dichloroethane	0.94	73	4.7	310	0.81 U	62 U	0.81 U	0.81 U	0.81 U
1,2-Dichloropropane	2.4	42	12	180	0.92 U	70 U	0.92 U	0.92 U	0.92 U
1,3-Dichlorobenzene[w]	2.2	8300	11	35000	2.4 U	120 U	2.0 J	2.4 U	2.4 U
1,4-Dichlorobenzene	2.2	8300	11	35000	2.4 U	120 U	2.4 U	2.4 U	2.4 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	52000	-	220000	2.9 U	150 U	1.9 J	1.5 J	3.2
2-Hexanone	-	310	-	1300	2.0 U	210 U	2.0 U	2.0 U	2.0 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	31000	-	130000	1.6 U	210 U	1.6 U	1.6 U	3.9 J
Acetone	-	320000	-	1400000	7.1 U	120 U	17 UJ	11 U	21 U
Benzene	3.1	310	16	1300	0.96 U	49 U	1.8	1.9	1.7
Bromodichloromethane	0.66	-	3.3	-	2.0 U	68 U	2.0 U	2.0 U	2.0 U
Bromoform	22	-	110	-	4.1 U	100 U	4.1 U	4.1 U	4.1 U
Bromomethane (Methyl bromide)	-	52	-	220	1.6 U	79 U	1.6 U	1.6 U	1.6 U
Carbon disulfide	-	7300	-	31000	6.5	160 U	8.4	13	11
Carbon tetrachloride	4.1	1000	20	4400	1.9 U	64 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	-	520	-	2200	1.4 U	47 U	1.4 U	1.9	1.4 U
Chloroethane	-	100000	-	440000	1.1 U	53 U	1.1 U	1.1 U	1.1 U
Chloroform (Trichloromethane)	1.1	1000	5.3	4300	1.5 U	49 U	**1.2 J[a]**	**14[ac]**	**4.5[a]**
Chloromethane (Methyl chloride)	-	940	-	3900	1.7 U	42 UJ	1.7 U	1.5 J	1.2 J
cis-1,2-Dichloroethene[x]	-	630	-	2600	0.79 U	40 U	0.79 U	1.4	0.79 U
cis-1,3-Dichloropropene[y]	6.1	210	31	880	1.8 U	46 U	1.8 U	1.8 U	1.8 U
Cyclohexane	-	63000	-	260000	1.7 U	35 U	2.1	1.7 U	1.7 U
Dibromochloromethane	0.9	-	4.5	-	3.4 U	86 U	3.4 U	3.4 U	3.4 U
Dichlorodifluoromethane (CFC-12)	-	1000	-	4400	4.0	75 U	63	2.5	24
Ethylbenzene	9.7	10000	49	44000	1.3 U	44 U	4.4	3.2	5.4
Isopropyl benzene	-	4200	-	18000	2.5 U	50 U	2.5 U	2.5 U	2.5 U
Methyl tert butyl ether (MTBE)	94	31000	470	130000	3.6 U	37 U	3.6 U	3.6 U	1.4 J
Methylene chloride	960	6300	12000	26000	1.0 U	19 J	0.55 J	1.0 U	1.0 U
Naphthalene	0.72	31	3.6	130	2.6 U	160 U	2.6 U	**3.8[ac]**	**7.9[ac]**
Styrene	-	10000	-	44000	1.7 U	43 U	1.7 U	1.7 U	1.7 U
Tetrachloroethene	94	420	470	1800	1.5 J	69 U	25	**120[a]**	40
Toluene	-	52000	-	220000	1.1 U	27 J	22	12	18
trans-1,2-Dichloroethene	-	630	-	2600	0.79 U	40 U	0.79 U	0.79 U	0.79 U
trans-1,3-Dichloropropene[z]	6.1	210	31	880	1.8 U	46 UJ	1.8 U	1.8 U	1.8 U
Trichloroethene	4.3	21	30	88	1.0 J	54 U	1.6 J	**2000[abcd]**	**40[abc]**
Trichlorofluoromethane (CFC-11)	-	7300	-	31000	8.8	40 J	74	5.2	5.2
Trifluorotrichloroethane (Freon 113)	-	310000	-	1300000	3.8 U	78 U	3.8 U	3.8 U	3.8 U
Vinyl chloride	1.6	1000	28	4400	0.51 U	52 U	0.51 U	0.51 U	0.51 U
Xylenes (total)	-	1000	-	4400	1.3 U	44 U	13	19	30

Notes:

All concentrations are expressed in units of micrograms per cubic meter ($\mu g/m^3$) unless otherwise noted.
J - The parameter was positively identified; however, the associated parameter concentration is estimated.
ELCR - Estimated Lifetime Cancer Risk
HI - Hazard Index
SVSL = Soil Vapor Screening Level.
U - The parameter was not detected. The associated numerical value is the sample quantitation limit.
UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.
The residential soil vapor screening levels (SVSLs) are based on the USEPA 2012 Regional Screening Levels (November 2012) for Residential Air. The RSLs are derived assuming a 10^{-6} target estimated lifetime cancer risk level or a hazard index of 1.
The SVSLs were derived from the USEPA (November 2012) RSLs by applying the USEPA Region 5 Vapor Intrusion Guidebook (Oct 2010) default soil-vapor-to-indoor-air attenuation factor of 0.1.
[w] = An RSL is not available for 1,3-dichlorobenzene; the RSL for 1,4-dichlorobenzene was considered an evaluation surrogate for 1,3-dichlorobenzene.
[x] = An RSL is not available for cis-1,2-dichloroethene; the RSL for trans-1,2-dichloroethene was considered an evaluation surrogate for cis-1,2-dichloroethene.
[y] = An RSL is not available for cis-1,3-dichloropropene; the RSL for 1,3-dichloropropene was considered an evaluation surrogate for cis-1,3-dichloropropene.
[z] = An RSL is not available for trans-1,3-dichloropropene; the RSL for 1,3-dichloropropene was considered an evaluation surrogate for trans-1,3-dichloropropene.

TABLE 2.5

HISTORIC SOIL VAPOR FIELD PARAMETERS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Sample Location:	*GP06-09*	*GP06-09*	*GP06-09*	*GP06-09*	*GP06-09*	*GP07-09*	*GP07-09*	*GP07-09*	*GP07-09*	*GP07-09*	*GP08-09*	*GP08-09*	*GP08-09*	*GP08-09*
Sample ID:	*GP06-09*	*GP06-09*	*GP06-09*	*GP06-09*	*GP06-09*	*GP07-09*	*GP07-09*	*GP07-09*	*GP07-09*	*GP07-09*	*GP08-09*	*GP08-09*	*GP08-09*	*GP08-09*
Sample Date:	*9/18/2009*	*10/14/2009*	*12/9/2009*	*11/1/2012*	*1/10/2013*	*9/18/2009*	*10/14/2009*	*12/9/2009*	*11/1/2012*	*1/10/2013*	*9/18/2009*	*10/14/2009*	*12/9/2009*	*11/1/2012*
Parameter														
Field Parameters														
Methane	0.1	0	0	0 / 0	0 / 0	0	0	0	0 / 0	0 / 0	0	0	0	0 / 0.1
Carbon Dioxide (%)	8.2	6.1	2.5	2.4 / 2.1	1.5 / 1.5	13.6	12.8	5.1	6.2 / 6.7	13.7 / 13.8	10.5	9.1	3.9	0 / 0.4
Oxygen (%)	--	10.1	16	19.1 / 19.5	19.3 / 19.0	--	4.4	13.9	13.1 / 12.8	4.7 / 5.0	--	7.8	16	21.9 / 21.6
Lower Explosive Limit (%)	--	0	0	0 / 0	0 / 0	--	0	0	0 / 0	0 / 0	--	0	0	0 / 2
Manometer Pressure (inches H_2O)	--	0	-1.1	0.8	0	--	0	0	2.81	2.41	--	0	0	0.8
PID (ppm)	--	0	0	--	--	--	0	0	--	--	--	0	0	--
Barometric Pressure (in. Hg)	29.28	29.27	28.58	--	--	29.28	29.27	28.58	--	--	29.28	29.27	28.58	--
Balance (%)	--	83.8	81.5	78.5 / 78.4	79.2 / 79.5	--	82.9	81	80.7 / 80.5	81.6 / 81.2	--	83	80.1	78.1 / 77.9
Ambient Air Temperature (^oF)	--	--	35	--	--	--	--	35	--	--	--	--	35	--

Notes:

Bold values exceed 10% of the LEL for methane

Bold and shaded values exceed the LEL for methane (5%)

Bold, shaded, and *italic* values exceed the UEL for methane (15%)

UEL - Upper explosive limit

LEL - Lower explosive limit

19.1 / 19.5 - filtered / unfiltered field reading

- - Not applicable.

TABLE 2.5

HISTORIC SOIL VAPOR FIELD PARAMETERS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Sample Location:	*GP08-09*	*GP09-09*	*GP09-09*	*GP09-09*	*GP09-09*	*GP09-09*	*GP10-09*	*GP10-09*	*GP10-09*	*GP10-09*	*GP10-09*
Sample ID:	*GP08-09*	*GP09-09*	*GP09-09*	*GP09-09*	*GP09-09*	*GP09-09*	*GP10-09*	*GP10-09*	*GP10-09*	*GP10-09*	*GP10-09*
Sample Date:	*1/10/2013*	*9/18/2009*	*10/14/2009*	*12/9/2009*	*11/1/2012*	*1/7/2013*	*9/18/2009*	*10/14/2009*	*12/9/2009*	*11/1/2012*	*1/7/2013*
Parameter											
Field Parameters											
Methane	0 / 0	0.1	0	0	0 / 0	0 / 0	0	0.1	0	0 / 0	0 / 0
Carbon Dioxide (%)	1.5 / 2.1	9.2	8.1	4.4	4.2 / 4.5	4.9 / 4.4	4.4	3.5	2.4	4.0 / 4.3	4.1 / 4.5
Oxygen (%)	21.2 / 20.6	--	12.1	13.5	19.8 / 19.7	16.2 / 16.2	13.5	--	8.3	3.1 / 2.4	0.1 / 0.0
Lower Explosive Limit (%)	0 / 0	--	0	0	0 / 0	0 / 0	0	--	0	0 / 0	0 / 0
Manometer Pressure (inches H_2O)	-0.4	--	0	-0.4	0	0	-0.4	--	-2	5.22	4.42
PID (ppm)	--	--	0	0	--	--	0	--	0	--	--
Barometric Pressure (in. Hg)	--	29.28	29	28.64	--	--	28.64	29.28	28.64	--	--
Balance (%)	77.3 / 77.3	--	79.8	82.1	76 / 75.8	78.9 / 79.4	82.1	--	89.3	92.9 / 93.3	95.8 / 95.5
Ambient Air Temperature (^oF)	--	--	--	35	--	--	35	--	35	--	--

Notes:

Bold values exceed 10% of the LEL for methane

Bold and shaded values exceed the LEL for methane (5%)

Bold, shaded, and *italic* values exceed the UEL for methane (15%)

UEL - Upper explosive limit

LEL - Lower explosive limit

19.1 / 19.5 - filtered / unfiltered field reading

- - Not applicable.

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
1	***State the Problem***			
	i) Problem description	Insufficient soil quality data exist for OU2 in order to determine: - The nature and lateral and vertical extent of the fill material. - The nature and extent of contaminated soil.	- Insufficient soil quality data exist for OU2 in order to determine whether potential soil contamination is from the Site or from off-Site sources.	If soil or fill containing contaminants at concentrations greater than screening values and background reference conditions is found in Phases 1A and 1B for Southern Parcels, there may still be insufficient data to establish the presence or absence of direct contact, ingestion, and inhalation risks to receptors via soil and/or fill exposure pathways.
	ii) Planning team	See note at bottom		

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
iii) Conceptual model	Fill was placed in a portion of the Southern Parcels. The fill includes but may not be limited to CDD. The fill may contain contaminants. OU2 soil may have site-related contaminants from wind-blown deposition, run-off, groundwater leaching and redepositing of contamination. - Contaminants in soil may pose a risk to receptors via the direct contact, inhalation and ingestion pathways. Cover material at the Site is limited or non-existent, which could lead to erosional run-off of contaminants towards the Quarry Pond - Infiltrating precipitation can cause contaminants in soil and fill to migrate downwards, ultimately impacting groundwater. - Groundwater migrating from OU1 could deposit contaminants in the soil and/or fill of OU2.			

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
iv) General intended use for data		The soil and fill data collected will be compared to USEPA Residential and Industrial Soil Regional Screening Levels (RSLs) to identify direct contact/ingestion/inhalation risks associated with soil and fill in OU2. The data collected will ultimately be used in the Remedial Investigation Report and Baseline Risk Assessment for OU2.	The data collected from sampling locations in the Southern Parcels will be compared to background conditions, to determine if there are measurable levels of Site-related contaminants. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	The collected data will be used to generate exposure estimates for an assessment of direct contact/ingestion/inhalation risks and risks to ecological receptors. The data collected will ultimately be used in the Baseline Human Health Risk Assessment and Ecological Risk Assessment for OU2.
v) Resources, constraints, deadlines		Sufficient resources will be committed to sample soil on the Southern Parcels under the OU2 RI/FS work plan. Sampling may be postponed due to flooding.		

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
2	***Goals of the Study:***			
	i) Primary study question	Do soil and fill samples from the Southern Parcels contain contaminants at concentrations greater than industrial or residential soil RSLs?	Are contaminant concentrations due to Site activities or locally occurring background concentrations?	Does soil or fill in OU2 contain Site-related contaminants that pose unacceptable human health risks or unacceptable risks to ecological receptors?

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	*Medium:*	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
	Investigation Item:	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
	ii) Alternate outcomes or actions	- If sampling demonstrates that contaminant concentrations in soil and fill are less than RSLs, no further sampling or remedial action is planned. - If sampling demonstrates that contaminant concentrations in soils or fill are greater than screening levels/criteria, further evaluation is needed to determine if the contamination is site-related, and is a risk to human health and the environment, and/or remedial measures.	- If sampling demonstrates that contaminant concentrations in OU2 are not greater than those found in background reference soils, no further sampling is planned.	- If sampling demonstrates that human health and ecological risks from all combined exposure pathways are acceptable, no further action is required. - If sampling demonstrates unacceptable human health or ecological risks, further evaluation, risk management and/or remediation would be required.
	iii) Type of problem (decision or estimation)[1]	Decision (Action Level)	Decision (Action Level)	Estimation

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	*Medium:*	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
	Investigation Item:	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
	iv.a) Decision statement	Determine whether any Site-related contaminant concentrations in soil and fill are greater than USEPA Industrial or Residential soil RSLs in OU2.	Determine whether any measurable levels of Site-related contaminants, relative to background reference conditions, occur in soil and fill in OU2.	Determine where contaminant concentrations require further consideration or response action, and where no further investigation is necessary.
	iv.b) Estimation statement & assumptions	--	--	The parameter of interest is the mean (for estimating direct contact/ingestion/inhalation risks) of soil/fill contaminant concentrations within identified exposure areas in OU2. Each exposure area will be 5 acres. The statistical measure of interest is the 95% UCL of the mean for each exposure unit. The size and location of each exposure unit should be identified based on property ownership boundaries and current and reasonably foreseeable activities and land uses.

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
3	***Identify Information Inputs:***			
	i) Information types needed	-Identification and chemical analysis of fill in OU2. - Contaminant concentrations in soil in OU2. -Background soil contaminant concentrations. - Soil samples will be collected on a random basis (random oriented grid) from each exposure area. - Soil samples will also be collected at data gap locations or areas of suspected soil contamination. -Exposure areas, determined by current and reasonably foreseeable activities land uses, exposure routes, and property ownership boundaries.	- Supplemental analyses of soil samples obtained to fill in significant data gaps across the exposure area. -Exposure routes and receptors -Toxicological information on the contaminants of concern.	
	ii) Information sources	- Existing soil/fill data - New results from all soil and fill samples collected from OU2, and data on background conditions. - Conceptual site model.	- New soil/fill data from the Phase 2 investigation - Available validated previous data (e.g., from Phase 1), within the exposure area.	

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
iii) Basis of Action Level		Action Levels are: - USEPA Industrial and Residential Soil RSLs - USEPA ESLs The data collected will be compared against USEPA Residential and Industrial Soil RSLs to identify risks associated with soil samples from OU2.		--
iv) Appropriate sampling & analysis methods		Methods are described in the Field Sampling Plan (CRA, January 2011) and the Quality Assurance Project Plan (CRA, September 2008).		

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
4	***Define the Boundaries of the Study:***			
	i) Target population, sample units	The initial target population is surficial and subsurface soils on the Southern Parcels. The sampling units are individual samples. The initial target population of background samples is surficial and subsurface soils from off-Site, near-by properties that have similar soil conditions.	The sampling units are individual samples collected from the soil off-Site (beyond the Southern Parcels).	Target population is soil and fill exceeding screening levels and comprising the exposure units for assessment of exposure risks for human receptors.
	ii) Specify spatial boundaries	The spatial boundaries are the limits of site-related soil and fill contamination. Surficial soil is to a maximum depth of 2 ft bgs for human health risk purposes, and 3 ft bgs for ecological risk. The spatial boundaries of the sub-surface soil	Background reference surface and subsurface sampling locations will be identified in areas outside a reasonable zone of potential influence (via surface runoff or substantial	The spatial boundaries are the limits of OU2, which is everywhere that environmental media have been impacted by Site contaminants outside of OU1. Surficial soil is to a maximum depth of 2 ft bgs for human health risk

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
		samples for screening human health risks will be to a depth of 15 ft bgs, i.e., the maximum soil depth construction workers would be expected to encounter. There is no predetermined maximum depth for characterizing the extent and magnitude of contamination. [Per the groundwater DQO in Table 3.2, additional unsaturated soil samples will be collected at depths greater than 15 ft bgs to investigate potential leaching threats to groundwater.] Boreholes will be advanced a minimum of 5 ft into native material or until refusal, whichever is encountered first.	airborne dust deposition) for the Site. Distance from the Site and prevailing wind directions will be considered in making this determination.	purposes, and 3 ft bgs for ecological risk. The spatial boundaries of the sub-surface soil samples for screening human health risks will be to a maximum depth of 15 ft bgs, i.e., the maximum soil depth construction workers would be expected to encounter. [Per the groundwater DQO in Table 3.2, the spatial boundaries to evaluate risks to groundwater will be the entire depth of soil above the water table.]

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
iii) Specify temporal boundaries	The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on the exposure assumptions of the Action Levels.			
iv) Identify any other practical constraints	Practical constraints anticipated for sampling of OU2 soil and fill include the presence of cars on the Jim City Parcels and buildings and equipment on the Ron Barnett Parcels. Safety issues associated with sampling adjacent to surface water will also be considered for sampling activities on the Quarry Pond Parcels.	If different surficial soil substrates are encountered (e.g., silt vs. sand vs. clay), these differences may require additional sampling (e.g., further reference samples) to appropriately evaluate potential Site-related impacts. Off-Site sampling may be restricted by permission of property owners, and availability of suitable locations for background locations.	Practical constraints anticipated for sampling of Southern Parcels soil include the presence of cars on the Jim City Parcels and buildings and equipment on the Ron Barnett Parcels. Off-Site sampling, if required for delineation purposes, may be restricted by permission of property owners.
v.a) Scale of inference for decision making	Comparisons to Action Levels will be carried out on an individual-location basis.	Comparisons to background reference conditions will be carried out on an individual-location basis.	--

TABLE 3.1

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - SOUTHERN PARCELS FILL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Soil and Fill on Southern Parcels (and potentially beyond the Southern Parcels)*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Residential and Industrial Soil Criteria*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
v.b) Scale of estimates		--		The scale of the exposure estimate is to be identified in a Site-specific risk assessment.

Notes:

(1) If investigating a "decision problem", follow items ending in ".a" in subsequent DQO steps (e.g., "ii.a" or "iii.a").

If investigating an "estimation problem", follow ".b" items.

Once the baseline risk assessment for OU2 has been performed, possible remedial goals (PRGs) will be derived from the calculator using site-specific risks.

-- Item not applicable for the type of problem (decision vs. estimation) investigated.

The planning team includes: Steve Quigley (CRA Project Director); Adam Loney (CRA project manager);
Wesley Dyck, Daniela Araujo (CRA statistics expert);
April Gowing, Steve Harris, Vincent Nero and Dan Smith (CRA risk assessment experts);
Paul Wiseman, Rawa Fleisher, Angela Bown (CRA chemists/quality assurance staff);
Julian Hayward, Valerie Chan (CRA project engineers); Mark Hilverda (CRA project hydrogeologist);
Leslie Patterson (USEPA Regional Project Manager); Mark Allen (Ohio EPA representative); and property owner stakeholders.

TABLE 3.2

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- GROUNDWATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Groundwater in OU2*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Investigation of Soil/Fill on Southern Parcels*	*Comparison of Soil to Background*	*Groundwater Investigation (if necessary) (See OU1 Phase 2A/B DQO)*
1	***State the Problem***			
	i) Problem description	Insufficient soil/fill quality data exist for OU2 in order to determine the presence or absence of risks to groundwater from contaminated soil or fill.	Insufficient groundwater quality data exist for OU2 in order to determine whether potential groundwater contamination is from the Site or from off-Site sources.	- If soil/fill samples contain Site-related contaminant concentrations greater than USEPA SSL criteria for the protection of groundwater or Ohio EPA leach-based soil values, or if groundwater samples collected in the current (2013-2014) Phase 2A/B groundwater investigation contain Site-related contaminant concentrations greater than USEPA MCL or RSL-tapwater criteria, a groundwater investigation will be conducted to delineate areas of OU2 groundwater contamination.
	ii) Planning team	See note at bottom		

TABLE 3.2

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- GROUNDWATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	*Groundwater in OU2*		
Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step / *Investigation Item:*	*Investigation of Soil/Fill on Southern Parcels*	*Comparison of Soil to Background*	*Groundwater Investigation (if necessary) (See OU1 Phase 2A/B DQO)*
iii) Conceptual model	- Fill and/or contaminated soils above or below the water table may act as a source for groundwater contamination due to leaching and infiltration (Phase 1). Contaminated groundwater related to Site-activities may have migrated outside the boundaries of OU1. The presumed groundwater flow direction is westward towards the Great Miami River and to the south, and thus, groundwater could transport contaminants to surface water and/or the downgradient drinking water well. The lower aquifer is a designated sole-source aquifer. - VOC, such as TCE, may volatilize from groundwater into vadose zone soil gas, which may migrate to indoor air via foundation cracks and utility penetrations in buildings, or may discharge to ambient air via dispersion (Phase 2).		
iv) General intended use for data	The soil data collected from each borehole will be used to identify areas in OU2 that may contribute to groundwater contamination. The data collected will be compared against Ohio EPA leach-based soil values and USEPA screening levels in soil (SSLs) that are protective of groundwater to identify risks associated with soil in OU2. Groundwater samples from each soil boring where groundwater is encountered will serve to provide an indication of potential impacts to groundwater related to infiltration of surface water, migration of groundwater through the fill material, or from upgradient sources. The groundwater sample concentrations may also serve to provide an indication of risks to vapor intrusion.		The OU1 Phase 2A/B data and any previously-generated and validated data (historic monitoring wells and vertical aquifer samples (VAS)) will be used to determine the extent and magnitude of groundwater contamination above action levels, and generate exposure estimates for an assessment of ingestion of groundwater contamination. The data will also be used to determine risks of groundwater volatilization into vadose zone soil gas, which may migrate to indoor air or discharge to ambient air. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.

TABLE 3.2

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- GROUNDWATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	*Groundwater in OU2*		
Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step / *Investigation Item:*	*Investigation of Soil/Fill on Southern Parcels*	*Comparison of Soil to Background*	*Groundwater Investigation (if necessary) (See OU1 Phase 2A/B DQO)*
v) Resources, constraints, deadlines	Sufficient resources will be committed to sample soil and water on the Southern Parcels and beyond (if necessary) under the OU2 RI/FS work plan. Sampling may be postponed due to flooding.		
2 *Goals of the Study:*			
i) Primary study question	Do soil samples from soil borings in OU2 contain Site-related contaminants at concentrations greater than Ohio EPA leach-based soil value, USEPA SSLs, or USEPA Vapor Intrusion Screening Levels (VISLs) for groundwater?		What is the extent of groundwater with Site-related contaminants exceeding USEPA maximum contaminant levels (MCLs), RSLs for tapwater, or USEPA VISLs?
ii) Alternate outcomes or actions	- If sampling demonstrates that contaminant concentrations in soil are less than screening levels/criteria for leaching to groundwater, and less than USEPA VISLs, these potential migration pathways can be eliminated in the CSM for this area.		- If sampling demonstrates that human health risks are acceptable, no further action is required. - If sampling demonstrates the presence of a Site-related groundwater contaminant plume, further study may be needed to evaluate alternatives for groundwater restoration.

TABLE 3.2

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- GROUNDWATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	*Groundwater in OU2*		
Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step / *Investigation Item:*	*Investigation of Soil/Fill on Southern Parcels*	*Comparison of Soil to Background*	*Groundwater Investigation (if necessary) (See OU1 Phase 2A/B DQO)*
	- If soil samples collected from the borehole demonstrate that contaminant concentrations in soils are greater than screening levels/criteria, and greater than background reference conditions, groundwater investigative activities may be warranted to delineate the groundwater plume and/or fully characterize risks to human health.		- If sampling demonstrates unacceptable human health risks, further evaluation, risk management and/or remediation would be required.
iii) Type of problem (decision or estimation)[1]	Decision (Action Level)		Decision (Action Level)
iv.a) Decision statement	Determine whether contaminant concentrations in the soil borings are greater than USEPA SSLs, Ohio EPA leach-based soil values, or USEPA VISLs.		Determine whether groundwater in OU2 with Site-related contamination poses an unacceptable ingestion or inhalation risks to human health.
iv.b) Estimation statement & assumptions	--		--

3 ***Identify Information Inputs:***

TABLE 3.2

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- GROUNDWATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	*Groundwater in OU2*		
Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step / *Investigation Item:*	*Investigation of Soil/Fill on Southern Parcels*	*Comparison of Soil to Background*	*Groundwater Investigation (if necessary) (See OU1 Phase 2A/B DQO)*
i) Information types needed	- Soil sample analysis from OU2 - Soil samples will be collected on a random basis (random oriented grid) across OU2. - Soil samples will also be collected at data gap locations or areas of suspected soil contamination.	- Soil sample analysis from background locations	- Existing and newly-collected groundwater data from OU2.
ii) Information sources	- Newly-collected and existing data from OU2	- Newly-collected and existing data from background locations.	- Newly-collected and validated data - Any available previous validated data (e.g., from historic monitoring wells and VAS samples) from OU2.
iii) Basis of Action Level	Action Levels are: - USEPA SSLs -Ohio EPA leach-based soil values		Action levels are: - USEPA MCLs, and RSLs for Tap Water where MCLs are unavailable - USEPA VISLs for groundwater
iv) Appropriate sampling & analysis methods	Methods are described in the Field Sampling Plan (CRA, January 2011) and the Quality Assurance Project Plan (CRA, September 2008).		

TABLE 3.2

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- GROUNDWATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Groundwater in OU2*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Investigation of Soil/Fill on Southern Parcels*	*Comparison of Soil to Background*	*Groundwater Investigation (if necessary) (See OU1 Phase 2A/B DQO)*
4	***Define the Boundaries of the Study:***			
	i) Target population, sample units	- The target population are soils on the Southern Parcels, to be extended to soils elsewhere in OU2 if the extent of contamination above screening levels cannot be delineated in the Southern Parcels alone. The sampling units are individual samples collected from the soil.	- The target population are soils outside of OU1 and the Southern Parcels that are expected to represent background contaminant levels. The sampling units are individual samples collected from the soil.	Target population is groundwater within the Southern Parcels. If a Site-related groundwater plume extends beyond the Southern Parcels, additional sampling to delineate the plume will be necessary. Sampling units are individual groundwater samples collected from monitoring wells.
	ii) Specify spatial boundaries	The spatial boundaries are the limits of Site-related contamination above screening levels. Additional unsaturated soil samples will be collected at depths greater than 15 ft bgs. Boreholes will be advanced up to 5 ft into native material or until refusal, whichever is encountered first.		The spatial boundaries are defined by the extent of Site-related groundwater contamination in OU2.

TABLE 3.2

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- GROUNDWATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	*Groundwater in OU2*		
Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step / *Investigation Item:*	*Investigation of Soil/Fill on Southern Parcels*	*Comparison of Soil to Background*	*Groundwater Investigation (if necessary) (See OU1 Phase 2A/B DQO)*
iii) Specify temporal boundaries	The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on the exposure assumptions of the Action Levels.		- Permanent monitoring wells can be installed at any time based on the results of the soil/fill investigation. - Two sampling events total will be carried out at newly installed monitoring wells, during periods of high (i.e. February - April) or low (i.e., June - September) groundwater elevations. Seasonal groundwater flow fluctuations will be evaluated based on historic Site data, and will be demonstrated by the completion of a Site-wide groundwater elevation monitoring round completed prior to each sampling event.
iv) Identify any other practical constraints	- Practical constraints anticipated for sampling of Southern Parcel soil include the presence of cars on the Jim City Parcels and buildings and equipment on the Ron Barnett Parcels. - Safety issues associated with sampling adjacent to surface water will also be considered for sampling activities on the Quarry Pond Parcels.		
v.a) Scale of inference for decision making	Comparisons to Action Levels and background levels will be carried out on an individual-location basis.		
v.b) Scale of estimates	--		--

TABLE 3.3

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- SOUTHERN PARCELS SOIL GAS INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Soil Gas on Southern Parcels***	
Investigation Phase:	***Phase 1***	***Phase 2***
Investigation Item:	***Investigation of Soil/Fill on Southern Parcels***	***Soil Gas Probe Investigation based on Southern Parcels Soil/Fill investigation (if necessary)***
DQO Step:		
1 *State the Problem*		
i) Problem description	- The fill areas have not been fully characterized, and they may contain materials that can produce elevated concentrations of explosive gases and NMOCs in landfill gas, and VOCs in soil gas. - Businesses operating on Site are located above or immediately adjacent to fill material, in close proximity to the soil gas probe locations where elevated levels of VOCs and explosive gases were detected. - A data gap exists with respect to possible groundwater contamination outside of OU1 that may have concentrations capable of posing a vapor intrusion threat. - A data gap exists with respect to potential soil contamination that may pose a vapor intrusion threat to businesses operating on or near the Southern Parcels.	- If soil and/or fill borehole samples containing Site-related contaminant concentrations with the potential to produce landfill gas/soil vapor are identified, actual soil gas concentrations will be investigated through the installation of soil gas probes in the affected area to assess the present conditions and potential for migration. Analyses will also be performed on samples collected from sub-slab probes installed in OU2 buildings that are at risk for vapor intrusion from Site-related contamination.
ii) Planning team	See note at bottom	

TABLE 3.3

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- SOUTHERN PARCELS SOIL GAS INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Soil Gas on Southern Parcels***	
Investigation Phase:	***Phase 1***	***Phase 2***
Investigation Item:	***Investigation of Soil/Fill on Southern Parcels***	***Soil Gas Probe Investigation based on Southern Parcels Soil/Fill investigation (if necessary)***
DQO Step:		
iii) Conceptual model	- VOCs, such as TCE, may volatilize from groundwater into vadose zone soil gas, which may migrate to indoor air via foundation cracks and utility penetrations in buildings. - Workers or residents in buildings where VOCs are present at concentrations greater than target criteria may be subject to potential risks due to inhalation hazards. -Potential future users of the Site include workers and residents in buildings on areas of the site that are currently vacant.	
iv) General intended use for data	-The collected soil/fill and groundwater data will be used to evaluate the potential for soil/fill contamination to act as a source for landfill gas/soil vapor, and to identify areas with potential landfill gas/soil vapor impacts.	The collected soil gas data will be used for direct comparison to the action levels, and each result will represent a reasonable worst-case maximum potential concentration migrating to indoor air at each structure. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.
v) Resources, constraints, deadlines	An iterative sampling approach may be required to refine estimates based on earlier findings from the OU1 vapor intrusion investigation.	Sufficient resources have been reserved to collect and analyze soil gas from the probes. Sampling may be constrained by access agreements to off-Site parcels or buildings. An iterative sampling approach may be required to refine estimates based on findings from the soil/fill investigation.

TABLE 3.3

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- SOUTHERN PARCELS SOIL GAS INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Soil Gas on Southern Parcels***	
Investigation Phase:	***Phase 1***	***Phase 2***
Investigation Item:	***Investigation of Soil/Fill on Southern Parcels***	***Soil Gas Probe Investigation based on Southern Parcels Soil/Fill investigation (if necessary)***
DQO Step:		
2 ***Goals of the Study:***		
i) Primary study question	Does OU2 soil, fill, or groundwater contain Site-related contaminant concentrations that indicate VOCs or methane in soil gas may pose a threat to human health?	- Do contaminant concentrations in soil vapor pose an unacceptable risk, via the vapor intrusion pathway, to occupants of structures on, or immediately adjacent to the Site? - Are concentrations of combustible gases within a structure greater than the screening criterion of 1 and 10 percent of the LEL (as per the USEPA Region V Vapor Intrusion Guidebook, October 2010), or the regulatory criterion of 25 percent of the LEL (as per OAC Chapter 3745-27-12)? - Taken together, how do the concentrations of contaminants and combustible gases in soil vapor affect future use of the Site? - Does the OU2 soil vapor act as a source of soil gas to the structures studied in the Vapor Intrusion investigation?

TABLE 3.3

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- SOUTHERN PARCELS SOIL GAS INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Soil Gas on Southern Parcels***	
Investigation Phase:	***Phase 1***	***Phase 2***
Investigation Item:	***Investigation of Soil/Fill on Southern Parcels***	***Soil Gas Probe Investigation based on Southern Parcels Soil/Fill investigation (if necessary)***
DQO Step:		
ii) Alternate outcomes or actions	- If soil/fill borehole samples and/or groundwater samples contain VOCs at concentrations less than the action levels, and methane below 1 and 10 percent of the LEL, no further action is necessary. - If VOCs and/or methane are present at concentrations greater than the action levels and 1 and 10 percent of the LEL, then further evaluation is required.	- If soil gas samples contain VOCs at concentrations less than the action levels, and methane below 1 and 10 percent of the LEL, no further action is necessary. - If VOCs and/or methane are present at concentrations greater than the action levels and 1 and 10 percent of the LEL, then further evaluation is required.
iii) Type of problem (decision or estimation)[(2)]	Decision (Action Level)	Decision (Action Level)
iv.a) Decision statement	Determine whether VOCs are present in OU2 soil/fill material and groundwater levels posing potential risk to occupants of on-Site structures specified in the Vapor Intrusion Investigation Work Plan (CRA, December 17, 2010).[(1)]	Determine whether VOCs are present in the OU2 areas at levels posing potential risk to potential occupants of off-Site structures identified as being at risk from volatilization of groundwater into indoor air based on Phase 2 of the Groundwater DQO investigation and Southern Parcels soil investigation.
iv.b) Estimation statement & assumptions	--	--

TABLE 3.3

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- SOUTHERN PARCELS SOIL GAS INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Soil Gas on Southern Parcels***	
Investigation Phase:	***Phase 1***	***Phase 2***
Investigation Item:	***Investigation of Soil/Fill on Southern Parcels***	***Soil Gas Probe Investigation based on Southern Parcels Soil/Fill investigation (if necessary)***
DQO Step:		
3 ***Identify Information Inputs:***		
i) Information types needed	- Analytical data from soil boreholes installed within the soil and fill material, and groundwater samples.	- This would be a new data collection effort, with analyses performed on samples collected from soil gas probes installed within the soil and/or fill material. Analyses will also be performed on samples collected from sub-slab probes installed in OU2 buildings at risk for Site-related vapor intrusion.
ii) Information sources	- New data from the OU2 soil investigation will form the basis of assessment.	- New data from the OU2 soil vapor/landfill gas investigation will form the basis of assessment.
iii) Basis of Action Level	Action Levels are: - Ohio Department of Health (ODH) Industrial Action Levels -USEPA Vapor intrusion screening levels (VISLs: groundwater, indoor air, and sub-slab air levels calculated from USEPA RSLs for air inhalation).	
iv) Appropriate sampling & analysis methods	Methods are described in the Field Sampling Plan (CRA, January 2011) and the Quality Assurance Project Plan (CRA, September 2008). During the soil borehole investigation, Methane values will be recorded in the field using a Landtec GEM-2000, or equivalent equipped with a charcoal carbon filter to differentiate methane from VOCs.	Methods are described in the Vapor Intrusion Investigation Work Plan (USEPA, November 2011) and Field Sampling Plan (CRA, January 2011). VOC and naphthalene analysis is via EPA method TO-15. During soil gas probe installation, methane values will be recorded in the field using a Landtec GEM-2000, or equivalent.

TABLE 3.3

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- SOUTHERN PARCELS SOIL GAS INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Soil Gas on Southern Parcels***	
Investigation Phase:	***Phase 1***	***Phase 2***
Investigation Item:	***Investigation of Soil/Fill on Southern Parcels***	***Soil Gas Probe Investigation based on Southern Parcels Soil/Fill investigation (if necessary)***
DQO Step:		
4 ***Define the Boundaries of the Study:***		
i) Target population, sample units	The target population is surficial and subsurface soils and fill, and groundwater on the Southern Parcels (and beyond the Southern Parcels, if necessary). The sampling units are individual samples collected from the soil, divided into background reference, and exposure units for assessment of risks to human receptors.	Target population is soil gas within the soils and/or the fill area where concentrations of VOCs in groundwater are greater than Phase 1 action levels, and therefore, represent a vapor intrusion risk.
ii) Specify spatial boundaries	Spatial boundaries are initially the limits of the Southern Parcels within the OU2 boundary, which included the fill area and occupied buildings.	Spatial boundaries are (initially) the limits of the Southern Parcels within the OU2 boundary, which includes the fill area and occupied buildings, where concentrations of contaminants in groundwater are greater than Phase 1 Action Levels. If soil vapor/landfill gas migration beyond the Southern Parcels is indicated by either Phase 1 or Phase 2 sampling, additional soil probes outside of the Southern Parcels will be necessary.
iii) Specify temporal boundaries	The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on exposure assumptions used in the derivation of the Action Levels.	

TABLE 3.3

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -- SOUTHERN PARCELS SOIL GAS INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Soil Gas on Southern Parcels***	
Investigation Phase:	***Phase 1***	***Phase 2***
Investigation Item:	***Investigation of Soil/Fill on Southern Parcels***	***Soil Gas Probe Investigation based on Southern Parcels Soil/Fill investigation (if necessary)***
DQO Step:		
iv) Identify any other practical constraints	- Practical constraints anticipated for sampling of Southern Parcel soil include the presence of cars on the Jim City Parcels and buildings and equipment on the Ron Barnett Parcels. - Safety issues associated with sampling adjacent to surface water will also be considered for sampling activities on the Quarry Pond Parcels.	- Practical constraints anticipated for sampling of Southern Parcel soil gas include the presence of cars on the Jim City Parcels and buildings and equipment on the Ron Barnett Parcels. - Safety issues associated with sampling adjacent to surface water will also be considered for sampling activities on the Quarry Pond Parcels. - Depending on soil borehole sample analytical results, the soil gas probe may not be able to be screened in intervals that delineate the specific stratigraphic layer(s) contributing to combustible gas concentrations.
v.a) Scale of inference for decision making	The initial decision unit is the soil, fill, and groundwater within the Southern Parcels. The decision unit may be expanded to soil, fill, and groundwater beyond the Southern Parcels, if necessary.	
v.b) Scale of estimates	--	

TABLE 3.4

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS --SURFACE WATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Surface Water***		
Investigation Phase:	***Phase 1A***	***Phase 1B***	***Phase 1C***
DQO Investigation Item:	***Comparison to Ambient Water Quality Criteria***	***Comparison to Upstream Conditions***	***Quarry Pond Surface Water Sampling***
Step:			
1 *State the Problem*			
i) Problem description	Surface water samples have not previously been obtained from the Great Miami River (GMR) as it flows past by the Site. It is unknown whether and to what extent the Site has any measurable impact on water quality in the GMR. Intermittent drainage pathways have not been identified at the Site to date.		Limited historic surface water samples have been obtained from the Quarry Pond (QP). Historic QP surface water samples did not contain any VOCs. No other parameters were assessed. The impact of Site contaminants on the QP is not known. Intermittent drainage pathways have not been identified at the Site to date.
ii) Planning team	See note at bottom		
iii) Conceptual model	- Shallow groundwater from the Site typically flows towards the west and/or north towards the GMR, which could carry contaminants into its surface waters. - Erosion of surface soils from the Site could also carry Site-related contaminants to the GMR, which is at a lower elevation, via overland surface flow. - During flood events, any potential GMR contaminants originating off-Site could affect the Site. - Greater contaminant concentrations may be present at groundwater discharge points into the GMR and this will be investigated through sampling completed along transects.		- Shallow and deep groundwater from the Site typically flows towards the west towards the QP, which could carry contaminants into the QP. - During flood events, off-Site contaminants could be deposited in the QP. - Erosion of surface soils from the Site could also carry Site-related

TABLE 3.4

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS --SURFACE WATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Surface Water***		
Investigation Phase:	***Phase 1A***	***Phase 1B***	***Phase 1C***
DQO Investigation Item:	***Comparison to Ambient Water Quality Criteria***	***Comparison to Upstream Conditions***	***Quarry Pond Surface Water Sampling***
Step:			
	- Persons can come into contact with river water when using the river for recreation. - Wildlife and aquatic organisms are in contact with and ingest GMR water.		contaminants to the QP, which is at a lower elevation, via overland surface flow. - Persons can come into contact with pond water when using the pond area for recreation. - Wildlife and aquatic organisms are in contact with and ingest QP water.
iv) General intended use for data	The data collected will be compared against ambient water quality criteria to assess if human or aquatic ecosystem health is potentially impaired. In addition, CRA will visually inspect the bank of the GMR adjacent to the Site for evidence of discharges potentially related to the Site (i.e., erosion rills, iron oxidation, turbidity, etc.). Sample locations will be matched up with Site discharges, if observed. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	The data collected from sampling locations along the Site's boundaries will be compared to upstream (background) conditions, to determine if there are any measurable inputs of contaminants from the Site. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	The data collected will be compared against ambient water quality criteria to assess if human health or aquatic ecosystem health is potentially impaired. In addition, CRA will visually inspect the Quarry Pond embankments for evidence of discharges (i.e., erosion rills, iron oxidation, turbidity, etc.). Sample locations will be matched up with Site discharges, if observed. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.
v) Resources, constraints,	Surface water quality and storm water runoff may be influenced by rainfall events, water temperature and other seasonal effects, which requires monitoring at different times of the year and under different conditions. Surface water sampling may		

TABLE 3.4

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS --SURFACE WATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Surface Water***		
Investigation Phase:	***Phase 1A***	***Phase 1B***	***Phase 1C***
DQO Investigation Item:	***Comparison to Ambient Water Quality Criteria***	***Comparison to Upstream Conditions***	***Quarry Pond Surface Water Sampling***
Step:			
deadlines	not be possible during high flows. Surface water and storm water runoff sampling may not be possible during ice-cover conditions. Surface water sampling will be completed during low flow periods where contaminants entering via groundwater would present the greatest risks. Storm water runoff sampling will be completed following rainfall events should a significant runoff pathway be identified. Intermittent drainage pathways have not been identified at the Site to date.		
2 ***Goals of the Study:***			
i) Primary study question	Does surface water quality fail to meet ambient water quality criteria for protection of human health (direct contact and ingestion) and aquatic organisms?	Does the Site add contaminants to surface water in the GMR as it flows past the Site? If so, to what extent?	Does surface water quality fail to meet ambient water quality criteria for protection of aquatic organisms and human health (trespassers)?
ii) Alternate outcomes or actions	- If sampling demonstrates that ambient water quality criteria are met, no further monitoring is planned.	- If sampling demonstrates conditions adjacent to the Site are less than or equal to those found upstream, no further monitoring is planned.	- If sampling demonstrates that ambient water quality criteria are met, no further monitoring is planned.

TABLE 3.4

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS --SURFACE WATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Surface Water***		
Investigation Phase:	***Phase 1A***	***Phase 1B***	***Phase 1C***
DQO Investigation Item:	***Comparison to Ambient Water Quality Criteria***	***Comparison to Upstream Conditions***	***Quarry Pond Surface Water Sampling***
Step:			
	- If sampling demonstrates that criteria are not met, comparison with background conditions is warranted.	- If sampling demonstrates conditions are greater than upstream, and that contaminant concentrations are greater than Action Level criteria (see Phase 1A to left), further evaluation and/or control measures may be warranted.	- If sampling demonstrates that criteria are not met, further evaluation and/or control measures may be warranted.
iii) Type of problem (decision or estimation)[1]	Decision (Action Level)		
iv.a) Decision statement	Determine whether any contaminants are present at concentration greater than ambient water quality criteria in the GMR as it flows past the Site.	Determine whether any measurable input of contaminants from the Site, relative to upstream conditions, occurs in the GMR as it flows past the Site.	Determine whether any contaminants are greater than ambient water quality criteria in the Quarry Pond.
iv.b) Estimation statement & assumptions	--		

TABLE 3.4

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS --SURFACE WATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	***Surface Water***		
	Investigation Phase:	***Phase 1A***	***Phase 1B***	***Phase 1C***
DQO Step:	***Investigation Item:***	***Comparison to Ambient Water Quality Criteria***	***Comparison to Upstream Conditions***	***Quarry Pond Surface Water Sampling***
3	***Identify Information Inputs:***			
	i) Information types needed	Surface water sample analysis is required to assess conditions in the GMR as it flows past the Site.		Surface water samples are required to assess conditions in the Quarry Pond.
	ii) Information sources	New data from the investigation will form the basis of assessment.		New data from the investigation will form the basis of assessment.
	iii) Basis of Action Level	Action Levels are: - Ambient water quality criteria (Ohio drainage basin) - Ohio EPA Aquatic Life and Human Health Tier 1 and II Values - USEPA RSL (tapwater)	The selected Action Level is a Background Threshold Value (e.g., 95th percentile) based on upstream conditions.	Action Levels are: - Ambient water quality criteria (Ohio drainage basin) - Ohio EPA Aquatic Life and Human Health Tier 1 and II Values - USEPA RSL (tapwater)
	iv) Appropriate sampling & analysis methods	Methods are described in the Field Sampling Plan (CRA, January 2011), CRA's Standard Operating Procedures, and the Quality Assurance Project Plan (CRA, September 2008). VOC samples will be collected using a peristaltic pump to minimize sample aeration while allowing for sample preservation. All other parameters will be sampled by directly dipping sample containers in the surface water body (GMR or Quarry Pond).		

TABLE 3.4

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS --SURFACE WATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Surface Water***		
Investigation Phase:	***Phase 1A***	***Phase 1B***	***Phase 1C***
DQO Investigation Item:	***Comparison to Ambient Water Quality Criteria***	***Comparison to Upstream Conditions***	***Quarry Pond Surface Water Sampling***
Step:			
4 ***Define the Boundaries of the Study:***			
i) Target population, sample units	The target population is all water flowing in the GMR as it flows past the Site. The sampling units are individual grab samples collected from the GMR, divided into upstream and near-Site reaches.		The target population is all water in the Quarry Pond. The sampling units are individual grab samples collected from the Quarry Pond.
ii) Specify spatial boundaries	In order to ensure that any potential contributions from nearby facilities (e.g. former GM-Delphi plant) are accounted for, CRA proposes to specify upstream sampling locations as those occurring to the east of Dryden Road, on the near-Site side of any dams. Near-Site sampling locations are those occurring to the west of Dryden Road (i.e., as surface water flows past the Site), and these will be located on the near (south/east) shore of the GMR. Due to the industrial activity in the area, chemical use and contaminants in the area may have been used by more than one facility. In order to establish whether contamination is or has resulted from Site activities, the background locations have been set close to the Site.		Spatial boundaries are the boundaries of Quarry Pond surface water.
iii) Specify temporal boundaries	The temporal boundaries are defined by the duration of monitoring, which will occur over two sampling rounds		The temporal boundaries are defined by the duration of monitoring, which will occur over two sampling rounds.

TABLE 3.4

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS --SURFACE WATER INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***Surface Water***		
Investigation Phase:	***Phase 1A***	***Phase 1B***	***Phase 1C***
DQO Investigation Item:	***Comparison to Ambient Water Quality Criteria***	***Comparison to Upstream Conditions***	***Quarry Pond Surface Water Sampling***
Step:			
iv) Identify any other practical constraints	Sampling may be postponed due to flooding or iced conditions in the GMR. The outfall of the City of Dayton Waste Water Treatment Plant across the river GMR, just south of the downstream limit of the Site, may substantially impact downstream water quality, making any subsequent Site effects difficult to discern. If any dams/weirs are encountered, samples will be collected from the side of the dam closest to the Site (i.e., downstream of any upstream dams, and upstream of any downstream dams). Dilution of contaminants is likely towards the center and far bank of the GMR, and increases with distance downstream of the Site.		Sampling may be postponed due to flooding or iced conditions in the Quarry Pond.
v.a) Scale of inference for decision making	Comparisons to Action Levels will be carried out on an individual-location basis. For the RA, the 95% UCL of the mean concentration in an exposure unit will be used. A single exposure unit will be applied for the GMR.	Comparisons to upstream conditions will be carried out on an individual-location basis.	Comparisons to Action Levels will be carried out on an individual-location basis.
v.b) Scale of estimates	--		

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
1 ***State the Problem*** **i) Problem description**	It is unknown whether the Site has a measurable impact on sediment quality in the GMR. Previous Great Miami River (GMR) sampling found PAH concentrations and some pesticide concentrations greater than conservative ecological screening levels, and arsenic and PAHs concentrations greater than USEPA residential soil RSLs. However, these common contaminants were also found, in similar concentrations, in upstream samples taken by OEPA (1995) in routine sampling of the GMR. Therefore, further data are needed to assess whether downstream concentrations are greater than upstream concentrations and, if so, whether downstream samples pose potential risks to ecological and human receptors.		If contaminant concentrations are greater than sediment benchmarks protective of aquatic life (Phase 1A-GMR), significantly greater than upstream concentrations (Phase 1B-GMR), and are potentially Site-related, a benthic community survey will be completed in accordance with USEPA Rapid Bioassessment Protocols (EPA	Previous QP sediment sampling found PAH concentrations greater than conservative Ecological Screening Levels (ESLs), and arsenic and PAH concentrations greater than USEPA industrial soil RSLs. Further data are needed to assess whether QP sediments pose potential risks to ecological and human health risks.

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
			841-B-99-002) or OEPA assessment methods.	
ii) Planning team	See note at bottom			
iii) Conceptual model	- Shallow groundwater from the Site typically flows towards the west and/or north towards the GMR, which could carry contaminants into its sediment. - Contaminants in sediment can be toxic to benthic organisms. -Fish may uptake contaminants in sediments and can be eaten by other fish, birds, and humans.			- Shallow and deep groundwater from the Site typically flows towards the west towards the QP, which could carry contaminants into its sediment. - PAH concentrations greater than conservative ESLs, and arsenic and PAH concentrations greater than USEPA industrial soil RSLs, have been found in QP sediment.
	- Erosion of surface soils from the Site could also carry Site-related contaminants to the GMR and/or the QP, which is at a lower elevation, via overland surface flow. - During flood events, off-site contaminants could be deposited on-site. -Contaminants could be toxic to benthic organisms and impact other species in the aquatic ecosystem. - Persons use the GMR and QP for recreation, mainly in boats; however, they could come into dermal contact with the sediment. - Persons consume the fish caught in the QP.			
iv) General intended use for data	The sediment data collected will be compared against ESLs to assess whether aquatic ecosystem health is potentially	The data collected from sampling locations adjacent to the landfill's	The data collected will be used to detect aquatic life	The data collected will be compared against ESLs to assess if QP aquatic ecosystem health is potentially

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
	impaired. The sediment data will be used to determine if bioaccumulative contaminants are present and to model edible fish concentrations for the HHRA. Additionally, CRA will compare the data to USEPA Industrial Soil criteria as a screening evaluation to identify potential human health risks. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	boundaries will be compared to upstream conditions, to determine if there are any measurable inputs of contaminants from the Site. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	impairments and assess their relative severity. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	impaired. Additionally, CRA will compare the data to USEPA Industrial Soil criteria to identify any potential human health risks. The data collected will ultimately be used in the Baseline Risk Assessment for OU2. The data will be used to determine if there is a need to cap or otherwise remediate the sediments in the QP. The sediment data will be used to determine if bioaccumulative contaminants are present and to model edible fish concentrations for the HHRA.
v) Resources, constraints, deadlines	Sufficient resources will be committed to sample sediments under the OU2 RI/FS work plan.			Sufficient resources will be committed to sample sediments under the OU2 RI/FS work plan.

2 ***<u>Goals of the Study:</u>***

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
i) Primary study question	Does sediment in the GMR and/or QP contain Site-related contaminants at concentrations greater than ESLs and/or Industrial soil criteria for protection of human health?	Does the Site add significantly to contaminants in sediments in the GMR adjacent to and down-gradient of the Site?	Are benthic organisms at risk due to sediment concentrations caused by Site-related contamination?	Do sediments in the QP contain contaminant concentrations greater than ESLs and/or Industrial soil criteria for protection of human health?
ii) Alternate outcomes or actions	- If sampling demonstrates that contaminants in sediment are less than screening levels/criteria, no further sampling is planned.	- If sampling demonstrates conditions adjacent to the Site are less than or equal to those found upstream, no further sampling is planned.	- If the community survey demonstrates that aquatic life in the GMR is not affected by Site-related contaminants, no further sampling is planned.	- If sampling demonstrates that contaminants in sediment are less than screening levels/criteria, no further sampling is planned.

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
	- If sampling demonstrates that contaminants are present at concentrations greater than screening levels/criteria, and that contaminant concentrations are greater than upstream conditions (see Phase 1B-GMR to right), further evaluation and/or remedial measures may be warranted.	- If sampling demonstrates contaminant concentrations are greater than those upstream, and that contaminant concentrations are greater than Action Level criteria (see Phase 1A-GMR to left), further evaluation and/or remediation may be warranted. Further evaluation may consist of an ecological study (i.e., benthic community study; see Phase 2-GMR to the right).	- If the community survey demonstrates that Site-related contaminants impair aquatic life in the GMR and/or the QP, further evaluation and/or remedial measures may be warranted.	- If sampling demonstrates that contaminants are present at concentrations greater than screening levels/criteria, further evaluation and/or remedial measures may be warranted (i.e., acute bioassays on representative QP sediments).
iii) Type of problem (decision or estimation)[1]	Decision (Action Level)	Decision (Action Level)	Decision (Action Level)	Decision (Action Level)

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
iv.a) Decision statement	Determine whether any contaminant concentrations are greater than Industrial Soil RSLs, ESLs, or if the sum of Equilibrium Partitioning Sediment Benchmark Toxic Units ($\sum ESBTU_{FCV}$) > 1, or if the organic carbon normalized excess Simultaneously Extracted Metal ($\sum SEM$) > 150 $\mu mol/g_{oc}$ in the GMR sediments near the Site, or if the concentrations of arsenic are greater than its Probable Effects Concentration (PEC).	Determine whether any measurable input of contaminants from the Site, relative to upstream conditions, occurs in the GMR sediments near the Site.	Determine whether any measureable impact to aquatic life in the GMR occurs due to contaminants from the Site, relative to upstream conditions	Determine whether any contaminant concentrations are greater than ESLs, USEPA Industrial soil criteria, Sum of Equilibrium Partitioning Sediment Benchmark Toxic Units ($\sum ESBTU_{FCV}$) > 1, or organic carbon normalized excess Simultaneously Extracted Metal ($\sum SEM$) > 150 µmol/goc in the on-Site pond sediments near the Site.
iv.b) Estimation statement & assumptions	--	--	--	--

3 ***<u>Identify Information Inputs:</u>***

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
i) Information types needed	Sediment sample analysis is required to assess conditions in the GMR near the Site.		A Benthic community survey may be required to assess the impact to aquatic life in the GMR near the Site.	Sediment sample analysis is required to assess conditions in the QP.
ii) Information sources	- New data from the investigation will form the basis of assessment. The results from three previous sediment samples collected from the GMR and QP, as well as results of soil samples will be considered during interpretation of the data obtained. - Sediment samples will be analyzed for PAHs, divalent metals (copper, cadmium, mercury, nickel, lead and zinc) using AVS/SEM analyses, and total metals (including arsenic).		- New data from the community survey will form the basis of assessment. The results from Phase 1A-GMR and 1B-GMR(see left) will be considered during interpretation of the data obtained.	- New data from the investigation will form the basis of assessment. The results from previous sediment samples collected from the QP, as well as results of soil samples will be considered during interpretation of the data obtained. Sediment samples will be analyzed for PAHs, divalent metals (copper, cadmium, mercury, nickel, lead and zinc) using AVS/SEM analyses, and total metals (including arsenic).

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
iii) Basis of action level	Action levels are: - Industrial Soil RSLs - Final Chronic Values (FCV) for PAHs, $\sum ESBTU_{FCV} < 1$ - Excess SEM < 150 µmol/g_{oc} - PEC values for arsenic	The selected action level is a background threshold value (e.g., 95th percentile) based on upstream conditions.	Population and community level response will be evaluated.	Action levels are: - Industrial Soil RSLs - Final Chronic Values (FCV) for PAHs, $\sum ESBTU_{FCV} < 1$ - Excess SEM < 150 µmol/g_{oc} - PEC values for arsenic
iv) Appropriate sampling & analysis methods	Methods are described in the Field Sampling Plan (CRA, January 20110, CRA's Standard Operating Procedures, and the Quality Assurance Project Plan (CRA, September 2008). Organic carbon in sediments will be analyzed using the Lloyd Kahn or Walkley-Black methods. PAH results will be evaluated against $\sum ESBTU_{FCV}$, as detailed in USEPA, 2003. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. EPA-600-R-02-013. Divalent metals results will be evaluated against the organic carbon normalized excess ∑SEM.		A benthic community survey will be completed in accordance with USEPA Rapid Bioassessment Protocols (EPA 841-B-99-002) or OEPA assessment methods (OEPA, 1989. Biological criteria for the protection of aquatic life), depending on the habitat.	Methods are described in the Field Sampling Plan, CRA's Standard Operating Procedures, and the Quality Assurance Project Plan. Organic carbon in sediments will be analyzed using the Lloyd Kahn or Walkley-Black methods. PAH results will be evaluated against $\sum ESBTU_{FCV}$, as detailed in USEPA, 2003. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. EPA-600-R-02-013. Metals results will be evaluated against the organic carbon normalized excess ∑SEM.

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
4 ***Define the Boundaries of the Study:***				
i) Target population, sample units	The target population are the upper (available) layer of sediments (0 - 6 inches below sediment/water interface), and subsurface sediment (greater than 6 inches below sediment/water interface) in the GMR adjacent to the Site. The sampling units are individual grab samples collected from the near-Site reaches of the GMR. Depositional areas will be targeted for sediment sample locations. Sediment samples will also be collected in depositional locations immediately downstream of any point discharges identified between the upstream dam and the southern Site boundary.	The target population is the upper (available) layer of sediments (0 - 6 inches below sediment/water interface) and subsurface sediment (greater than 6 inches below sediment/water interface) in the upstream sampling locations. The sampling units are individual grab samples collected from the upstream reaches of the GMR. Depositional areas will be targeted for sediment sample locations. Sediment samples will be	The target population is the aquatic life in the GMR in the vicinity of the Site. The sampling units are composite samples collected from the GMR, divided by upstream, near-Site, and downstream reaches. Sampling efforts may be concentrated in near-shore habitats, where most species will be collected.	The target populations are the upper (available) layer of sediments (0 - 6 inches below sediment/water interface), and subsurface sediment (greater than 6 inches below sediment/water interface) in the QP. The sampling units are individual grab samples collected from the QP. Depositional areas and areas where visual evidence of potential leachate migration is observed will be targeted for sediment sample locations.

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
		collected in depositional locations immediately downstream of any point discharges identified between the upstream dam and east of the Dryden Road bridge.		

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
ii) Specify spatial boundaries	Near-Site sampling locations are those occurring to the west of the Dryden Road bridge (i.e., as surface water passes the Site), and these will be located on the near (south and east) shore of the GMR. Sediment samples will be collected from the top of the sediment layer (i.e., 0 - 6 inches below the sediment/water interface), and subsurface sediments (i.e., greater than 6 inches below the sediment/water interface) in the GMR.	Upstream sampling locations are to the east of the Dryden Road bridge. Sediment samples will be collected from the top of the sediment layer (i.e., 0 - 6 inches below the sediment/water interface), and subsurface sediments (i.e., greater than 6 inches below the sediment/water interface) in the GMR.	Upstream sampling locations are to the east of the Dryden Road bridge. Near-Site sampling locations are those occurring to the west of the Dryden Road bridge (i.e., as surface water passes the Site), and these will be located on the near (south and east) shore of the GMR. Downstream sampling locations are to the south of the City of Dayton Wastewater Treatment Plant.	Sediment samples will be collected from the top of the sediment layer (i.e., 0 - 6 inches below the sediment/water interface), and subsurface sediments (i.e., greater than 6 inches below the sediment/water interface) in the QP.

TABLE 3.5

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS -SEDIMENT INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Medium:	***GMR Sediment***			***Quarry Pond (QP) Sediments***
Investigation Phase:	***Phase 1A – GMR***	***Phase 1B – GMR***	***Phase 2 - GMR***	***Phase 1A - QP***
Investigation Item:	***Comparison to Human Health and Ecological Screening Values***	***Comparison to Upstream Conditions***	***Benthic Sampling***	***Comparison to Human Health and Ecological Screening Value***
DQO Step:				
iii) Specify temporal boundaries	The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on exposure assumptions forming the basis for the Action Levels.			The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on exposure assumptions forming the basis for the Action Levels.
iv) Identify any other practical constraints	Sampling may be postponed due to flooding or iced conditions in the GMR. If any dams/weirs are encountered, samples will be collected from the side of the dam closest to the Site (i.e., downstream of any upstream dams, and upstream of any downstream dams).			Sampling may be postponed due to flooding or iced conditions of the QP.
v.a) Scale of inference for decision making	Comparisons to Action Levels will be carried out on an individual-location basis.	Comparisons to upstream conditions will be carried out on an individual-location basis.	Criteria in biological indices will be used to evaluate the impacts on aquatic life.	Comparisons to Action Levels will be carried out on an individual-location basis.
v.b) Scale of estimates	--	--	--	--

TABLE 3.6

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - FLOODPLAIN SOIL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Floodplain Soil*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Site-Specific Risk Values*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
1	***State the Problem***			
i) Problem description		Potential risk to industrial workers from exposure to on-Site soils has been identified in a human health risk assessment. It is not known if potential soil contamination in the floodplain (a) poses risks to human receptors due to recreational use, and (b) is a result of migration from the Site. Analysis of floodplain soil samples is required to make these assessments. It is also unknown whether floodplain soils pose ecological risks either in-situ or if soils are eroded and enter the Great Miami River (GMR).		If, during Phase 1, floodplain soil containing Site-related contaminants at concentrations greater than screening values and background reference conditions is identified, characterization of conditions within the exposure unit (i.e., nature and extent of contamination) is required for risk assessment purposes.
ii) Planning team		See note at bottom		
iii) Conceptual model		- Cover material at the Site is limited or non-existent, which could lead to erosional run-off of contaminants towards the floodplain of the GMR. - In addition, movement of contaminants in dust particles carried by wind may result in deposition of contaminants off-Site. - Soil contaminants are assumed to have been deposited by erosion and mixed by subsequent flooding events. -The floodplain can serve as habitat for small mammals and birds.		

TABLE 3.6

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - FLOODPLAIN SOIL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Floodplain Soil*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Site-Specific Risk Values*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
iv) General intended use for data	The data collected will be screened against health-based and ecological risk values. The goal of the investigation is to identify risks associated with surficial soil in the floodplain and determine the magnitude and extent of contamination from Site-related contaminants. The goal is not to identify individual areas of contamination.	The data collected from sampling locations along the Site's boundaries will be compared to upstream floodplain soil conditions, to determine if there are any measurable inputs of contaminants from the Site and determine the magnitude and extent of contamination from Site-related contaminants. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	The collected data will be used to determine the magnitude and extent of contamination from Site-related contaminants, and generate human health and/or ecological exposure estimates for a risk assessment. The data collected will ultimately be used in the Baseline Risk Assessment for OU2.	
v) Resources, constraints, deadlines	Sufficient resources will be committed to sample off-Site soil under the OU2 RI/FS work plan. Sampling may be postponed due to flooding, and could be constrained due to access agreements in off-Site areas.			

TABLE 3.6

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - FLOODPLAIN SOIL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Floodplain Soil*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Site-Specific Risk Values*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
2	***Goals of the Study:***			
i) Primary study question		Do near-Site floodplain soils contain Site-related contaminants at concentrations that pose a potential risk to receptors, based on the use of screening criteria, i.e., residential soil RSLs, and/or Site-specific risk-based values? If so, what are the risks?	Does the Site add contaminants to soil in the floodplain of the GMR near the Site?	What are the risks from floodplain soils contaminated by Site-related sources?
ii) Alternate outcomes or actions		- If sampling demonstrates that contaminants in soil are less than risk-based screening levels/criteria, no further sampling is planned. - If sampling demonstrates that contaminant concentrations are greater than screening levels/criteria, and greater than background reference conditions (see Phase 1B to right), further evaluation and/or remedial measures may be warranted.	- If sampling demonstrates conditions adjacent to the Site are not greater than those found in background reference soils, no furthersampling is planned. - If sampling demonstrates conditions are greater than background, and that contaminant concentrations are greater than Action Level criteria (see Phase 1A to left), further evaluation and/or remediation may be warranted.	- If sampling demonstrates that health risks are acceptable, no further action is required. - If sampling demonstrates unacceptable risks, further evaluation, risk management and/or remediation would be required.

TABLE 3.6

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - FLOODPLAIN SOIL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Floodplain Soil*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Site-Specific Risk Values*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
iii) Type of problem (decision or estimation)[1]	Decision (Action Level)	Decision (Action Level)	Estimation
iv.a) Decision statement	Determine whether any contaminant concentrations are greater than USEPA residential soil RSLs or site-specific risk values in off-Site floodplain soil near the Site.	Determine whether any measurable input of contaminants from the Site, relative to background reference conditions, occurs in near-Site floodplain soil near the Site.	--
iv.b) Estimation statement & assumptions	--	--	The parameter of interest is 95% UCL of the mean (for estimating inhalation, dermal exposure, and ingestion risks, etc.) of soil contaminant concentrations within an identified off-Site exposure area. A 5-acre exposure area will be applied.

TABLE 3.6

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - FLOODPLAIN SOIL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	*Medium:*	*Floodplain Soil*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
	Investigation Item:	*Comparison to Site-Specific Risk Values*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
3	***Identify Information Inputs:***			
i) Information types needed		- Soil sample analysis is required to assess conditions in the floodplain of the GMR near the Site. - Soil samples will be collected at locations adjacent to (i.e., downgradient of) known on-Site issues, and also biased toward erosional areas. -Background soil contaminant concentrations (from Table 3.1)		- This would be a supplemental data collection effort, with analyses performed on soil samples obtained to fill in any data gaps across the exposure area.
ii) Information sources		- New data from the investigation will form the basis of assessment. The results from three previous sediment samples collected from the GMR will be considered during interpretation of the data obtained.		- New data from the investigation will form the basis of assessment. Available previous validated data (e.g., from Phase 1), within the exposure area would also be used.
iii) Basis of Action Level		Action Levels are: - USEPA Residential soil RSLs -USEPA ESLs	The selected Action Level is a Background Threshold Value (e.g., 95th percentile) based on background reference conditions.	--
iv) Appropriate sampling & analysis methods		Methods are described in the Field Sampling Plan (CRA, January 2011) and the Quality Assurance Project Plan (CRA, September 2008).		

TABLE 3.6

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - FLOODPLAIN SOIL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

DQO Step	*Medium:*	*Floodplain Soil*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
	Investigation Item:	*Comparison to Site-Specific Risk Values*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
4	***Define the Boundaries of the Study:***			
	i) Target population, sample units	The target population is surficial soil on the floodplain of the GMR near the Site; subsurface soils will be collected if necessary. CRA has defined the exposure unit of the floodplain to be the bike path/recreational trail. The sampling units are individual samples collected from surface soil located between the Site embankment and the bike path.	The sampling units are individual samples collected from surface soil from background reference sampling locations; subsurface soils will be collected if necessary. Background reference sampling locations will be identified in areas outside a reasonable zone of potential influence (via surface runoff or substantial airborne dust deposition) for the Site.	Target population is surficial, and subsurface if necessary, floodplain soils comprising the exposure unit for assessment of exposure risks for human receptors.
	ii) Specify spatial boundaries	The spatial boundaries of the floodplain soil sampling locations are the floodplain soil of the GMR, located between the Site embankment and the bike path/recreational trail.	Distance from the Site and prevailing wind directions will be considered in making this determination.	The spatial boundaries are the limits of the surficial soils in the identified off-Site exposure area (based on Phase 1 findings).
	iii) Specify temporal boundaries	The temporal boundaries are indefinite, assuming continued exposure at levels found during sampling. The practical temporal limits are based on exposure assumptions of the Action Levels.		

TABLE 3.6

SUMMARY OF DATA QUALITY OBJECTIVES (DQO) PROCESS - FLOODPLAIN SOIL INVESTIGATION
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

	Medium:	*Floodplain Soil*		
	Investigation Phase:	*Phase 1A*	*Phase 1B*	*Phase 2*
DQO Step	*Investigation Item:*	*Comparison to Site-Specific Risk Values*	*Comparison to Background Reference Conditions*	*Additional sampling (if necessary) to develop risk assessment exposure estimates*
iv) Identify any other practical constraints	Due to the presence of a high pressure gas line in the floodplain, soil samples will be hand-dug. If different surficial soil subtrates are encountered (e.g., silt vs. sand vs. clay), these differences may require additional sampling (e.g., further reference samples) to appropriately evaluate potential Site-related impacts. Off-Site sampling may be restricted by permission of property owners, e.g. for background locations.			Further practical constraints are not anticipated for sampling of floodplain soils near to the Site.
v.a) Scale of inference for decision making	Comparisons to Action Levels will be carried out on an individual-location basis.		Comparisons to background reference conditions will be carried out on an individual-location basis.	--
v.b) Scale of estimates	--		--	The scale of the exposure estimate is to be identified in a Site-specific risk assessment.

APPENDIX A

OU2 PARCELS GROUNDWATER ANALYTICAL RESULTS

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*
Sample ID:			*GW-38443-120108-DD-144*	*GW-38443-120208-DD-145*	*GW-38443-120208-DD-146*	*GW-38443-120208-DD-147*	*GW-38443-120208-DD-148*	*GW-38443-120208-DD-149*	*GW-38443-120208-DD-150*	*GW-38443-120208-DD-151*
Sample Date:			*12/1/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*
Sample Depth:			*12-17 ft BGS*	*17-22 ft BGS*	*22-27 ft BGS*	*27-32 ft BGS*	*32-37 ft BGS*	*37-42 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*
	USEPA Regional Screening Levels [1]									
Parameter	*MCL a*	*TapWater b*								
Volatiles										
1,1,1-Trichloroethane	0.2	7.5	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005	0.00024	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	-	0.0024	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.007	0.26	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.6	0.28	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	0.005	0.00015	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005	0.00038	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	-	-	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	-	0.034	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Acetone	-	12	0.05 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ
Benzene	0.005	0.00039	0.005 U	0.001 U	0.001 U	0.00023 J	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.08	0.00012	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	0.08	0.0079	0.005 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Bromomethane (Methyl bromide)	-	0.007	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	-	0.72	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005	0.00039	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.1	0.072	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	-	21	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform (Trichloromethane)	0.08	0.00019	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride)	-	0.19	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.07	0.028	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	-	-	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Cyclohexane	-	13	0.005 U	0.00013 J	0.001 U	0.00027 J	0.00014 J	0.001 U	0.001 U	0.00016 J
Dibromochloromethane	0.08	0.00015	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	0.7	0.0013	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Isopropyl benzene	-	0.39	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl acetate	-	16	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methyl cyclohexane	-	-	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl tert butyl ether (MTBE)	-	0.012	0.025 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Methylene chloride	0.005	0.0099	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Styrene	0.1	1.1	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005	0.0097	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	1	0.86	0.18	0.0014	0.0017	0.0015	0.0011	0.00049 J	0.00035 J	0.0023
trans-1,2-Dichloroethene	0.1	0.086	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	-	-	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005	0.00044	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichlorofluoromethane (CFC-11)	-	1.1	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trifluorotrichloroethane (Freon 113)	-	53	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.002	0.000015	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)	10	0.19	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*
Sample ID:			*GW-38443-120108-DD-144*	*GW-38443-120208-DD-145*	*GW-38443-120208-DD-146*	*GW-38443-120208-DD-147*	*GW-38443-120208-DD-148*	*GW-38443-120208-DD-149*	*GW-38443-120208-DD-150*	*GW-38443-120208-DD-151*
Sample Date:			*12/1/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*
Sample Depth:			*12-17 ft BGS*	*17-22 ft BGS*	*22-27 ft BGS*	*27-32 ft BGS*	*32-37 ft BGS*	*37-42 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*
	USEPA Regional Screening Levels [1]									
Parameter	*MCL a*	*TapWater b*								
Semi-Volatiles										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	0.001 U	0.001 U	-	-	-	-	-	-
2,4,5-Trichlorophenol	-	0.89	0.005 U	0.005 U	-	-	-	-	-	-
2,4,6-Trichlorophenol	-	0.0035	0.005 U	0.005 U	-	-	-	-	-	-
2,4-Dichlorophenol	-	0.035	0.002 U	0.002 U	-	-	-	-	-	-
2,4-Dimethylphenol	-	0.27	0.002 U	0.002 U	-	-	-	-	-	-
2,4-Dinitrophenol	-	0.03	0.005 U	0.005 U	-	-	-	-	-	-
2,4-Dinitrotoluene	-	0.0002	0.005 U	0.005 U	-	-	-	-	-	-
2,6-Dinitrotoluene	-	0.015	0.005 U	0.005 U	-	-	-	-	-	-
2-Chloronaphthalene	-	0.55	0.001 U	0.001 U	-	-	-	-	-	-
2-Chlorophenol	-	0.071	0.001 U	0.001 U	-	-	-	-	-	-
2-Methylnaphthalene	-	0.027	0.0002 U	0.0002 U	-	-	-	-	-	-
2-Methylphenol	-	0.72	0.001 UJ	0.001 UJ	-	-	-	-	-	-
2-Nitroaniline	-	0.15	0.002 U	0.002 U	-	-	-	-	-	-
2-Nitrophenol	-	-	0.002 U	0.002 U	-	-	-	-	-	-
3,3'-Dichlorobenzidine	-	0.00011	0.005 U	0.005 U	-	-	-	-	-	-
3-Nitroaniline	-	-	0.002 U	0.002 U	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	-	0.0012	0.005 U	0.005 U	-	-	-	-	-	-
4-Bromophenyl phenyl ether	-	-	0.002 U	0.002 U	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	1.1	0.002 U	0.002 U	-	-	-	-	-	-
4-Chloroaniline	-	0.00032	0.002 U	0.002 U	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	0.002 U	0.002 U	-	-	-	-	-	-
4-Methylphenol	-	1.4	0.001 U	0.001 U	-	-	-	-	-	-
4-Nitroaniline	-	0.0033	0.002 U	0.002 U	-	-	-	-	-	-
4-Nitrophenol	-	-	0.005 U	0.005 U	-	-	-	-	-	-
Acenaphthene	-	0.4	0.0002 U	0.0002 U	-	-	-	-	-	-
Acenaphthylene	-	-	0.0002 U	0.0002 U	-	-	-	-	-	-
Acetophenone	-	1.5	0.001 U	0.001 U	-	-	-	-	-	-
Anthracene	-	1.3	0.0002 U	0.0002 U	-	-	-	-	-	-
Atrazine	0.003	0.00026	0.001 U	0.001 U	-	-	-	-	-	-
Benzaldehyde	-	1.5	0.001 U	0.001 U	-	-	-	-	-	-
Benzo(a)anthracene	-	0.000029	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(a)pyrene	0.0002	0.0000029	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(b)fluoranthene	-	0.000029	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(k)fluoranthene	-	0.00029	0.0002 U	0.0002 U	-	-	-	-	-	-
Biphenyl (1,1-Biphenyl)	-	0.00083	0.001 U	0.001 U	-	-	-	-	-	-
bis(2-Chloroethoxy)methane	-	0.046	0.001 U	0.001 U	-	-	-	-	-	-
bis(2-Chloroethyl)ether	-	0.000012	0.001 UJ	0.001 UJ	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	0.00089 J	0.002 U	-	-	-	-	-	-
Butyl benzylphthalate (BBP)	-	0.014	0.001 U	0.001 U	-	-	-	-	-	-
Caprolactam	-	7.7	0.005 UJ	0.005 UJ	-	-	-	-	-	-
Carbazole	-	-	0.001 U	0.001 U	-	-	-	-	-	-
Chrysene	-	0.0029	0.0002 U	0.0002 U	-	-	-	-	-	-
Dibenz(a,h)anthracene	-	0.0000029	0.0002 U	0.0002 U	-	-	-	-	-	-
Dibenzofuran	-	0.0058	0.001 U	0.001 U	-	-	-	-	-	-
Diethyl phthalate	-	11	0.001 U	0.001 U	-	-	-	-	-	-
Dimethyl phthalate	-	-	0.001 U	0.001 U	-	-	-	-	-	-

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*
Sample ID:			*GW-38443-120108-DD-144*	*GW-38443-120208-DD-145*	*GW-38443-120208-DD-146*	*GW-38443-120208-DD-147*	*GW-38443-120208-DD-148*	*GW-38443-120208-DD-149*	*GW-38443-120208-DD-150*	*GW-38443-120208-DD-151*
Sample Date:			*12/1/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*	*12/2/2008*
Sample Depth:			*12-17 ft BGS*	*17-22 ft BGS*	*22-27 ft BGS*	*27-32 ft BGS*	*32-37 ft BGS*	*37-42 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*
	USEPA Regional Screening Levels [1]									
Parameter	*MCL a*	*TapWater b*								
Di-n-butylphthalate (DBP)	-	0.67	0.001 U	0.001 U	-	-	-	-	-	-
Di-n-octyl phthalate (DnOP)	-	0.19	0.001 U	0.001 U	-	-	-	-	-	-
Fluoranthene	-	0.63	0.0002 U	0.0002 U	-	-	-	-	-	-
Fluorene	-	0.22	0.0002 U	0.0002 U	-	-	-	-	-	-
Hexachlorobenzene	0.001	0.000042	0.0002 U	0.0002 U	-	-	-	-	-	-
Hexachlorobutadiene	-	0.00026	0.001 U	0.001 U	-	-	-	-	-	-
Hexachlorocyclopentadiene	0.05	0.022	0.01 UJ	0.01 UJ	-	-	-	-	-	-
Hexachloroethane	-	0.00079	0.001 U	0.001 U	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	-	0.000029	0.0002 U	0.0002 U	-	-	-	-	-	-
Isophorone	-	0.067	0.001 U	0.001 U	-	-	-	-	-	-
Naphthalene	-	0.00014	0.0002 U	0.0002 U	-	-	-	-	-	-
Nitrobenzene	-	0.00012	0.001 U	0.001 U	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	-	0.0000093	0.001 U	0.001 U	-	-	-	-	-	-
N-Nitrosodiphenylamine	-	0.01	0.001 U	0.001 U	-	-	-	-	-	-
Pentachlorophenol	0.001	0.000035	0.005 U	0.005 U	-	-	-	-	-	-
Phenanthrene	-	-	0.0002 U	0.0002 U	-	-	-	-	-	-
Phenol	-	4.5	0.001 U	0.001 U	-	-	-	-	-	-
Pyrene	-	0.087	0.0002 U	0.0002 U	-	-	-	-	-	-
Metals										
Arsenic	0.01	0.000045	**0.0436[ab]**	**0.165[ab]**	**0.101[ab]**	**0.0936[ab]**	**0.0322[ab]**	**0.0057[b]**	**0.0063[b]**	**0.0356[ab]**
Arsenic (dissolved)	0.01	0.000045	-	-	-	-	-	-	-	-
Lead	0.015	-	**0.0408[a]**	**0.033[a]**	**0.0178[a]**	**0.0375[a]**	0.0127	0.0018	0.0023	**0.0319[a]**
Lead (dissolved)	0.015	-	-	-	-	-	-	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

- - Not applicable.

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-19*
Sample ID:			*GW-38443-120208-DD-152*	*GW-38443-120308-DD-153*	*GW-38443-120308-DD-154*	*GW-38443-120308-DD-155*	*GW-38443-120308-DD-156*	*GW-38443-120308-DD-157*	*GW-38443-120308-DD-158*	*GW-38443-121508-DD-189*
Sample Date:			*12/2/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/15/2008*
Sample Depth:			*52-57 ft BGS*	*67-72 ft BGS*	*72-77 ft BGS*	*77-82 ft BGS*	*82-87 ft BGS*	*87-92 ft BGS*	*92-97 ft BGS*	*17-22 ft BGS*
	USEPA Regional Screening Levels [1]									
Parameter	*MCL a*	*TapWater b*								
Volatiles										
1,1,1-Trichloroethane	0.2	7.5	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005	0.00024	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	-	0.0024	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00043 J
1,1-Dichloroethene	0.007	0.26	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.6	0.28	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	0.005	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005	0.00038	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	-	0.034	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Acetone	-	12	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U
Benzene	0.005	0.00039	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.08	0.00012	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	0.08	0.0079	0.001 UJ	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromomethane (Methyl bromide)	-	0.007	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	-	0.72	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005	0.00039	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.1	0.072	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	-	21	0.001 U	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 U
Chloroform (Trichloromethane)	0.08	0.00019	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride)	-	0.19	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.07	0.028	0.00021 J	0.001 U	0.001 U	0.001 U	0.001 U	0.00024 J	0.001 U	0.001 U
cis-1,3-Dichloropropene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Cyclohexane	-	13	0.001 U	0.00017 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00014 J
Dibromochloromethane	0.08	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	0.001 U	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 U
Ethylbenzene	0.7	0.0013	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Isopropyl benzene	-	0.39	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl acetate	-	16	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methyl cyclohexane	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl tert butyl ether (MTBE)	-	0.012	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Methylene chloride	0.005	0.0099	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Styrene	0.1	1.1	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005	0.0097	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	1	0.86	0.0015	0.00057 J	0.00043 J	0.00044 J	0.00045 J	0.00046 J	0.0003 J	0.0023
trans-1,2-Dichloroethene	0.1	0.086	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005	0.00044	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichlorofluoromethane (CFC-11)	-	1.1	0.001 U	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 U
Trifluorotrichloroethane (Freon 113)	-	53	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.002	0.000015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	**0.00027 J[b]**
Xylenes (total)	10	0.19	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-19*
Sample ID:			*GW-38443-120208-DD-152*	*GW-38443-120308-DD-153*	*GW-38443-120308-DD-154*	*GW-38443-120308-DD-155*	*GW-38443-120308-DD-156*	*GW-38443-120308-DD-157*	*GW-38443-120308-DD-158*	*GW-38443-121508-DD-189*
Sample Date:			*12/2/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/15/2008*
Sample Depth:			*52-57 ft BGS*	*67-72 ft BGS*	*72-77 ft BGS*	*77-82 ft BGS*	*82-87 ft BGS*	*87-92 ft BGS*	*92-97 ft BGS*	*17-22 ft BGS*
	USEPA Regional Screening Levels [1]									
Parameter	*MCL a*	*TapWater b*								
Semi-Volatiles										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	-	0.001 U	-	-	-	-	0.001 U	0.001 U
2,4,5-Trichlorophenol	-	0.89	-	0.005 U	-	-	-	-	0.005 U	0.005 U
2,4,6-Trichlorophenol	-	0.0035	-	0.005 U	-	-	-	-	0.005 U	0.005 U
2,4-Dichlorophenol	-	0.035	-	0.002 U	-	-	-	-	0.002 U	0.002 U
2,4-Dimethylphenol	-	0.27	-	0.002 U	-	-	-	-	0.002 U	0.002 U
2,4-Dinitrophenol	-	0.03	-	0.005 U	-	-	-	-	0.005 U	0.005 U
2,4-Dinitrotoluene	-	0.0002	-	0.005 U	-	-	-	-	0.005 U	0.005 U
2,6-Dinitrotoluene	-	0.015	-	0.005 U	-	-	-	-	0.005 U	0.005 U
2-Chloronaphthalene	-	0.55	-	0.001 U	-	-	-	-	0.001 U	0.001 U
2-Chlorophenol	-	0.071	-	0.001 U	-	-	-	-	0.001 U	0.001 U
2-Methylnaphthalene	-	0.027	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
2-Methylphenol	-	0.72	-	0.001 U	-	-	-	-	0.001 U	0.001 U
2-Nitroaniline	-	0.15	-	0.002 U	-	-	-	-	0.002 U	0.002 U
2-Nitrophenol	-	-	-	0.002 U	-	-	-	-	0.002 U	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	-	0.005 U	-	-	-	-	0.005 U	0.005 U
3-Nitroaniline	-	-	-	0.002 U	-	-	-	-	0.002 U	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	-	0.005 U	-	-	-	-	0.005 U	0.005 U
4-Bromophenyl phenyl ether	-	-	-	0.002 U	-	-	-	-	0.002 U	0.002 U
4-Chloro-3-methylphenol	-	1.1	-	0.002 U	-	-	-	-	0.002 U	0.002 U
4-Chloroaniline	-	0.00032	-	0.002 U	-	-	-	-	0.002 U	0.002 U
4-Chlorophenyl phenyl ether	-	-	-	0.002 U	-	-	-	-	0.002 U	0.002 U
4-Methylphenol	-	1.4	-	0.001 U	-	-	-	-	0.001 U	0.001 U
4-Nitroaniline	-	0.0033	-	0.002 U	-	-	-	-	0.002 U	0.002 U
4-Nitrophenol	-	-	-	0.005 U	-	-	-	-	0.005 U	0.005 U
Acenaphthene	-	0.4	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Acenaphthylene	-	-	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Acetophenone	-	1.5	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Anthracene	-	1.3	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Atrazine	0.003	0.00026	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Benzaldehyde	-	1.5	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Benzo(a)anthracene	-	0.000029	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Benzo(b)fluoranthene	-	0.000029	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Benzo(g,h,i)perylene	-	-	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Benzo(k)fluoranthene	-	0.00029	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	-	0.001 U	-	-	-	-	0.001 U	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	-	0.001 U	-	-	-	-	0.001 U	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	-	0.001 U	-	-	-	-	0.001 U	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	-	0.0011 J	-	-	-	-	0.002 U	0.002 U
Butyl benzylphthalate (BBP)	-	0.014	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Caprolactam	-	7.7	-	0.005 U	-	-	-	-	0.005 U	0.005 UJ
Carbazole	-	-	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Chrysene	-	0.0029	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Dibenzofuran	-	0.0058	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Diethyl phthalate	-	11	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Dimethyl phthalate	-	-	-	0.001 U	-	-	-	-	0.001 U	0.001 U

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-13*	*VAS-19*
Sample ID:			*GW-38443-120208-DD-152*	*GW-38443-120308-DD-153*	*GW-38443-120308-DD-154*	*GW-38443-120308-DD-155*	*GW-38443-120308-DD-156*	*GW-38443-120308-DD-157*	*GW-38443-120308-DD-158*	*GW-38443-121508-DD-189*
Sample Date:			*12/2/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/3/2008*	*12/15/2008*
Sample Depth:			*52-57 ft BGS*	*67-72 ft BGS*	*72-77 ft BGS*	*77-82 ft BGS*	*82-87 ft BGS*	*87-92 ft BGS*	*92-97 ft BGS*	*17-22 ft BGS*
	USEPA Regional Screening Levels [1]									
Parameter	*MCL a*	*TapWater b*								
Di-n-butylphthalate (DBP)	-	0.67	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Fluoranthene	-	0.63	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Fluorene	-	0.22	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Hexachlorobenzene	0.001	0.000042	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Hexachlorobutadiene	-	0.00026	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	-	0.01 U	-	-	-	-	0.01 U	0.01 U
Hexachloroethane	-	0.00079	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Isophorone	-	0.067	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Naphthalene	-	0.00014	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Nitrobenzene	-	0.00012	-	0.001 U	-	-	-	-	0.001 U	0.001 U
N-Nitrosodi-n-propylamine	-	0.0000093	-	0.001 U	-	-	-	-	0.001 U	0.001 U
N-Nitrosodiphenylamine	-	0.01	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Pentachlorophenol	0.001	0.000035	-	0.005 U	-	-	-	-	0.005 U	0.005 U
Phenanthrene	-	-	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Phenol	-	4.5	-	0.001 U	-	-	-	-	0.001 U	0.001 U
Pyrene	-	0.087	-	0.0002 U	-	-	-	-	0.0002 U	0.0002 U
Metals										
Arsenic	0.01	0.000045	**0.0258[ab]**	**0.0203[ab]**	**0.0171[ab]**	**0.0165[ab]**	**0.0131[ab]**	**0.0174[ab]**	**0.0125[ab]**	**0.0662[ab]**
Arsenic (dissolved)	0.01	0.000045	-	-	-	-	-	-	-	-
Lead	0.015	-	**0.023[a]**	**0.0193[a]**	0.0141	0.0123	0.0083	0.0132	0.0066	**0.18[a]**
Lead (dissolved)	0.015	-	-	-	-	-	-	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

- - Not applicable.

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*
Sample ID:			*GW-38443-121508-DD-190*	*GW-38443-121508-DD-191*	*GW-38443-121508-DD-192*	*GW-38443-121508-DD-193*	*GW-38443-121608-DD-194*	*GW-38443-121608-DD-195*	*GW-38443-121608-DD-196*	*GW-38443-121608-DD-197*
Sample Date:			*12/15/2008*	*12/15/2008*	*12/15/2008*	*12/15/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*
Sample Depth:			*27-32 ft BGS*	*32-37 ft BGS*	*37-42 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*	*47-52 ft BGS*	*52-57 ft BGS*	*57-62 ft BGS*
	USEPA Regional Screening Levels [1]							*Duplicate*		
Parameter	*MCL a*	*TapWater b*								
Volatiles										
1,1,1-Trichloroethane	0.2	7.5	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
1,1,2,2-Tetrachloroethane	-	0.000066	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
1,1,2-Trichloroethane	0.005	0.00024	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
1,1-Dichloroethane	-	0.0024	0.001 U	0.001 U	0.00022 J	0.00022 J	0.005 U	0.0067 U	0.0067 U	0.0015 J
1,1-Dichloroethene	0.007	0.26	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
1,2,4-Trichlorobenzene	0.07	0.00099	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.002 U	0.002 U	0.002 U	0.002 U	0.01 U	0.013 U	0.013 U	0.0067 U
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
1,2-Dichlorobenzene	0.6	0.28	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
1,2-Dichloroethane	0.005	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
1,2-Dichloropropane	0.005	0.00038	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
1,3-Dichlorobenzene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
1,4-Dichlorobenzene	0.075	0.00042	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.067 U	0.067 U	0.033 U
2-Hexanone	-	0.034	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.067 U	0.067 U	0.033 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.067 U	0.067 U	0.033 U
Acetone	-	12	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.067 U	0.067 U	0.033 U
Benzene	0.005	0.00039	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Bromodichloromethane	0.08	0.00012	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Bromoform	0.08	0.0079	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Bromomethane (Methyl bromide)	-	0.007	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Carbon disulfide	-	0.72	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Carbon tetrachloride	0.005	0.00039	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Chlorobenzene	0.1	0.072	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Chloroethane	-	21	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Chloroform (Trichloromethane)	0.08	0.00019	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Chloromethane (Methyl chloride)	-	0.19	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
cis-1,2-Dichloroethene	0.07	0.028	0.001 U	0.001 U	0.001 U	0.001 U	0.0049 J	0.0052 J	0.0051 J	**0.031[b]**
cis-1,3-Dichloropropene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 UJ	0.0067 UJ	0.0033 UJ
Cyclohexane	-	13	0.0002 J	0.00018 J	0.0002 J	0.00017 J	0.005 U	0.0067 U	0.0067 U	0.0033 U
Dibromochloromethane	0.08	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Dichlorodifluoromethane (CFC-12)	-	0.19	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 UJ	0.0067 UJ	0.0033 UJ
Ethylbenzene	0.7	0.0013	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Isopropyl benzene	-	0.39	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Methyl acetate	-	16	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.067 U	0.067 U	0.033 U
Methyl cyclohexane	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Methyl tert butyl ether (MTBE)	-	0.012	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U	0.033 U	0.033 U	0.017 U
Methylene chloride	0.005	0.0099	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Styrene	0.1	1.1	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Tetrachloroethene	0.005	0.0097	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Toluene	1	0.86	0.0016	0.0012	0.00082 J	0.0009 J	0.005 U	0.0067 U	0.0067 U	0.0033 U
trans-1,2-Dichloroethene	0.1	0.086	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
trans-1,3-Dichloropropene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Trichloroethene	0.005	0.00044	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Trichlorofluoromethane (CFC-11)	-	1.1	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Trifluorotrichloroethane (Freon 113)	-	53	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.0067 U	0.0067 U	0.0033 U
Vinyl chloride	0.002	0.000015	**0.00091 J[b]**	**0.00068 J[b]**	**0.04[ab]**	**0.04[ab]**	**0.14[ab]**	**0.14[ab]**	**0.15[ab]**	**0.088[ab]**
Xylenes (total)	10	0.19	0.002 U	0.002 U	0.002 U	0.002 U	0.01 U	0.013 U	0.013 U	0.0067 U

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*
Sample ID:			*GW-38443-121508-DD-190*	*GW-38443-121508-DD-191*	*GW-38443-121508-DD-192*	*GW-38443-121508-DD-193*	*GW-38443-121608-DD-194*	*GW-38443-121608-DD-195*	*GW-38443-121608-DD-196*	*GW-38443-121608-DD-197*
Sample Date:			*12/15/2008*	*12/15/2008*	*12/15/2008*	*12/15/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*
Sample Depth:			*27-32 ft BGS*	*32-37 ft BGS*	*37-42 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*	*47-52 ft BGS*	*52-57 ft BGS*	*57-62 ft BGS*
	USEPA Regional Screening Levels [1]							*Duplicate*		
Parameter	*MCL a*	*TapWater b*								
Semi-Volatiles										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	0.001 U	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	-	0.89	0.005 U	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	-	0.0035	0.005 U	-	-	-	-	-	-	-
2,4-Dichlorophenol	-	0.035	0.002 U	-	-	-	-	-	-	-
2,4-Dimethylphenol	-	0.27	0.002 U	-	-	-	-	-	-	-
2,4-Dinitrophenol	-	0.03	0.005 U	-	-	-	-	-	-	-
2,4-Dinitrotoluene	-	0.0002	0.005 U	-	-	-	-	-	-	-
2,6-Dinitrotoluene	-	0.015	0.005 U	-	-	-	-	-	-	-
2-Chloronaphthalene	-	0.55	0.001 U	-	-	-	-	-	-	-
2-Chlorophenol	-	0.071	0.001 U	-	-	-	-	-	-	-
2-Methylnaphthalene	-	0.027	0.0002 U	-	-	-	-	-	-	-
2-Methylphenol	-	0.72	0.001 U	-	-	-	-	-	-	-
2-Nitroaniline	-	0.15	0.002 U	-	-	-	-	-	-	-
2-Nitrophenol	-	-	0.002 U	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine	-	0.00011	0.005 U	-	-	-	-	-	-	-
3-Nitroaniline	-	-	0.002 U	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	-	0.0012	0.005 U	-	-	-	-	-	-	-
4-Bromophenyl phenyl ether	-	-	0.002 U	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	1.1	0.002 U	-	-	-	-	-	-	-
4-Chloroaniline	-	0.00032	0.002 U	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	0.002 U	-	-	-	-	-	-	-
4-Methylphenol	-	1.4	0.001 U	-	-	-	-	-	-	-
4-Nitroaniline	-	0.0033	0.002 U	-	-	-	-	-	-	-
4-Nitrophenol	-	-	0.005 U	-	-	-	-	-	-	-
Acenaphthene	-	0.4	0.00021	-	-	-	-	-	-	-
Acenaphthylene	-	-	0.0002 U	-	-	-	-	-	-	-
Acetophenone	-	1.5	0.001 U	-	-	-	-	-	-	-
Anthracene	-	1.3	0.00021	-	-	-	-	-	-	-
Atrazine	0.003	0.00026	0.001 U	-	-	-	-	-	-	-
Benzaldehyde	-	1.5	0.001 U	-	-	-	-	-	-	-
Benzo(a)anthracene	-	0.000029	**0.00057[b]**	-	-	-	-	-	-	-
Benzo(a)pyrene	0.0002	0.0000029	**0.0011[ab]**	-	-	-	-	-	-	-
Benzo(b)fluoranthene	-	0.000029	**0.0011[b]**	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	0.00029	-	-	-	-	-	-	-
Benzo(k)fluoranthene	-	0.00029	**0.00033[b]**	-	-	-	-	-	-	-
Biphenyl (1,1-Biphenyl)	-	0.00083	0.001 U	-	-	-	-	-	-	-
bis(2-Chloroethoxy)methane	-	0.046	0.001 U	-	-	-	-	-	-	-
bis(2-Chloroethyl)ether	-	0.000012	0.001 U	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	0.002 U	-	-	-	-	-	-	-
Butyl benzylphthalate (BBP)	-	0.014	0.001 U	-	-	-	-	-	-	-
Caprolactam	-	7.7	0.005 UJ	-	-	-	-	-	-	-
Carbazole	-	-	0.001 U	-	-	-	-	-	-	-
Chrysene	-	0.0029	0.00055	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	-	0.0000029	0.0002 U	-	-	-	-	-	-	-
Dibenzofuran	-	0.0058	0.001 U	-	-	-	-	-	-	-
Diethyl phthalate	-	11	0.001 U	-	-	-	-	-	-	-
Dimethyl phthalate	-	-	0.001 U	-	-	-	-	-	-	-

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*
Sample ID:			*GW-38443-121508-DD-190*	*GW-38443-121508-DD-191*	*GW-38443-121508-DD-192*	*GW-38443-121508-DD-193*	*GW-38443-121608-DD-194*	*GW-38443-121608-DD-195*	*GW-38443-121608-DD-196*	*GW-38443-121608-DD-197*
Sample Date:			*12/15/2008*	*12/15/2008*	*12/15/2008*	*12/15/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*
Sample Depth:			*27-32 ft BGS*	*32-37 ft BGS*	*37-42 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*	*47-52 ft BGS*	*52-57 ft BGS*	*57-62 ft BGS*
	USEPA Regional Screening Levels [1]							*Duplicate*		
Parameter	*MCL a*	*TapWater b*								
Di-n-butylphthalate (DBP)	-	0.67	0.001 U	-	-	-	-	-	-	-
Di-n-octyl phthalate (DnOP)	-	0.19	0.001 U	-	-	-	-	-	-	-
Fluoranthene	-	0.63	0.0011	-	-	-	-	-	-	-
Fluorene	-	0.22	0.0002 U	-	-	-	-	-	-	-
Hexachlorobenzene	0.001	0.000042	0.0002 U	-	-	-	-	-	-	-
Hexachlorobutadiene	-	0.00026	0.001 U	-	-	-	-	-	-	-
Hexachlorocyclopentadiene	0.05	0.022	0.01 U	-	-	-	-	-	-	-
Hexachloroethane	-	0.00079	0.001 U	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	-	0.000029	**0.00024[b]**	-	-	-	-	-	-	-
Isophorone	-	0.067	0.001 U	-	-	-	-	-	-	-
Naphthalene	-	0.00014	0.0002 U	-	-	-	-	-	-	-
Nitrobenzene	-	0.00012	0.001 U	-	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	-	0.0000093	0.001 U	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	-	0.01	0.001 U	-	-	-	-	-	-	-
Pentachlorophenol	0.001	0.000035	0.005 U	-	-	-	-	-	-	-
Phenanthrene	-	-	0.00074	-	-	-	-	-	-	-
Phenol	-	4.5	0.001 U	-	-	-	-	-	-	-
Pyrene	-	0.087	0.00091	-	-	-	-	-	-	-
Metals										
Arsenic	0.01	0.000045	**0.049[ab]**	**0.0158[ab]**	**0.0526[ab]**	**0.0153[ab]**	**0.0196[ab]**	**0.0304[ab]**	**0.0202[ab]**	**0.0254[ab]**
Arsenic (dissolved)	0.01	0.000045	-	-	**0.0032 J[b]**	-	-	-	-	**0.003 J[b]**
Lead	0.015	-	**0.226[a]**	**0.0666[a]**	**0.142[a]**	**0.0386[a]**	**0.0494[a]**	**0.066[a]**	**0.0497[a]**	**0.0622[a]**
Lead (dissolved)	0.015	-	-	-	0.001 U	-	-	-	-	0.001 U

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

- - Not applicable.

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-20*
Sample ID:			*GW-38443-121608-DD-198*	*GW-38443-121608-DD-199*	*GW-38443-121608-DD-200*	*GW-38443-121608-DD-201*	*GW-38443-121608-DD-202*	*GW-38443-121608-DD-203*	*GW-38443-121608-DD-204*	*GW-38443-011109-KMV-229*
Sample Date:			*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*1/11/2009*
Sample Depth:			*62-67 ft BGS*	*67-72 ft BGS*	*72-77 ft BGS*	*77-82 ft BGS*	*82-87 ft BGS*	*87-92 ft BGS*	*92-97 ft BGS*	*22-27 ft BGS*
	USEPA Regional Screening Levels [1]									
Parameter	*MCL a*	*TapWater b*								
Volatiles										
1,1,1-Trichloroethane	0.2	7.5	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005	0.00024	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	-	0.0024	0.0014 J	0.0018	0.0021	0.003[b]	0.0023	0.0012	0.00093 J	0.001 U
1,1-Dichloroethene	0.007	0.26	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.004 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.6	0.28	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	0.005	0.00015	0.002 U	0.001 U	0.001 U	0.00032 J[b]	0.00025 J[b]	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005	0.00038	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	-	-	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	-	0.034	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 UJ
Acetone	-	12	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005	0.00039	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.08	0.00012	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	0.08	0.0079	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 UJ
Bromomethane (Methyl bromide)	-	0.007	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	-	0.72	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005	0.00039	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.1	0.072	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	-	21	0.0007 J	0.00038 J	0.00036 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform (Trichloromethane)	0.08	0.00019	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride)	-	0.19	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.07	0.028	0.03[b]	0.019	0.019	0.012	0.0077	0.0034	0.0029	0.001 U
cis-1,3-Dichloropropene	-	-	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 UJ
Cyclohexane	-	13	0.002 U	0.00026 J	0.0002 J	0.00017 J	0.0002 J	0.00018 J	0.0002 J	0.00044 J
Dibromochloromethane	0.08	0.00015	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 UJ
Ethylbenzene	0.7	0.0013	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00045 J
Isopropyl benzene	-	0.39	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl acetate	-	16	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methyl cyclohexane	-	-	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00071 J
Methyl tert butyl ether (MTBE)	-	0.012	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Methylene chloride	0.005	0.0099	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Styrene	0.1	1.1	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005	0.0097	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	1	0.86	0.00061 J	0.00067 J	0.00053 J	0.00044 J	0.00053 J	0.00047 J	0.0005 J	0.0018
trans-1,2-Dichloroethene	0.1	0.086	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	-	-	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005	0.00044	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichlorofluoromethane (CFC-11)	-	1.1	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trifluorotrichloroethane (Freon 113)	-	53	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 UJ
Vinyl chloride	0.002	0.000015	0.065 J[ab]	0.028[ab]	0.024[ab]	0.012[ab]	0.012[ab]	0.012[ab]	0.011[ab]	0.001 UJ
Xylenes (total)	10	0.19	0.004 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.00078 J

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-20*
Sample ID:			*GW-38443-121608-DD-198*	*GW-38443-121608-DD-199*	*GW-38443-121608-DD-200*	*GW-38443-121608-DD-201*	*GW-38443-121608-DD-202*	*GW-38443-121608-DD-203*	*GW-38443-121608-DD-204*	*GW-38443-011109-KMV-229*
Sample Date:			*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*1/11/2009*
Sample Depth:			*62-67 ft BGS*	*67-72 ft BGS*	*72-77 ft BGS*	*77-82 ft BGS*	*82-87 ft BGS*	*87-92 ft BGS*	*92-97 ft BGS*	*22-27 ft BGS*
	USEPA Regional Screening Levels [1]									
Parameter	*MCL a*	*TapWater b*								
Semi-Volatiles										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	0.001 U	-	-	-	-	-	0.001 UJ	0.001 U
2,4,5-Trichlorophenol	-	0.89	0.005 U	-	-	-	-	-	0.005 U	0.005 U
2,4,6-Trichlorophenol	-	0.0035	0.005 U	-	-	-	-	-	0.005 U	0.005 U
2,4-Dichlorophenol	-	0.035	0.002 U	-	-	-	-	-	0.002 U	0.002 U
2,4-Dimethylphenol	-	0.27	0.002 U	-	-	-	-	-	0.002 U	0.002 U
2,4-Dinitrophenol	-	0.03	0.005 U	-	-	-	-	-	0.005 U	0.005 U
2,4-Dinitrotoluene	-	0.0002	0.005 U	-	-	-	-	-	0.005 U	0.005 U
2,6-Dinitrotoluene	-	0.015	0.005 U	-	-	-	-	-	0.005 U	0.005 U
2-Chloronaphthalene	-	0.55	0.001 U	-	-	-	-	-	0.001 U	0.001 U
2-Chlorophenol	-	0.071	0.001 U	-	-	-	-	-	0.001 U	0.001 U
2-Methylnaphthalene	-	0.027	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
2-Methylphenol	-	0.72	0.001 U	-	-	-	-	-	0.001 U	0.001 U
2-Nitroaniline	-	0.15	0.002 U	-	-	-	-	-	0.002 UJ	0.002 U
2-Nitrophenol	-	-	0.002 U	-	-	-	-	-	0.002 U	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	0.005 U	-	-	-	-	-	0.005 U	0.005 U
3-Nitroaniline	-	-	0.002 U	-	-	-	-	-	0.002 U	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	0.005 U	-	-	-	-	-	0.005 U	0.005 U
4-Bromophenyl phenyl ether	-	-	0.002 U	-	-	-	-	-	0.002 U	0.002 U
4-Chloro-3-methylphenol	-	1.1	0.002 U	-	-	-	-	-	0.002 U	0.002 U
4-Chloroaniline	-	0.00032	0.002 U	-	-	-	-	-	0.002 U	0.002 U
4-Chlorophenyl phenyl ether	-	-	0.002 U	-	-	-	-	-	0.002 U	0.002 U
4-Methylphenol	-	1.4	0.001 U	-	-	-	-	-	0.001 U	0.001 U
4-Nitroaniline	-	0.0033	0.002 U	-	-	-	-	-	0.002 U	0.002 U
4-Nitrophenol	-	-	0.005 U	-	-	-	-	-	0.005 U	0.005 U
Acenaphthene	-	0.4	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Acenaphthylene	-	-	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Acetophenone	-	1.5	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Anthracene	-	1.3	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Atrazine	0.003	0.00026	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Benzaldehyde	-	1.5	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Benzo(a)anthracene	-	0.000029	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Benzo(b)fluoranthene	-	0.000029	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Benzo(g,h,i)perylene	-	-	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Benzo(k)fluoranthene	-	0.00029	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	0.001 U	-	-	-	-	-	0.001 U	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	0.001 U	-	-	-	-	-	0.001 U	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	0.001 U	-	-	-	-	-	0.001 U	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	0.002 U	-	-	-	-	-	0.002 U	0.002 U
Butyl benzylphthalate (BBP)	-	0.014	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Caprolactam	-	7.7	0.005 UJ	-	-	-	-	-	0.005 UJ	0.005 UJ
Carbazole	-	-	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Chrysene	-	0.0029	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Dibenzofuran	-	0.0058	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Diethyl phthalate	-	11	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Dimethyl phthalate	-	-	0.001 U	-	-	-	-	-	0.001 U	0.001 U

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-19*	*VAS-20*
Sample ID:			*GW-38443-121608-DD-198*	*GW-38443-121608-DD-199*	*GW-38443-121608-DD-200*	*GW-38443-121608-DD-201*	*GW-38443-121608-DD-202*	*GW-38443-121608-DD-203*	*GW-38443-121608-DD-204*	*GW-38443-011109-KMV-229*
Sample Date:			*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*12/16/2008*	*1/11/2009*
Sample Depth:			*62-67 ft BGS*	*67-72 ft BGS*	*72-77 ft BGS*	*77-82 ft BGS*	*82-87 ft BGS*	*87-92 ft BGS*	*92-97 ft BGS*	*22-27 ft BGS*
	USEPA Regional Screening Levels [1]									
Parameter	*MCL a*	*TapWater b*								
Di-n-butylphthalate (DBP)	-	0.67	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Fluoranthene	-	0.63	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Fluorene	-	0.22	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Hexachlorobenzene	0.001	0.000042	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Hexachlorobutadiene	-	0.00026	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	0.01 U	-	-	-	-	-	0.01 U	0.01 U
Hexachloroethane	-	0.00079	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Isophorone	-	0.067	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Naphthalene	-	0.00014	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Nitrobenzene	-	0.00012	0.001 U	-	-	-	-	-	0.001 UJ	0.001 U
N-Nitrosodi-n-propylamine	-	0.0000093	0.001 U	-	-	-	-	-	0.001 U	0.001 U
N-Nitrosodiphenylamine	-	0.01	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Pentachlorophenol	0.001	0.000035	0.005 U	-	-	-	-	-	0.005 U	0.005 U
Phenanthrene	-	-	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Phenol	-	4.5	0.001 U	-	-	-	-	-	0.001 U	0.001 U
Pyrene	-	0.087	0.0002 U	-	-	-	-	-	0.0002 U	0.0002 U
Metals										
Arsenic	0.01	0.000045	**0.022[ab]**	**0.012[ab]**	**0.0153[ab]**	**0.0376[ab]**	**0.0295[ab]**	**0.0217[ab]**	**0.0222[ab]**	**0.0344[ab]**
Arsenic (dissolved)	0.01	0.000045	-	-	-	-	**0.0044 J[b]**	-	-	-
Lead	0.015	-	**0.0465[a]**	**0.0343[a]**	**0.0317[a]**	**0.0808[a]**	**0.0682[a]**	**0.0744[a]**	**0.0661[a]**	**0.0298[a]**
Lead (dissolved)	0.015	-	-	-	-	-	0.001 U	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

- - Not applicable.

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*
Sample ID:			*GW-38443-011109-KMV-230*	*GW-38443-011109-KMV-231*	*GW-38443-011109-KMV-232*	*GW-38443-011109-KMV-233*	*GW-38443-011109-KMV-234*	*GW-38443-011109-KMV-235*	*GW-38443-011109-KMV-236*
Sample Date:			*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*
Sample Depth:			*27-32 ft BGS*	*32-37 ft BGS*	*37-42 ft BGS*	*37-42 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*	*52-57 ft BGS*
	USEPA Regional Screening Levels [1]					*Duplicate*			
Parameter	*MCL a*	*TapWater b*							
Volatiles									
1,1,1-Trichloroethane	0.2	7.5	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005	0.00024	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	-	0.0024	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00078 J	0.00087 J
1,1-Dichloroethene	0.007	0.26	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.6	0.28	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	0.005	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005	0.00038	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	-	0.034	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ
Acetone	-	12	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005	0.00039	**0.00045 J[b]**	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.08	0.00012	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	0.08	0.0079	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Bromomethane (Methyl bromide)	-	0.007	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	-	0.72	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005	0.00039	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.1	0.072	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	-	21	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform (Trichloromethane)	0.08	0.00019	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride)	-	0.19	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.07	0.028	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	-	-	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Cyclohexane	-	13	0.00047 J	0.00049 J	0.00035 J	0.00032 J	0.00014 J	0.00029 J	0.00033 J
Dibromochloromethane	0.08	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Ethylbenzene	0.7	0.0013	0.00039 J	0.00047 J	0.00032 J	0.00032 J	0.001 U	0.00026 J	0.00032 J
Isopropyl benzene	-	0.39	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl acetate	-	16	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methyl cyclohexane	-	-	0.00061 J	0.00068 J	0.00053 J	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Methyl tert butyl ether (MTBE)	-	0.012	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Methylene chloride	0.005	0.0099	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Styrene	0.1	1.1	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005	0.0097	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	1	0.86	0.0017	0.0018	0.0013	0.0014	0.00059 J	0.0017	0.0012
trans-1,2-Dichloroethene	0.1	0.086	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005	0.00044	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichlorofluoromethane (CFC-11)	-	1.1	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trifluorotrichloroethane (Freon 113)	-	53	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Vinyl chloride	0.002	0.000015	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Xylenes (total)	10	0.19	0.00075 J	0.00078 J	0.00056 J	0.00051 J	0.002 U	0.00072 J	0.00062 J

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*
Sample ID:			*GW-38443-011109-KMV-230*	*GW-38443-011109-KMV-231*	*GW-38443-011109-KMV-232*	*GW-38443-011109-KMV-233*	*GW-38443-011109-KMV-234*	*GW-38443-011109-KMV-235*	*GW-38443-011109-KMV-236*
Sample Date:			*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*
Sample Depth:			*27-32 ft BGS*	*32-37 ft BGS*	*37-42 ft BGS*	*37-42 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*	*52-57 ft BGS*
	USEPA Regional Screening Levels [1]					*Duplicate*			
Parameter	*MCL a*	*TapWater b*							
Semi-Volatiles									
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	-	-	-	-	0.001 U	-	0.001 U
2,4,5-Trichlorophenol	-	0.89	-	-	-	-	0.005 U	-	0.005 U
2,4,6-Trichlorophenol	-	0.0035	-	-	-	-	0.005 U	-	0.005 U
2,4-Dichlorophenol	-	0.035	-	-	-	-	0.002 U	-	0.002 U
2,4-Dimethylphenol	-	0.27	-	-	-	-	0.002 U	-	0.002 U
2,4-Dinitrophenol	-	0.03	-	-	-	-	0.005 U	-	0.005 U
2,4-Dinitrotoluene	-	0.0002	-	-	-	-	0.005 U	-	0.005 U
2,6-Dinitrotoluene	-	0.015	-	-	-	-	0.005 U	-	0.005 U
2-Chloronaphthalene	-	0.55	-	-	-	-	0.001 U	-	0.001 U
2-Chlorophenol	-	0.071	-	-	-	-	0.001 U	-	0.001 U
2-Methylnaphthalene	-	0.027	-	-	-	-	0.0002 U	-	0.0002 U
2-Methylphenol	-	0.72	-	-	-	-	0.001 U	-	0.001 U
2-Nitroaniline	-	0.15	-	-	-	-	0.002 U	-	0.002 U
2-Nitrophenol	-	-	-	-	-	-	0.002 U	-	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	-	-	-	-	0.005 U	-	0.005 U
3-Nitroaniline	-	-	-	-	-	-	0.002 U	-	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	-	-	-	-	0.005 U	-	0.005 U
4-Bromophenyl phenyl ether	-	-	-	-	-	-	0.002 U	-	0.002 U
4-Chloro-3-methylphenol	-	1.1	-	-	-	-	0.002 U	-	0.002 U
4-Chloroaniline	-	0.00032	-	-	-	-	0.002 U	-	0.002 U
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	0.002 U	-	0.002 U
4-Methylphenol	-	1.4	-	-	-	-	0.001 U	-	0.001 U
4-Nitroaniline	-	0.0033	-	-	-	-	0.002 U	-	0.002 U
4-Nitrophenol	-	-	-	-	-	-	0.005 U	-	0.005 U
Acenaphthene	-	0.4	-	-	-	-	0.0002 U	-	0.0002 U
Acenaphthylene	-	-	-	-	-	-	0.0002 U	-	0.0002 U
Acetophenone	-	1.5	-	-	-	-	0.001 U	-	0.001 U
Anthracene	-	1.3	-	-	-	-	0.0002 U	-	0.0002 U
Atrazine	0.003	0.00026	-	-	-	-	0.001 U	-	0.001 U
Benzaldehyde	-	1.5	-	-	-	-	0.001 U	-	0.001 U
Benzo(a)anthracene	-	0.000029	-	-	-	-	0.0002 U	-	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	-	-	-	-	0.0002 U	-	0.0002 U
Benzo(b)fluoranthene	-	0.000029	-	-	-	-	0.0002 U	-	0.0002 U
Benzo(g,h,i)perylene	-	-	-	-	-	-	0.0002 U	-	0.0002 U
Benzo(k)fluoranthene	-	0.00029	-	-	-	-	0.0002 U	-	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	-	-	-	-	0.001 U	-	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	-	-	-	-	0.001 U	-	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	-	-	-	-	0.001 U	-	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	-	-	-	-	0.0033	-	**0.0079[ab]**
Butyl benzylphthalate (BBP)	-	0.014	-	-	-	-	0.001 U	-	0.001 U
Caprolactam	-	7.7	-	-	-	-	0.005 UJ	-	0.005 UJ
Carbazole	-	-	-	-	-	-	0.001 U	-	0.001 U
Chrysene	-	0.0029	-	-	-	-	0.0002 U	-	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	-	-	-	-	0.0002 U	-	0.0002 U
Dibenzofuran	-	0.0058	-	-	-	-	0.001 U	-	0.001 U
Diethyl phthalate	-	11	-	-	-	-	0.001 U	-	0.001 U
Dimethyl phthalate	-	-	-	-	-	-	0.001 U	-	0.001 U

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*	*VAS-20*
Sample ID:			*GW-38443-011109-KMV-230*	*GW-38443-011109-KMV-231*	*GW-38443-011109-KMV-232*	*GW-38443-011109-KMV-233*	*GW-38443-011109-KMV-234*	*GW-38443-011109-KMV-235*	*GW-38443-011109-KMV-236*
Sample Date:			*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*	*1/11/2009*
Sample Depth:			*27-32 ft BGS*	*32-37 ft BGS*	*37-42 ft BGS*	*37-42 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*	*52-57 ft BGS*
	USEPA Regional Screening Levels [1]					*Duplicate*			
Parameter	*MCL a*	*TapWater b*							
Di-n-butylphthalate (DBP)	-	0.67	-	-	-	-	0.001 U	-	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	-	-	-	-	0.001 U	-	0.001 U
Fluoranthene	-	0.63	-	-	-	-	0.0002 U	-	0.0002 U
Fluorene	-	0.22	-	-	-	-	0.0002 U	-	0.0002 U
Hexachlorobenzene	0.001	0.000042	-	-	-	-	0.0002 U	-	0.0002 U
Hexachlorobutadiene	-	0.00026	-	-	-	-	0.001 U	-	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	-	-	-	-	0.01 U	-	0.01 U
Hexachloroethane	-	0.00079	-	-	-	-	0.001 U	-	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	-	-	-	-	0.0002 U	-	0.0002 U
Isophorone	-	0.067	-	-	-	-	0.001 U	-	0.001 U
Naphthalene	-	0.00014	-	-	-	-	0.0002 U	-	0.0002 U
Nitrobenzene	-	0.00012	-	-	-	-	0.001 U	-	0.001 U
N-Nitrosodi-n-propylamine	-	0.0000093	-	-	-	-	0.001 U	-	0.001 U
N-Nitrosodiphenylamine	-	0.01	-	-	-	-	0.001 U	-	0.001 U
Pentachlorophenol	0.001	0.000035	-	-	-	-	0.005 U	-	0.005 U
Phenanthrene	-	-	-	-	-	-	0.0002 U	-	0.0002 U
Phenol	-	4.5	-	-	-	-	0.001 U	-	0.001 U
Pyrene	-	0.087	-	-	-	-	0.0002 U	-	0.0002 U
Metals									
Arsenic	0.01	0.000045	**0.129[ab]**	**0.0608[ab]**	**0.0463[ab]**	**0.0313[ab]**	**0.0086[b]**	**0.0868[ab]**	**0.0235[ab]**
Arsenic (dissolved)	0.01	0.000045	-	-	-	-	-	-	-
Lead	0.015	-	**0.0989[a]**	**0.0461[a]**	**0.0456[a]**	**0.0302[a]**	0.0067	**0.0866[a]**	**0.0224[a]**
Lead (dissolved)	0.015	-	-	-	-	-	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

- - Not applicable.

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-22*	*VAS-22*	*VAS-22*	*VAS-22*	*VAS-22*	*VAS-22*
Sample ID:			*GW-38443-121808-DD-205*	*GW-38443-121808-DD-206*	*GW-38443-121808-DD-207*	*GW-38443-121808-DD-208*	*GW-38443-121808-DD-209*	*GW-38443-121808-DD-210*
Sample Date:			*12/18/2008*	*12/18/2008*	*12/18/2008*	*12/18/2008*	*12/18/2008*	*12/18/2008*
Sample Depth:			*27-32 ft BGS*	*27-32 ft BGS*	*32-37 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*	*52-57 ft BGS*
	USEPA Regional Screening Levels [1]			*Duplicate*				
Parameter	*MCL a*	*TapWater b*						
Volatiles								
1,1,1-Trichloroethane	0.2	7.5	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	0.001 U	0.001 U	0.001 U	0.001 U	0.001 UJ	0.001 U
1,1,2-Trichloroethane	0.005	0.00024	0.001 U	0.001 U	0.001 U	0.001 U	0.001 UJ	0.001 U
1,1-Dichloroethane	-	0.0024	0.001	0.00094 J	0.0011	0.00037 J	0.0005 J	0.00045 J
1,1-Dichloroethene	0.007	0.26	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.6	0.28	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	0.005	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005	0.00038	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	-	0.034	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Acetone	-	12	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005	0.00039	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.08	0.00012	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	0.08	0.0079	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromomethane (Methyl bromide)	-	0.007	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	-	0.72	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005	0.00039	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.1	0.072	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	-	21	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform (Trichloromethane)	0.08	0.00019	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride)	-	0.19	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.07	0.028	0.0006 J	0.00053 J	0.00058 J	0.001 U	0.00087 J	0.00098 J
cis-1,3-Dichloropropene	-	-	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Cyclohexane	-	13	0.00014 J	0.00018 J	0.00021 J	0.001 U	0.0002 J	0.00017 J
Dibromochloromethane	0.08	0.00015	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	0.7	0.0013	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Isopropyl benzene	-	0.39	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl acetate	-	16	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methyl cyclohexane	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl tert butyl ether (MTBE)	-	0.012	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Methylene chloride	0.005	0.0099	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Styrene	0.1	1.1	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005	0.0097	0.001 U	0.001 U	0.001 U	0.001 U	0.001 UJ	0.001 U
Toluene	1	0.86	0.0038	0.0032	0.0062	0.0022	0.001	0.0014
trans-1,2-Dichloroethene	0.1	0.086	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 UJ	0.001 U
Trichloroethene	0.005	0.00044	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichlorofluoromethane (CFC-11)	-	1.1	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trifluorotrichloroethane (Freon 113)	-	53	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.002	0.000015	**0.00066 J[b]**	**0.00058 J[b]**	**0.00075 J[b]**	**0.00035 J[b]**	**0.00064 J[b]**	**0.00071 J[b]**
Xylenes (total)	10	0.19	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-22*	*VAS-22*	*VAS-22*	*VAS-22*	*VAS-22*	*VAS-22*
Sample ID:			*GW-38443-121808-DD-205*	*GW-38443-121808-DD-206*	*GW-38443-121808-DD-207*	*GW-38443-121808-DD-208*	*GW-38443-121808-DD-209*	*GW-38443-121808-DD-210*
Sample Date:			*12/18/2008*	*12/18/2008*	*12/18/2008*	*12/18/2008*	*12/18/2008*	*12/18/2008*
Sample Depth:			*27-32 ft BGS*	*27-32 ft BGS*	*32-37 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*	*52-57 ft BGS*
	USEPA Regional Screening Levels [1]			*Duplicate*				
Parameter	*MCL a*	*TapWater b*						
Semi-Volatiles								
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	0.001 U	0.001 U	0.001 U	-	-	0.001 U
2,4,5-Trichlorophenol	-	0.89	0.005 U	0.005 U	0.005 U	-	-	0.005 U
2,4,6-Trichlorophenol	-	0.0035	0.005 U	0.005 U	0.005 U	-	-	0.005 U
2,4-Dichlorophenol	-	0.035	0.002 U	0.002 U	0.002 U	-	-	0.002 U
2,4-Dimethylphenol	-	0.27	0.002 U	0.002 U	0.002 U	-	-	0.002 U
2,4-Dinitrophenol	-	0.03	0.005 U	0.005 U	0.005 U	-	-	0.005 U
2,4-Dinitrotoluene	-	0.0002	0.005 U	0.005 U	0.005 U	-	-	0.005 U
2,6-Dinitrotoluene	-	0.015	0.005 U	0.005 U	0.005 U	-	-	0.005 U
2-Chloronaphthalene	-	0.55	0.001 U	0.001 U	0.001 U	-	-	0.001 U
2-Chlorophenol	-	0.071	0.001 U	0.001 U	0.001 U	-	-	0.001 U
2-Methylnaphthalene	-	0.027	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
2-Methylphenol	-	0.72	0.001 U	0.001 U	0.001 U	-	-	0.001 U
2-Nitroaniline	-	0.15	0.002 U	0.002 U	0.002 U	-	-	0.002 U
2-Nitrophenol	-	-	0.002 U	0.002 U	0.002 U	-	-	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	0.005 U	0.005 U	0.005 U	-	-	0.005 U
3-Nitroaniline	-	-	0.002 U	0.002 U	0.002 U	-	-	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	0.005 U	0.005 U	0.005 U	-	-	0.005 U
4-Bromophenyl phenyl ether	-	-	0.002 U	0.002 U	0.002 U	-	-	0.002 U
4-Chloro-3-methylphenol	-	1.1	0.002 U	0.002 U	0.002 U	-	-	0.002 U
4-Chloroaniline	-	0.00032	0.002 U	0.002 U	0.002 U	-	-	0.002 U
4-Chlorophenyl phenyl ether	-	-	0.002 U	0.002 U	0.002 U	-	-	0.002 U
4-Methylphenol	-	1.4	0.001 U	0.001 U	0.001 U	-	-	0.001 U
4-Nitroaniline	-	0.0033	0.002 U	0.002 U	0.002 U	-	-	0.002 U
4-Nitrophenol	-	-	0.005 U	0.005 U	0.005 U	-	-	0.005 U
Acenaphthene	-	0.4	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Acenaphthylene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Acetophenone	-	1.5	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Anthracene	-	1.3	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Atrazine	0.003	0.00026	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Benzaldehyde	-	1.5	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Benzo(a)anthracene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Benzo(b)fluoranthene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Benzo(g,h,i)perylene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Benzo(k)fluoranthene	-	0.00029	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	0.001 U	0.001 U	0.001 U	-	-	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	0.001 U	0.001 U	0.001 U	-	-	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	0.001 U	0.001 U	0.001 U	-	-	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	0.002 U	0.002 U	0.002 U	-	-	0.002 U
Butyl benzylphthalate (BBP)	-	0.014	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Caprolactam	-	7.7	0.005 U	0.005 U	0.005 U	-	-	0.005 U
Carbazole	-	-	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Chrysene	-	0.0029	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Dibenzofuran	-	0.0058	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Diethyl phthalate	-	11	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Dimethyl phthalate	-	-	0.001 U	0.001 U	0.001 U	-	-	0.001 U

TABLE A-1

HISTORIC GROUNDWATER VERTICAL AQUIFER SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*VAS-22*	*VAS-22*	*VAS-22*	*VAS-22*	*VAS-22*	*VAS-22*
Sample ID:			*GW-38443-121808-DD-205*	*GW-38443-121808-DD-206*	*GW-38443-121808-DD-207*	*GW-38443-121808-DD-208*	*GW-38443-121808-DD-209*	*GW-38443-121808-DD-210*
Sample Date:			*12/18/2008*	*12/18/2008*	*12/18/2008*	*12/18/2008*	*12/18/2008*	*12/18/2008*
Sample Depth:			*27-32 ft BGS*	*27-32 ft BGS*	*32-37 ft BGS*	*42-47 ft BGS*	*47-52 ft BGS*	*52-57 ft BGS*
	USEPA Regional Screening Levels [1]			*Duplicate*				
Parameter	*MCL a*	*TapWater b*						
Di-n-butylphthalate (DBP)	-	0.67	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Fluoranthene	-	0.63	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Fluorene	-	0.22	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Hexachlorobenzene	0.001	0.000042	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Hexachlorobutadiene	-	0.00026	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	0.01 U	0.01 U	0.01 U	-	-	0.01 U
Hexachloroethane	-	0.00079	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Isophorone	-	0.067	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Naphthalene	-	0.00014	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Nitrobenzene	-	0.00012	0.001 U	0.001 U	0.001 U	-	-	0.001 U
N-Nitrosodi-n-propylamine	-	0.0000093	0.001 U	0.001 U	0.001 U	-	-	0.001 U
N-Nitrosodiphenylamine	-	0.01	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Pentachlorophenol	0.001	0.000035	0.005 U	0.005 U	0.005 U	-	-	0.005 U
Phenanthrene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Phenol	-	4.5	0.001 U	0.001 U	0.001 U	-	-	0.001 U
Pyrene	-	0.087	0.0002 U	0.0002 U	0.0002 U	-	-	0.0002 U
Metals								
Arsenic	0.01	0.000045	**0.127[ab]**	**0.132[ab]**	**0.0714[ab]**	**0.174[ab]**	**0.147[ab]**	**0.0495[ab]**
Arsenic (dissolved)	0.01	0.000045	-	-	-	**0.0063[b]**	-	-
Lead	0.015	-	**0.309[a]**	**0.325[a]**	**0.183[a]**	**0.451[a]**	**0.342[a]**	**0.11[a]**
Lead (dissolved)	0.015	-	-	-	-	0.001 U	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

J - Indicates an estimated value.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

- - Not applicable.

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*
Sample ID:			*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*GW-38443-091108-NZ-013*
Sample Date:			*2/22/1999*	*11/11/1999*	*5/9/2000*	*6/6/2001*	*6/14/2002*	*7/2/2004*	*10/14/2004*	*8/3/2005*	*9/11/2008*
Sample Depth:			*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*
	USEPA Regional Screening Levels [1]										
Parameter	*MCL a*	*TapWater b*									
Volatiles											
1,1,1-Trichloroethane	0.2	7.5	U	U	U	U	U	U	U	U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	U	U	U	U	U	U	U	U	0.001 UJ
1,1,2-Trichloroethane	0.005	0.00024	-	-	-	-	-	-	-	-	0.001 U
1,1-Dichloroethane	-	0.0024	U	U	U	U	U	U	U	U	0.001 U
1,1-Dichloroethene	0.007	0.26	-	-	-	-	-	-	-	-	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	-	-	-	-	-	-	-	-	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	-	-	-	-	-	-	-	-	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	-	-	-	-	-	-	-	-	0.001 U
1,2-Dichlorobenzene	0.6	0.28	-	-	-	-	-	-	-	-	0.001 U
1,2-Dichloroethane	0.005	0.00015	U	U	U	U	U	U	U	U	0.001 U
1,2-Dichloroethene (total)	-	0.13	U	U	U	U	U	U	U	U	-
1,2-Dichloropropane	0.005	0.00038	-	-	-	-	-	-	-	-	0.001 U
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	-	-	-	-	-	-	-	-	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	-	-	-	-	-	-	-	-	0.01 U
2-Hexanone	-	0.034	-	-	-	-	-	-	-	-	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	-	-	-	-	-	-	-	-	0.01 U
Acetone	-	12	U	U	U	U	U	U	U	U	0.01 U
Benzene	0.005	0.00039	U	U	U	U	U	U	U	U	0.001 U
Bromodichloromethane	0.08	0.00012	-	-	-	-	-	-	-	-	0.001 U
Bromoform	0.08	0.0079	U	U	U	U	U	U	U	U	0.001 U
Bromomethane (Methyl bromide)	-	0.007	-	-	-	-	-	-	-	-	0.001 U
Carbon disulfide	-	0.72	-	-	-	-	-	-	-	-	0.001 U
Carbon tetrachloride	0.005	0.00039	-	-	-	-	-	-	-	-	0.001 U
Chlorobenzene	0.1	0.072	U	U	U	U	U	U	U	U	0.001 U
Chloroethane	-	21	U	U	U	U	U	U	U	U	0.001 U
Chloroform (Trichloromethane)	0.08	0.00019	-	-	-	-	-	-	-	-	0.001 U
Chloromethane (Methyl chloride)	-	0.19	-	-	-	-	-	-	-	-	0.001 U
cis-1,2-Dichloroethene	0.07	0.028	-	-	-	-	-	-	-	-	0.001 U
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	0.001 U
Cyclohexane	-	13	-	-	-	-	-	-	-	-	0.001 U
Dibromochloromethane	0.08	0.00015	-	-	-	-	-	-	-	-	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	-	-	-	-	-	-	-	-	0.001 U
Ethylbenzene	0.7	0.0013	-	-	-	-	-	-	-	-	0.001 U
Isopropyl benzene	-	0.39	-	-	-	-	-	-	-	-	0.001 U
Methyl acetate	-	16	-	-	-	-	-	-	-	-	0.01 U
Methyl cyclohexane	-	-	-	-	-	-	-	-	-	-	0.001 U
Methyl tert butyl ether (MTBE)	-	0.012	-	-	-	-	-	-	-	-	0.005 U
Methylene chloride	0.005	0.0099	**0.008 B[a]**	**0.051 B[ab]**	U	U	U	U	U	U	0.001 U
Styrene	0.1	1.1	U	U	U	U	U	U	U	U	0.001 UJ
Tetrachloroethene	0.005	0.0097	U	U	U	U	U	U	U	U	0.001 U
Toluene	1	0.86	0.007	U	U	U	U	U	U	U	0.001 U
trans-1,2-Dichloroethene	0.1	0.086	-	-	-	-	-	-	-	-	0.001 U
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	0.001 U
Trichloroethene	0.005	0.00044	U	U	U	U	U	U	U	U	0.001 U
Trichlorofluoromethane (CFC-11)	-	1.1	-	-	-	-	-	-	-	-	0.001 U
Trifluorotrichloroethane (Freon 113)	-	53	-	-	-	-	-	-	-	-	0.001 U
Vinyl chloride	0.002	0.000015	U	U	U	U	U	U	U	U	**0.00031 J[b]**

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*
Sample ID:			*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*GW-38443-091108-NZ-013*
Sample Date:			*2/22/1999*	*11/11/1999*	*5/9/2000*	*6/6/2001*	*6/14/2002*	*7/2/2004*	*10/14/2004*	*8/3/2005*	*9/11/2008*
Sample Depth:			*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*
	USEPA Regional Screening Levels [1]										
Parameter	*MCL a*	*TapWater b*									
Xylenes (total)	10	0.19	U	U	U	U	U	U	U	U	0.002 U
Semi-Volatiles											
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	-	-	-	-	-	-	-	-	0.001 U
2,4,5-Trichlorophenol	-	0.89	-	-	-	-	-	-	-	-	0.005 U
2,4,6-Trichlorophenol	-	0.0035	-	-	-	-	-	-	-	-	0.005 U
2,4-Dichlorophenol	-	0.035	-	-	-	-	-	-	-	-	0.002 U
2,4-Dimethylphenol	-	0.27	-	-	-	-	-	-	-	-	0.002 U
2,4-Dinitrophenol	-	0.03	-	-	-	-	-	-	-	-	0.005 UJ
2,4-Dinitrotoluene	-	0.0002	-	-	-	-	-	-	-	-	0.005 U
2,6-Dinitrotoluene	-	0.015	-	-	-	-	-	-	-	-	0.005 U
2-Chloronaphthalene	-	0.55	-	-	-	-	-	-	-	-	0.001 U
2-Chlorophenol	-	0.071	-	-	-	-	-	-	-	-	0.001 U
2-Methylnaphthalene	-	0.027	-	-	-	-	-	-	-	-	0.0002 U
2-Methylphenol	-	0.72	-	-	-	-	-	-	-	-	0.001 U
2-Nitroaniline	-	0.15	-	-	-	-	-	-	-	-	0.002 U
2-Nitrophenol	-	-	-	-	-	-	-	-	-	-	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	-	-	-	-	-	-	-	-	0.005 U
3-Nitroaniline	-	-	-	-	-	-	-	-	-	-	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	-	-	-	-	-	-	-	-	0.005 U
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-	0.002 U
4-Chloro-3-methylphenol	-	1.1	-	-	-	-	-	-	-	-	0.002 U
4-Chloroaniline	-	0.00032	-	-	-	-	-	-	-	-	0.002 U
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-	0.002 U
4-Methylphenol	-	1.4	-	-	-	-	-	-	-	-	0.001 U
4-Nitroaniline	-	0.0033	-	-	-	-	-	-	-	-	0.002 U
4-Nitrophenol	-	-	-	-	-	-	-	-	-	-	0.005 U
Acenaphthene	-	0.4	-	-	-	-	-	-	-	-	0.0002 U
Acenaphthylene	-	-	-	-	-	-	-	-	-	-	0.0002 U
Acetophenone	-	1.5	-	-	-	-	-	-	-	-	0.001 U
Anthracene	-	1.3	-	-	-	-	-	-	-	-	0.0002 U
Atrazine	0.003	0.00026	-	-	-	-	-	-	-	-	0.001 U
Benzaldehyde	-	1.5	-	-	-	-	-	-	-	-	0.001 U
Benzo(a)anthracene	-	0.000029	-	-	-	-	-	-	-	-	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	-	-	-	-	-	-	-	-	0.0002 U
Benzo(b)fluoranthene	-	0.000029	-	-	-	-	-	-	-	-	0.0002 U
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	-	0.0002 U
Benzo(k)fluoranthene	-	0.00029	-	-	-	-	-	-	-	-	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	-	-	-	-	-	-	-	-	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	-	-	-	-	-	-	-	-	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	-	-	-	-	-	-	-	-	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	-	-	-	-	-	-	-	-	0.0028 U
Butyl benzylphthalate (BBP)	-	0.014	-	-	-	-	-	-	-	-	0.001 U
Caprolactam	-	7.7	-	-	-	-	-	-	-	-	0.0037 J
Carbazole	-	-	-	-	-	-	-	-	-	-	0.001 U
Chrysene	-	0.0029	-	-	-	-	-	-	-	-	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	-	-	-	-	-	-	-	-	0.0002 U
Dibenzofuran	-	0.0058	-	-	-	-	-	-	-	-	0.001 U
Diethyl phthalate	-	11	-	-	-	-	-	-	-	-	0.001 U

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*
Sample ID:			*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*GW-38443-091108-NZ-013*
Sample Date:			*2/22/1999*	*11/11/1999*	*5/9/2000*	*6/6/2001*	*6/14/2002*	*7/2/2004*	*10/14/2004*	*8/3/2005*	*9/11/2008*
Sample Depth:			*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*
	USEPA Regional Screening Levels [1]										
Parameter	*MCL a*	*TapWater b*									
Dimethyl phthalate	-	-	-	-	-	-	-	-	-	-	0.001 U
Di-n-butylphthalate (DBP)	-	0.67	-	-	-	-	-	-	-	-	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	-	-	-	-	-	-	-	-	0.001 U
Fluoranthene	-	0.63	-	-	-	-	-	-	-	-	0.0002 U
Fluorene	-	0.22	-	-	-	-	-	-	-	-	0.0002 U
Hexachlorobenzene	0.001	0.000042	-	-	-	-	-	-	-	-	0.0002 U
Hexachlorobutadiene	-	0.00026	-	-	-	-	-	-	-	-	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	-	-	-	-	-	-	-	-	R
Hexachloroethane	-	0.00079	-	-	-	-	-	-	-	-	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	-	-	-	-	-	-	-	-	0.0002 U
Isophorone	-	0.067	-	-	-	-	-	-	-	-	0.001 U
Naphthalene	-	0.00014	-	-	-	-	-	-	-	-	0.0002 U
Nitrobenzene	-	0.00012	-	-	-	-	-	-	-	-	0.001 U
N-Nitrosodi-n-propylamine	-	0.0000093	-	-	-	-	-	-	-	-	0.001 U
N-Nitrosodiphenylamine	-	0.01	-	-	-	-	-	-	-	-	0.001 U
Pentachlorophenol	0.001	0.000035	-	-	-	-	-	-	-	-	0.005 U
Phenanthrene	-	-	-	-	-	-	-	-	-	-	0.0002 U
Phenol	-	4.5	-	-	-	-	-	-	-	-	0.001 U
Pyrene	-	0.087	-	-	-	-	-	-	-	-	0.0002 U
Metals											
Aluminum	-	16	-	-	-	-	-	-	-	-	0.162 J
Aluminum (dissolved)	-	16	-	-	-	-	-	-	-	-	-
Antimony	0.006	0.006	-	-	-	-	-	-	-	-	0.002 U
Antimony (dissolved)	0.006	0.006	-	-	-	-	-	-	-	-	-
Arsenic	0.01	0.000045	**0.032[ab]**	-	-	-	-	-	-	-	**0.0042 J[b]**
Arsenic (dissolved)	0.01	0.000045	-	-	-	-	-	-	-	-	-
Barium	2	2.9	0.63	-	-	-	-	-	-	-	0.163 J
Barium (dissolved)	2	2.9	-	-	-	-	-	-	-	-	-
Beryllium	0.004	0.016	-	-	-	-	-	-	-	-	0.005 U
Beryllium (dissolved)	0.004	0.016	-	-	-	-	-	-	-	-	-
Cadmium	0.005	0.0069	U	-	-	-	-	-	-	-	0.001 U
Cadmium (dissolved)	0.005	0.0069	-	-	-	-	-	-	-	-	-
Calcium	-	-	-	-	-	-	-	-	-	-	77
Calcium (dissolved)	-	-	-	-	-	-	-	-	-	-	-
Chromium	0.1	-	0.065	-	-	-	-	-	-	-	0.01 U
Chromium (dissolved)	0.1	-	-	-	-	-	-	-	-	-	-
Cobalt	-	0.0047	-	-	-	-	-	-	-	-	0.05 U
Cobalt (dissolved)	-	0.0047	-	-	-	-	-	-	-	-	-
Copper	1.3	0.62	-	-	-	-	-	-	-	-	0.025 U
Copper (dissolved)	1.3	0.62	-	-	-	-	-	-	-	-	-
Iron	-	11	-	-	-	-	-	-	-	-	1.76
Iron (dissolved)	-	11	3	-	-	-	-	-	-	-	-
Lead	0.015	-	**0.1[a]**	-	-	-	-	-	-	-	0.0004 J
Lead (dissolved)	0.015	-	-	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-	-	-	32.4
Magnesium (dissolved)	-	-	-	-	-	-	-	-	-	-	-
Manganese	-	0.32	-	-	-	-	-	-	-	-	0.213
Manganese (dissolved)	-	0.32	-	-	-	-	-	-	-	-	-

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*
Sample ID:			*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*GW-38443-091108-NZ-013*
Sample Date:			*2/22/1999*	*11/11/1999*	*5/9/2000*	*6/6/2001*	*6/14/2002*	*7/2/2004*	*10/14/2004*	*8/3/2005*	*9/11/2008*
Sample Depth:			*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*
	USEPA Regional Screening Levels [1]										
Parameter	*MCL a*	*TapWater b*									
Manganese 2+	-	-	-	-	-	-	-	-	-	-	-
Mercury	0.002	0.00063	-	-	-	-	-	-	-	-	0.0002 U
Mercury (dissolved)	0.002	0.00063	-	-	-	-	-	-	-	-	-
Nickel	-	0.3	-	-	-	-	-	-	-	-	0.04 U
Nickel (dissolved)	-	0.3	-	-	-	-	-	-	-	-	-
Potassium	-	-	-	-	-	-	-	-	-	-	9.99
Potassium (dissolved)	-	-	-	-	-	-	-	-	-	-	-
Selenium	0.05	0.078	-	-	-	-	-	-	-	-	0.005 U
Selenium (dissolved)	0.05	0.078	-	-	-	-	-	-	-	-	-
Silver	-	0.071	-	-	-	-	-	-	-	-	0.001 U
Silver (dissolved)	-	0.071	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-	-	40.6
Sodium (dissolved)	-	-	-	-	-	-	-	-	-	-	-
Thallium	0.002	0.00016	-	-	-	-	-	-	-	-	0.001 U
Thallium (dissolved)	0.002	0.00016	-	-	-	-	-	-	-	-	-
Vanadium	-	0.078	-	-	-	-	-	-	-	-	0.05 U
Vanadium (dissolved)	-	0.078	-	-	-	-	-	-	-	-	-
Zinc	-	4.7	-	-	-	-	-	-	-	-	0.02 U
Zinc (dissolved)	-	4.7	-	-	-	-	-	-	-	-	-
PCBs											
Aroclor-1016 (PCB-1016)	-	0.00096	-	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1221 (PCB-1221)	-	0.000004	-	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1232 (PCB-1232)	-	0.000004	-	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1242 (PCB-1242)	-	0.000034	-	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1248 (PCB-1248)	-	0.000034	-	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1254 (PCB-1254)	-	0.000034	-	-	-	-	-	-	-	-	0.0002 UJ
Aroclor-1260 (PCB-1260)	-	0.000034	-	-	-	-	-	-	-	-	0.0002 UJ
Pesticides											
4,4'-DDD	-	0.000027	-	-	-	-	-	-	-	-	0.00005 U
4,4'-DDE	-	0.0002	-	-	-	-	-	-	-	-	0.00005 U
4,4'-DDT	-	0.0002	-	-	-	-	-	-	-	-	0.00005 U
Aldrin	-	0.000004	-	-	-	-	-	-	-	-	0.00005 U
alpha-BHC	-	0.0000062	-	-	-	-	-	-	-	-	0.00005 U
alpha-Chlordane	-	-	-	-	-	-	-	-	-	-	0.00005 U
beta-BHC	-	0.000022	-	-	-	-	-	-	-	-	0.00005 U
delta-BHC	-	-	-	-	-	-	-	-	-	-	0.00005 U
Dieldrin	-	0.0000015	-	-	-	-	-	-	-	-	0.00005 U
Endosulfan I	-	-	-	-	-	-	-	-	-	-	0.00005 U
Endosulfan II	-	-	-	-	-	-	-	-	-	-	0.00005 U
Endosulfan sulfate	-	-	-	-	-	-	-	-	-	-	0.00005 U
Endrin	0.002	0.0017	-	-	-	-	-	-	-	-	0.00005 U
Endrin aldehyde	-	-	-	-	-	-	-	-	-	-	0.00005 U
Endrin ketone	-	-	-	-	-	-	-	-	-	-	0.00005 U
gamma-BHC (lindane)	0.0002	0.000036	-	-	-	-	-	-	-	-	0.00005 U
gamma-Chlordane	-	-	-	-	-	-	-	-	-	-	0.00005 U
Heptachlor	0.0004	0.0000018	-	-	-	-	-	-	-	-	0.00005 U
Heptachlor epoxide	0.0002	0.0000033	-	-	-	-	-	-	-	-	0.00005 U

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*	*MW-209*
Sample ID:			*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*MW209*	*GW-38443-091108-NZ-013*
Sample Date:			*2/22/1999*	*11/11/1999*	*5/9/2000*	*6/6/2001*	*6/14/2002*	*7/2/2004*	*10/14/2004*	*8/3/2005*	*9/11/2008*
Sample Depth:			*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*	*694.48-686.48 ft AMSL*
	USEPA Regional Screening Levels [1]										
Parameter	*MCL a*	*TapWater b*									
Methoxychlor	0.04	0.027	-	-	-	-	-	-	-	-	0.0001 U
Toxaphene	0.003	0.000013	-	-	-	-	-	-	-	-	0.002 U
Herbicides											
2,4,5-TP (Silvex)	0.05	0.084	-	-	-	-	-	-	-	-	0.001 U
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07	0.13	-	-	-	-	-	-	-	-	0.004 U
Gases											
Ethane	-	-	0.004	-	-	-	-	-	-	-	-
Ethene	-	-	U	-	-	-	-	-	-	-	-
Methane	-	-	0.28 E/0.59 D	-	-	-	-	-	-	-	-
General Chemistry											
Alkalinity, total (as CaCO3)	-	-	340	-	-	-	-	-	-	-	-
Ammonia-N	-	-	1	-	-	-	-	-	-	-	-
Chloride	-	-	39.1	-	-	-	-	-	-	-	-
Cyanide (total)	0.2	0.0014	-	-	-	-	-	-	-	-	-
Dissolved organic carbon (DOC)	-	-	-	-	-	-	-	-	-	-	-
Hardness	-	-	-	-	-	-	-	-	-	-	-
Nitrate (as N)	10	25	U	-	-	-	-	-	-	-	-
Nitrite (as N)	1	1.6	-	-	-	-	-	-	-	-	-
Sulfate	-	-	78	-	-	-	-	-	-	-	-
Sulfide (acid soluble)	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	-	-	4	-	-	-	-	-	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

B - Value is real, but above instrument detection limit and below contract-required detection limit (Inorganics).

B - Compound is found in the associated blank as well as in the sample (Organics).

D - Result was obtained from the analysis of a dilution.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument.

J - Indicates an estimated value.

R - The parameter was rejected.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

- - Not applicable.

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-209*	*MW-209A*	*MW-209A*	*MW-212*	*MW-212*	*MW-212*	*MW-212*	*MW-212*	*MW-212*
Sample ID:			*GW-38443-072109-GL-003*	*GW-38443-072209-GL-004*	*GW-38443-010510-DR-007*	*MW212*	*MW212*	*MW212*	*MW212*	*MW212*	*MW212*
Sample Date:			*7/21/2009*	*7/22/2009*	*1/5/2010*	*2/18/1999*	*11/11/1999*	*5/10/2000*	*6/6/2001*	*6/14/2002*	*7/2/2004*
Sample Depth:			*694.48-686.48 ft AMSL*	*660.34-655.34 ft AMSL*	*660.34-655.34 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*
	USEPA Regional Screening Levels [1]										
Parameter	*MCL a*	*TapWater b*									
Volatiles											
1,1,1-Trichloroethane	0.2	7.5	0.001 U	0.001 U	0.001 U	U	U	U	U	U	U
1,1,2,2-Tetrachloroethane	-	0.000066	0.001 UJ	0.001 UJ	0.001 UJ	U	U	U	U	U	U
1,1,2-Trichloroethane	0.005	0.00024	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
1,1-Dichloroethane	-	0.0024	0.001 U	0.001 U	0.001 U	U	U	U	U	U	U
1,1-Dichloroethene	0.007	0.26	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
1,2,4-Trichlorobenzene	0.07	0.00099	0.001 UJ	0.001 UJ	0.001 U	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	0.002 U	0.002 U	0.002 UJ	-	-	-	-	-	-
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
1,2-Dichlorobenzene	0.6	0.28	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
1,2-Dichloroethane	0.005	0.00015	0.001 U	0.001 U	0.001 U	U	U	U	U	U	U
1,2-Dichloroethene (total)	-	0.13	-	-	-	U	U	U	U	U	U
1,2-Dichloropropane	0.005	0.00038	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
1,4-Dichlorobenzene	0.075	0.00042	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	0.01 U	0.01 U	0.01 U	-	-	-	-	-	-
2-Hexanone	-	0.034	0.01 U	0.01 U	0.01 U	-	-	-	-	-	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	0.01 U	0.01 U	0.01 U	-	-	-	-	-	-
Acetone	-	12	0.01 U	0.01 U	0.01 U	U	U	U	U	U	U
Benzene	0.005	0.00039	0.001 U	0.001 U	0.001 U	U	U	U	U	U	U
Bromodichloromethane	0.08	0.00012	0.001 U	0.001 U	0.001 UJ	-	-	-	-	-	-
Bromoform	0.08	0.0079	0.001 U	0.001 U	0.001 U	U	U	U	U	U	U
Bromomethane (Methyl bromide)	-	0.007	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Carbon disulfide	-	0.72	0.001 UJ	0.001 UJ	0.001 U	-	-	-	-	-	-
Carbon tetrachloride	0.005	0.00039	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Chlorobenzene	0.1	0.072	0.001 U	0.001 U	0.001 U	U	U	U	U	U	U
Chloroethane	-	21	0.001 U	0.001 U	0.001 UJ	U	U	U	U	U	U
Chloroform (Trichloromethane)	0.08	0.00019	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Chloromethane (Methyl chloride)	-	0.19	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.07	0.028	0.001 U	0.0011	0.001 U	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	0.001 UJ	0.001 UJ	0.001 UJ	-	-	-	-	-	-
Cyclohexane	-	13	0.001 UJ	0.001 UJ	0.001 U	-	-	-	-	-	-
Dibromochloromethane	0.08	0.00015	0.001 U	0.001 U	0.001 UJ	-	-	-	-	-	-
Dichlorodifluoromethane (CFC-12)	-	0.19	0.001 UJ	0.001 UJ	0.001 UJ	-	-	-	-	-	-
Ethylbenzene	0.7	0.0013	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Isopropyl benzene	-	0.39	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Methyl acetate	-	16	0.01 U	0.01 U	0.01 U	-	-	-	-	-	-
Methyl cyclohexane	-	-	0.001 UJ	0.001 UJ	0.001 U	-	-	-	-	-	-
Methyl tert butyl ether (MTBE)	-	0.012	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
Methylene chloride	0.005	0.0099	0.001 U	0.001 U	0.001 U	U	**0.0054 B[a]**	U	U	U	U
Styrene	0.1	1.1	0.001 U	0.001 U	0.001 U	U	U	U	U	U	U
Tetrachloroethene	0.005	0.0097	0.001 U	0.001 U	0.001 U	U	U	U	U	U	U
Toluene	1	0.86	0.001 U	0.001 U	0.001 U	0.002 J	0.0058	0.0066	U	U	U
trans-1,2-Dichloroethene	0.1	0.086	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	0.001 UJ	0.001 UJ	0.001 UJ	-	-	-	-	-	-
Trichloroethene	0.005	0.00044	0.001 U	0.001 U	0.001 U	U	U	U	U	U	U
Trichlorofluoromethane (CFC-11)	-	1.1	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Trifluorotrichloroethane (Freon 113)	-	53	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Vinyl chloride	0.002	0.000015	**0.00066 J[b]**	**0.019[ab]**	**0.011[ab]**	U	U	U	U	U	U

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-209*	*MW-209A*	*MW-209A*	*MW-212*	*MW-212*	*MW-212*	*MW-212*	*MW-212*	*MW-212*
Sample ID:			*GW-38443-072109-GL-003*	*GW-38443-072209-GL-004*	*GW-38443-010510-DR-007*	*MW212*	*MW212*	*MW212*	*MW212*	*MW212*	*MW212*
Sample Date:			*7/21/2009*	*7/22/2009*	*1/5/2010*	*2/18/1999*	*11/11/1999*	*5/10/2000*	*6/6/2001*	*6/14/2002*	*7/2/2004*
Sample Depth:			*694.48-686.48 ft AMSL*	*660.34-655.34 ft AMSL*	*660.34-655.34 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*
	USEPA Regional Screening Levels [1]										
Parameter	*MCL a*	*TapWater b*									
Xylenes (total)	10	0.19	0.002 U	0.002 U	0.002 U	U	U	U	U	U	U
Semi-Volatiles											
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
2,4,5-Trichlorophenol	-	0.89	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
2,4,6-Trichlorophenol	-	0.0035	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
2,4-Dichlorophenol	-	0.035	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
2,4-Dimethylphenol	-	0.27	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
2,4-Dinitrophenol	-	0.03	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
2,4-Dinitrotoluene	-	0.0002	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
2,6-Dinitrotoluene	-	0.015	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
2-Chloronaphthalene	-	0.55	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
2-Chlorophenol	-	0.071	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
2-Methylnaphthalene	-	0.027	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
2-Methylphenol	-	0.72	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
2-Nitroaniline	-	0.15	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
2-Nitrophenol	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
3,3'-Dichlorobenzidine	-	0.00011	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
3-Nitroaniline	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	-	0.0012	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
4-Bromophenyl phenyl ether	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
4-Chloro-3-methylphenol	-	1.1	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
4-Chloroaniline	-	0.00032	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
4-Methylphenol	-	1.4	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
4-Nitroaniline	-	0.0033	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
4-Nitrophenol	-	-	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
Acenaphthene	-	0.4	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Acenaphthylene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Acetophenone	-	1.5	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Anthracene	-	1.3	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Atrazine	0.003	0.00026	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Benzaldehyde	-	1.5	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Benzo(a)anthracene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(a)pyrene	0.0002	0.0000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(b)fluoranthene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Benzo(k)fluoranthene	-	0.00029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Biphenyl (1,1-Biphenyl)	-	0.00083	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
bis(2-Chloroethoxy)methane	-	0.046	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
bis(2-Chloroethyl)ether	-	0.000012	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
Butyl benzylphthalate (BBP)	-	0.014	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Caprolactam	-	7.7	0.005 U	0.005 U	0.005 UJ	-	-	-	-	-	-
Carbazole	-	-	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Chrysene	-	0.0029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Dibenz(a,h)anthracene	-	0.0000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Dibenzofuran	-	0.0058	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Diethyl phthalate	-	11	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-209*	*MW-209A*	*MW-209A*	*MW-212*	*MW-212*	*MW-212*	*MW-212*	*MW-212*	*MW-212*
Sample ID:			*GW-38443-072109-GL-003*	*GW-38443-072209-GL-004*	*GW-38443-010510-DR-007*	*MW212*	*MW212*	*MW212*	*MW212*	*MW212*	*MW212*
Sample Date:			*7/21/2009*	*7/22/2009*	*1/5/2010*	*2/18/1999*	*11/11/1999*	*5/10/2000*	*6/6/2001*	*6/14/2002*	*7/2/2004*
Sample Depth:			*694.48-686.48 ft AMSL*	*660.34-655.34 ft AMSL*	*660.34-655.34 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*
	USEPA Regional Screening Levels [1]										
Parameter	*MCL a*	*TapWater b*									
Dimethyl phthalate	-	-	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Di-n-butylphthalate (DBP)	-	0.67	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Di-n-octyl phthalate (DnOP)	-	0.19	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Fluoranthene	-	0.63	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Fluorene	-	0.22	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Hexachlorobenzene	0.001	0.000042	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Hexachlorobutadiene	-	0.00026	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Hexachlorocyclopentadiene	0.05	0.022	0.01 U	0.01 U	0.01 U	-	-	-	-	-	-
Hexachloroethane	-	0.00079	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	-	0.000029	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Isophorone	-	0.067	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Naphthalene	-	0.00014	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Nitrobenzene	-	0.00012	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	-	0.0000093	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
N-Nitrosodiphenylamine	-	0.01	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Pentachlorophenol	0.001	0.000035	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
Phenanthrene	-	-	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Phenol	-	4.5	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Pyrene	-	0.087	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Metals											
Aluminum	-	16	0.152 J	0.2 U	0.2 U	-	-	-	-	-	-
Aluminum (dissolved)	-	16	0.2 U	0.2 U	-	-	-	-	-	-	-
Antimony	0.006	0.006	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
Antimony (dissolved)	0.006	0.006	0.002 U	0.002 U	-	-	-	-	-	-	-
Arsenic	0.01	0.000045	**0.0044 J[b]**	**0.0031 J[b]**	**0.0033 J[b]**	U	-	-	-	-	-
Arsenic (dissolved)	0.01	0.000045	**0.004 J[b]**	**0.003 J[b]**	-	-	-	-	-	-	-
Barium	2	2.9	0.136 J	0.321	0.348	U	-	-	-	-	-
Barium (dissolved)	2	2.9	0.134 J	0.313	-	-	-	-	-	-	-
Beryllium	0.004	0.016	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
Beryllium (dissolved)	0.004	0.016	0.005 U	0.005 U	-	-	-	-	-	-	-
Cadmium	0.005	0.0069	0.001 U	0.001 U	0.001 U	U	-	-	-	-	-
Cadmium (dissolved)	0.005	0.0069	0.001 U	0.001 U	-	-	-	-	-	-	-
Calcium	-	-	69.5	69	76.5	-	-	-	-	-	-
Calcium (dissolved)	-	-	68.8	67	-	-	-	-	-	-	-
Chromium	0.1	-	0.01 U	0.01 U	0.01 U	0.013	-	-	-	-	-
Chromium (dissolved)	0.1	-	0.01 U	0.01 U	-	-	-	-	-	-	-
Cobalt	-	0.0047	0.05 U	0.05 U	0.05 U	-	-	-	-	-	-
Cobalt (dissolved)	-	0.0047	0.05 U	0.05 U	-	-	-	-	-	-	-
Copper	1.3	0.62	0.025 U	0.025 U	0.025 U	-	-	-	-	-	-
Copper (dissolved)	1.3	0.62	0.025 U	0.025 U	-	-	-	-	-	-	-
Iron	-	11	1.81	1.35	1.4	-	-	-	-	-	-
Iron (dissolved)	-	11	1.36	1.25	-	1.2	-	-	-	-	-
Lead	0.015	-	0.00044 J	0.001 U	0.00024 J	U	-	-	-	-	-
Lead (dissolved)	0.015	-	0.001 U	0.001 U	-	-	-	-	-	-	-
Magnesium	-	-	28.5	56.9	61.6	-	-	-	-	-	-
Magnesium (dissolved)	-	-	28.5	55.4	-	-	-	-	-	-	-
Manganese	-	0.32	0.179	0.176	0.208	-	-	-	-	-	-
Manganese (dissolved)	-	0.32	0.175	0.171	-	-	-	-	-	-	-

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-209*	*MW-209A*	*MW-209A*	*MW-212*	*MW-212*	*MW-212*	*MW-212*	*MW-212*	*MW-212*
Sample ID:			*GW-38443-072109-GL-003*	*GW-38443-072209-GL-004*	*GW-38443-010510-DR-007*	*MW212*	*MW212*	*MW212*	*MW212*	*MW212*	*MW212*
Sample Date:			*7/21/2009*	*7/22/2009*	*1/5/2010*	*2/18/1999*	*11/11/1999*	*5/10/2000*	*6/6/2001*	*6/14/2002*	*7/2/2004*
Sample Depth:			*694.48-686.48 ft AMSL*	*660.34-655.34 ft AMSL*	*660.34-655.34 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*
	USEPA Regional Screening Levels [1]										
Parameter	*MCL a*	*TapWater b*									
Manganese 2+	-	-	0.260	0.566	0.359	-	-	-	-	-	-
Mercury	0.002	0.00063	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Mercury (dissolved)	0.002	0.00063	0.0002 U	0.0002 U	-	-	-	-	-	-	-
Nickel	-	0.3	0.04 U	0.04 U	0.04 U	-	-	-	-	-	-
Nickel (dissolved)	-	0.3	0.04 U	0.04 U	-	-	-	-	-	-	-
Potassium	-	-	7.68	21.1	21.2	-	-	-	-	-	-
Potassium (dissolved)	-	-	7.78	20.6	-	-	-	-	-	-	-
Selenium	0.05	0.078	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
Selenium (dissolved)	0.05	0.078	0.005 U	0.005 U	-	-	-	-	-	-	-
Silver	-	0.071	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Silver (dissolved)	-	0.071	0.001 U	0.001 U	-	-	-	-	-	-	-
Sodium	-	-	43.1	46.8	37.4	-	-	-	-	-	-
Sodium (dissolved)	-	-	43.8	45.8	-	-	-	-	-	-	-
Thallium	0.002	0.00016	0.001 U	0.001 U	0.001 U	-	-	-	-	-	-
Thallium (dissolved)	0.002	0.00016	0.001 U	0.001 U	-	-	-	-	-	-	-
Vanadium	-	0.078	0.05 U	0.05 U	0.05 U	-	-	-	-	-	-
Vanadium (dissolved)	-	0.078	0.05 U	0.05 U	-	-	-	-	-	-	-
Zinc	-	4.7	0.02 U	0.02 U	0.02 U	-	-	-	-	-	-
Zinc (dissolved)	-	4.7	0.02 U	0.02 U	-	-	-	-	-	-	-
PCBs											
Aroclor-1016 (PCB-1016)	-	0.00096	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Aroclor-1221 (PCB-1221)	-	0.000004	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Aroclor-1232 (PCB-1232)	-	0.000004	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Aroclor-1242 (PCB-1242)	-	0.000034	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Aroclor-1248 (PCB-1248)	-	0.000034	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Aroclor-1254 (PCB-1254)	-	0.000034	0.0002 U	0.0002 U	**0.000046 J[b]**	-	-	-	-	-	-
Aroclor-1260 (PCB-1260)	-	0.000034	0.0002 U	0.0002 U	0.0002 U	-	-	-	-	-	-
Pesticides											
4,4'-DDD	-	0.000027	0.00005 U	0.00005 UJ	0.00005 U	-	-	-	-	-	-
4,4'-DDE	-	0.0002	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
4,4'-DDT	-	0.0002	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
Aldrin	-	0.000004	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
alpha-BHC	-	0.0000062	0.00005 U	0.00005 U	**0.00004 J[b]**	-	-	-	-	-	-
alpha-Chlordane	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
beta-BHC	-	0.000022	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
delta-BHC	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
Dieldrin	-	0.0000015	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
Endosulfan I	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
Endosulfan II	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
Endosulfan sulfate	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
Endrin	0.002	0.0017	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
Endrin aldehyde	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
Endrin ketone	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
gamma-BHC (lindane)	0.0002	0.000036	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
gamma-Chlordane	-	-	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
Heptachlor	0.0004	0.0000018	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-
Heptachlor epoxide	0.0002	0.0000033	0.00005 U	0.00005 U	0.00005 U	-	-	-	-	-	-

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-209*	*MW-209A*	*MW-209A*	*MW-212*	*MW-212*	*MW-212*	*MW-212*	*MW-212*	*MW-212*
Sample ID:			*GW-38443-072109-GL-003*	*GW-38443-072209-GL-004*	*GW-38443-010510-DR-007*	*MW212*	*MW212*	*MW212*	*MW212*	*MW212*	*MW212*
Sample Date:			*7/21/2009*	*7/22/2009*	*1/5/2010*	*2/18/1999*	*11/11/1999*	*5/10/2000*	*6/6/2001*	*6/14/2002*	*7/2/2004*
Sample Depth:			*694.48-686.48 ft AMSL*	*660.34-655.34 ft AMSL*	*660.34-655.34 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*
	USEPA Regional Screening Levels [1]										
Parameter	*MCL a*	*TapWater b*									
Methoxychlor	0.04	0.027	0.0001 U	0.0001 U	0.0001 U	-	-	-	-	-	-
Toxaphene	0.003	0.000013	0.002 U	0.002 U	0.002 U	-	-	-	-	-	-
Herbicides											
2,4,5-TP (Silvex)	0.05	0.084	0.001 U	0.001 U	-	-	-	-	-	-	-
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07	0.13	0.004 U	0.004 U	-	-	-	-	-	-	-
Gases											
Ethane	-	-	0.001	0.0068	0.0033 J	0.001	-	-	-	-	-
Ethene	-	-	0.0005 U	0.00026 J	0.0005 U	U	-	-	-	-	-
Methane	-	-	0.28	0.43	0.078	1.3 D/0.3 E	-	-	-	-	-
General Chemistry											
Alkalinity, total (as CaCO3)	-	-	309	394	374	270	-	-	-	-	-
Ammonia-N	-	-	-	-	-	1.7	-	-	-	-	-
Chloride	-	-	41.0	66.8	78.4	96.3	-	-	-	-	-
Cyanide (total)	0.2	0.0014	0.010 U	0.010 U	-	-	-	-	-	-	-
Dissolved organic carbon (DOC)	-	-	4	5	4	-	-	-	-	-	-
Hardness	-	-	291	407	445	-	-	-	-	-	-
Nitrate (as N)	10	25	0.10 U	0.10 U	0.10 U	U	-	-	-	-	-
Nitrite (as N)	1	1.6	0.10 U	0.10 U	0.10 U	-	-	-	-	-	-
Sulfate	-	-	45.0	58.8	65.0	94.5	-	-	-	-	-
Sulfide (acid soluble)	-	-	3.0 U	3.0 U	3.0 U	-	-	-	-	-	-
Total organic carbon (TOC)	-	-	-	-	-	4	-	-	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

B - Value is real, but above instrument detection limit and below contract-required detection limit (Inorganics).

B - Compound is found in the associated blank as well as in the sample (Organics).

D - Result was obtained from the analysis of a dilution.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument.

J - Indicates an estimated value.

R - The parameter was rejected.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

- - Not applicable.

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-212*	*MW-212*	*MW-212*	*MW-218A*	*MW-218A*	*MW-218B*	*MW-218B*	*MW-218B*
Sample ID:			*MW212*	*MW212*	*GW-38443-090408-GL-001*	*GW-38443-072109-GL-001*	*GW-38443-122209-DR-003*	*GW-38443-072109-GL-002*	*GW-38443-122209-DR-001*	*GW-38443-122209-DR-002*
Sample Date:			*10/14/2004*	*8/3/2005*	*9/4/2008*	*7/21/2009*	*12/22/2009*	*7/21/2009*	*12/22/2009*	*12/22/2009*
Sample Depth:			*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*708.17-698.17 ft AMSL*	*708.17-698.17 ft AMSL*	*650.13-645.13 ft AMSL*	*650.13-645.13 ft AMSL*	*650.13-645.13 ft AMSL*
	USEPA Regional Screening Levels [1]									*Duplicate*
Parameter	*MCL a*	*TapWater b*								
Volatiles										
1,1,1-Trichloroethane	0.2	7.5	U	U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	-	0.000066	U	U	0.001 U	0.001 UJ	0.001 U	0.001 UJ	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005	0.00024	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	-	0.0024	U	U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.007	0.26	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene	0.07	0.00099	-	-	0.001 U	0.001 UJ	0.001 U	0.001 UJ	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0.00000032	-	-	0.002 UJ	0.002 U	0.002 UJ	0.002 U	0.002 UJ	0.002 UJ
1,2-Dibromoethane (Ethylene dibromide)	0.00005	0.0000065	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.6	0.28	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	0.005	0.00015	U	U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethene (total)	-	0.13	U	U	-	-	-	-	-	-
1,2-Dichloropropane	0.005	0.00038	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	-	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene	0.075	0.00042	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	-	4.9	-	-	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	-	0.034	-	-	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	-	1	-	-	0.01 U	0.01 U	0.01 UJ	0.01 U	0.01 UJ	0.01 UJ
Acetone	-	12	U	U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005	0.00039	U	U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.08	0.00012	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	0.08	0.0079	U	U	0.001 UJ	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromomethane (Methyl bromide)	-	0.007	-	-	0.001 U	0.001 U	0.001 UJ	0.001 U	0.001 UJ	0.001 UJ
Carbon disulfide	-	0.72	-	-	0.001 UJ	0.001 UJ	0.001 U	0.001 UJ	0.001 U	0.001 U
Carbon tetrachloride	0.005	0.00039	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.1	0.072	U	U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	-	21	U	U	0.001 U	0.001 U	0.001 UJ	0.001 U	0.001 UJ	0.001 UJ
Chloroform (Trichloromethane)	0.08	0.00019	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride)	-	0.19	-	-	0.001 U	0.001 U	0.001 UJ	0.001 U	0.001 UJ	0.001 UJ
cis-1,2-Dichloroethene	0.07	0.028	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	-	-	-	-	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Cyclohexane	-	13	-	-	0.001 U	0.001 UJ	0.001 U	0.001 UJ	0.001 U	0.001 U
Dibromochloromethane	0.08	0.00015	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12)	-	0.19	-	-	0.001 U	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Ethylbenzene	0.7	0.0013	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Isopropyl benzene	-	0.39	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl acetate	-	16	-	-	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methyl cyclohexane	-	-	-	-	0.001 U	0.001 UJ	0.001 U	0.001 UJ	0.001 U	0.001 U
Methyl tert butyl ether (MTBE)	-	0.012	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Methylene chloride	0.005	0.0099	U	U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Styrene	0.1	1.1	U	U	0.001 UJ	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005	0.0097	U	U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	1	0.86	U	U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.1	0.086	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	-	-	-	-	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ
Trichloroethene	0.005	0.00044	U	U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichlorofluoromethane (CFC-11)	-	1.1	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trifluorotrichloroethane (Freon 113)	-	53	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.002	0.000015	U	U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-212*	*MW-212*	*MW-212*	*MW-218A*	*MW-218A*	*MW-218B*	*MW-218B*	*MW-218B*
Sample ID:			*MW212*	*MW212*	*GW-38443-090408-GL-001*	*GW-38443-072109-GL-001*	*GW-38443-122209-DR-003*	*GW-38443-072109-GL-002*	*GW-38443-122209-DR-001*	*GW-38443-122209-DR-002*
Sample Date:			*10/14/2004*	*8/3/2005*	*9/4/2008*	*7/21/2009*	*12/22/2009*	*7/21/2009*	*12/22/2009*	*12/22/2009*
Sample Depth:			*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*708.17-698.17 ft AMSL*	*708.17-698.17 ft AMSL*	*650.13-645.13 ft AMSL*	*650.13-645.13 ft AMSL*	*650.13-645.13 ft AMSL*
	USEPA Regional Screening Levels [1]									*Duplicate*
Parameter	*MCL a*	*TapWater b*								
Xylenes (total)	10	0.19	U	U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Semi-Volatiles										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-	0.00031	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2,4,5-Trichlorophenol	-	0.89	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
2,4,6-Trichlorophenol	-	0.0035	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
2,4-Dichlorophenol	-	0.035	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
2,4-Dimethylphenol	-	0.27	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
2,4-Dinitrophenol	-	0.03	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
2,4-Dinitrotoluene	-	0.0002	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
2,6-Dinitrotoluene	-	0.015	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
2-Chloronaphthalene	-	0.55	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Chlorophenol	-	0.071	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Methylnaphthalene	-	0.027	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
2-Methylphenol	-	0.72	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
2-Nitroaniline	-	0.15	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
2-Nitrophenol	-	-	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
3,3'-Dichlorobenzidine	-	0.00011	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
3-Nitroaniline	-	-	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
4,6-Dinitro-2-methylphenol	-	0.0012	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
4-Bromophenyl phenyl ether	-	-	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
4-Chloro-3-methylphenol	-	1.1	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
4-Chloroaniline	-	0.00032	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
4-Chlorophenyl phenyl ether	-	-	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
4-Methylphenol	-	1.4	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
4-Nitroaniline	-	0.0033	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
4-Nitrophenol	-	-	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Acenaphthene	-	0.4	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Acenaphthylene	-	-	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Acetophenone	-	1.5	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Anthracene	-	1.3	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Atrazine	0.003	0.00026	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Benzaldehyde	-	1.5	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Benzo(a)anthracene	-	0.000029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Benzo(a)pyrene	0.0002	0.0000029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Benzo(b)fluoranthene	-	0.000029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Benzo(g,h,i)perylene	-	-	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Benzo(k)fluoranthene	-	0.00029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Biphenyl (1,1-Biphenyl)	-	0.00083	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
bis(2-Chloroethoxy)methane	-	0.046	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
bis(2-Chloroethyl)ether	-	0.000012	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.0048	-	-	0.0024 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Butyl benzylphthalate (BBP)	-	0.014	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Caprolactam	-	7.7	-	-	0.011	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Carbazole	-	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chrysene	-	0.0029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Dibenz(a,h)anthracene	-	0.0000029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Dibenzofuran	-	0.0058	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Diethyl phthalate	-	11	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-212*	*MW-212*	*MW-212*	*MW-218A*	*MW-218A*	*MW-218B*	*MW-218B*	*MW-218B*
Sample ID:			*MW212*	*MW212*	*GW-38443-090408-GL-001*	*GW-38443-072109-GL-001*	*GW-38443-122209-DR-003*	*GW-38443-072109-GL-002*	*GW-38443-122209-DR-001*	*GW-38443-122209-DR-002*
Sample Date:			*10/14/2004*	*8/3/2005*	*9/4/2008*	*7/21/2009*	*12/22/2009*	*7/21/2009*	*12/22/2009*	*12/22/2009*
Sample Depth:			*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*708.17-698.17 ft AMSL*	*708.17-698.17 ft AMSL*	*650.13-645.13 ft AMSL*	*650.13-645.13 ft AMSL*	*650.13-645.13 ft AMSL*
	USEPA Regional Screening Levels [1]									*Duplicate*
Parameter	*MCL a*	*TapWater b*								
Dimethyl phthalate	-	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Di-n-butylphthalate (DBP)	-	0.67	-	-	0.0012 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Di-n-octyl phthalate (DnOP)	-	0.19	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Fluoranthene	-	0.63	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Fluorene	-	0.22	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Hexachlorobenzene	0.001	0.000042	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Hexachlorobutadiene	-	0.00026	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Hexachlorocyclopentadiene	0.05	0.022	-	-	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Hexachloroethane	-	0.00079	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Indeno(1,2,3-cd)pyrene	-	0.000029	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Isophorone	-	0.067	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Naphthalene	-	0.00014	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nitrobenzene	-	0.00012	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
N-Nitrosodi-n-propylamine	-	0.0000093	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
N-Nitrosodiphenylamine	-	0.01	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Pentachlorophenol	0.001	0.000035	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Phenanthrene	-	-	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Phenol	-	4.5	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Pyrene	-	0.087	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Metals										
Aluminum	-	16	-	-	0.15 J	0.2 U	0.2 U	0.2 U	1.05	0.92
Aluminum (dissolved)	-	16	-	-	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Antimony	0.006	0.006	-	-	0.002 U	0.00046 J	0.00027 J	0.002 U	0.00015 J	0.002 U
Antimony (dissolved)	0.006	0.006	-	-	-	0.00045 J	0.00023 J	0.002 U	0.002 U	0.002 U
Arsenic	0.01	0.000045	-	-	**0.0037 J[b]**	**0.00074 J[b]**	**0.00057 J[b]**	**0.004 J[b]**	**0.0076[b]**	**0.0078[b]**
Arsenic (dissolved)	0.01	0.000045	-	-	-	**0.00083 J[b]**	**0.00056 J[b]**	**0.0041 J[b]**	**0.0067[b]**	**0.0069[b]**
Barium	2	2.9	-	-	0.175 J	0.104 J	0.089 J	0.186 J	0.191 J	0.197 J
Barium (dissolved)	2	2.9	-	-	-	0.104 J	0.0898 J	0.177 J	0.195 J	0.192 J
Beryllium	0.004	0.016	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Beryllium (dissolved)	0.004	0.016	-	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Cadmium	0.005	0.0069	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Cadmium (dissolved)	0.005	0.0069	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Calcium	-	-	-	-	37.7	51.4	46.1	98	93.6	96.5
Calcium (dissolved)	-	-	-	-	-	51.3	45.9	92.1	91.9	90.2
Chromium	0.1	-	-	-	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Chromium (dissolved)	0.1	-	-	-	-	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	-	0.0047	-	-	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Cobalt (dissolved)	-	0.0047	-	-	-	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Copper	1.3	0.62	-	-	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
Copper (dissolved)	1.3	0.62	-	-	-	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
Iron	-	11	-	-	0.894	0.1 U	0.1 U	4.15	3.87	3.86
Iron (dissolved)	-	11	-	-	-	0.1 U	0.1 U	3.77	2.45	2.42
Lead	0.015	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.00087 J	0.00076 J
Lead (dissolved)	0.015	-	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Magnesium	-	-	-	-	11.5	23.3	28.5	33.4	32.9	34.1
Magnesium (dissolved)	-	-	-	-	-	23.3	28.5	31.4	32.6	31.9
Manganese	-	0.32	-	-	0.0572	0.0586	0.0326	0.0705	0.094	0.0905
Manganese (dissolved)	-	0.32	-	-	-	0.0593	0.032	0.0641	0.0578	0.0565

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-212*	*MW-212*	*MW-212*	*MW-218A*	*MW-218A*	*MW-218B*	*MW-218B*	*MW-218B*
Sample ID:			*MW212*	*MW212*	*GW-38443-090408-GL-001*	*GW-38443-072109-GL-001*	*GW-38443-122209-DR-003*	*GW-38443-072109-GL-002*	*GW-38443-122209-DR-001*	*GW-38443-122209-DR-002*
Sample Date:			*10/14/2004*	*8/3/2005*	*9/4/2008*	*7/21/2009*	*12/22/2009*	*7/21/2009*	*12/22/2009*	*12/22/2009*
Sample Depth:			*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*708.17-698.17 ft AMSL*	*708.17-698.17 ft AMSL*	*650.13-645.13 ft AMSL*	*650.13-645.13 ft AMSL*	*650.13-645.13 ft AMSL*
	USEPA Regional Screening Levels [1]									*Duplicate*
Parameter	*MCL a*	*TapWater b*								
Manganese 2+	-	-	-	-	-	0.050 U	0.028 J	0.250 U	0.037 J	0.044 J
Mercury	0.002	0.00063	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Mercury (dissolved)	0.002	0.00063	-	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel	-	0.3	-	-	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nickel (dissolved)	-	0.3	-	-	-	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Potassium	-	-	-	-	13.6	5.04	3.84 J	2.68 J	2.87 J	2.93 J
Potassium (dissolved)	-	-	-	-	-	5.1	3.86 J	2.56 J	2.68 J	2.66 J
Selenium	0.05	0.078	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Selenium (dissolved)	0.05	0.078	-	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Silver	-	0.071	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Silver (dissolved)	-	0.071	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Sodium	-	-	-	-	105	25.1	26.2	24.5	23.8	24.7
Sodium (dissolved)	-	-	-	-	-	25.5	26.1	23.5	25.2	24.8
Thallium	0.002	0.00016	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Thallium (dissolved)	0.002	0.00016	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vanadium	-	0.078	-	-	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Vanadium (dissolved)	-	0.078	-	-	-	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Zinc	-	4.7	-	-	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Zinc (dissolved)	-	4.7	-	-	-	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
PCBs										
Aroclor-1016 (PCB-1016)	-	0.00096	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1221 (PCB-1221)	-	0.000004	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1232 (PCB-1232)	-	0.000004	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1242 (PCB-1242)	-	0.000034	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1248 (PCB-1248)	-	0.000034	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1254 (PCB-1254)	-	0.000034	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1260 (PCB-1260)	-	0.000034	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Pesticides										
4,4'-DDD	-	0.000027	-	-	0.00005 UJ	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
4,4'-DDE	-	0.0002	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
4,4'-DDT	-	0.0002	-	-	0.00005 UJ	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Aldrin	-	0.000004	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
alpha-BHC	-	0.0000062	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
alpha-Chlordane	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
beta-BHC	-	0.000022	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
delta-BHC	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Dieldrin	-	0.0000015	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endosulfan I	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endosulfan II	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endosulfan sulfate	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endrin	0.002	0.0017	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endrin aldehyde	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Endrin ketone	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
gamma-BHC (lindane)	0.0002	0.000036	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
gamma-Chlordane	-	-	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Heptachlor	0.0004	0.0000018	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U
Heptachlor epoxide	0.0002	0.0000033	-	-	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U	0.00005 U

TABLE A-2

HISTORIC GROUNDWATER MONITORING WELL SAMPLES ANALYTICAL RESULTS
SOUTHERN PARCELS
MORAINE, OHIO

Sample Location:			*MW-212*	*MW-212*	*MW-212*	*MW-218A*	*MW-218A*	*MW-218B*	*MW-218B*	*MW-218B*
Sample ID:			*MW212*	*MW212*	*GW-38443-090408-GL-001*	*GW-38443-072109-GL-001*	*GW-38443-122209-DR-003*	*GW-38443-072109-GL-002*	*GW-38443-122209-DR-001*	*GW-38443-122209-DR-002*
Sample Date:			*10/14/2004*	*8/3/2005*	*9/4/2008*	*7/21/2009*	*12/22/2009*	*7/21/2009*	*12/22/2009*	*12/22/2009*
Sample Depth:			*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*680.31-670.31 ft AMSL*	*708.17-698.17 ft AMSL*	*708.17-698.17 ft AMSL*	*650.13-645.13 ft AMSL*	*650.13-645.13 ft AMSL*	*650.13-645.13 ft AMSL*
	USEPA Regional Screening Levels [1]									*Duplicate*
Parameter	*MCL a*	*TapWater b*								
Methoxychlor	0.04	0.027	-	-	0.0001 UJ	0.0001 U	0.0001 UJ	0.0001 U	0.0001 UJ	0.0001 UJ
Toxaphene	0.003	0.000013	-	-	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Herbicides										
2,4,5-TP (Silvex)	0.05	0.084	-	-	0.001 U	0.001 U	-	0.001 U	-	-
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07	0.13	-	-	0.004 U	0.004 U	-	0.004 U	-	-
Gases										
Ethane	-	-	-	-	-	0.0005 U	0.0005 UJ	0.0005 U	0.0005 UJ	0.00029 J
Ethene	-	-	-	-	-	0.0005 U	0.0005 UJ	0.0005 U	0.00031 J	0.00026 J
Methane	-	-	-	-	-	0.039	0.016	0.0036	0.0026	0.0028
General Chemistry										
Alkalinity, total (as CaCO3)	-	-	-	-	-	194	199	308	288	300
Ammonia-N	-	-	-	-	-	-	-	-	-	-
Chloride	-	-	-	-	-	43.1	42.8	54.6	57.9	58.2
Cyanide (total)	0.2	0.0014	-	-	-	0.010 U	-	0.010 U	-	-
Dissolved organic carbon (DOC)	-	-	-	-	-	3	2	2	2	2
Hardness	-	-	-	-	-	224	232	382	369	381
Nitrate (as N)	10	25	-	-	-	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nitrite (as N)	1	1.6	-	-	-	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Sulfate	-	-	-	-	-	33.2	32.5	69.7	65.1	66.0
Sulfide (acid soluble)	-	-	-	-	-	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Total organic carbon (TOC)	-	-	-	-	-	-	-	-	-	-

Notes:

All concentrations are expressed in units of milligrams per litre (mg/L) unless otherwise noted.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites, November 2012.

MCL - Maximum contaminant level.

B - Value is real, but above instrument detection limit and below contract-required detection limit (Inorganics).

B - Compound is found in the associated blank as well as in the sample (Organics).

D - Result was obtained from the analysis of a dilution.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument.

J - Indicates an estimated value.

R - The parameter was rejected.

U - Compound was analyzed for but not detected.

UJ - The parameter was not detected. The associate numerical values is the estimated sample quantitation limit.

- - Not applicable.

APPENDIX B

HUMAN HEALTH CONCEPTUAL SITE MODEL

FIGURE B-1
HUMAN HEALTH CONCEPTUAL SITE MODEL
OPERABLE UNIT 1 PARCELS
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

PRIMARY SOURCE	release mechanism	SECONDARY SOURCE	release mechanism	TERTIARY SOURCE	release mechanism	EXPOSURE ROUTE	RECEPTOR CHARACTERIZATION														
							POTENTIALLY EXPOSED RECEPTORS (HUMAN HEALTH - BASELINE CONDITIONS)														
							OU1 Parcels				OU2 Parcels (Excluding Quarry Pond)				OU2 Quarry Pond		Off-site properties			GMR / floodplain	
							Residents	Site Workers	Temporary Workers	Trespassers	Residents	Site Workers	Temporary Workers	Trespassers	Temporary Workers	Trespassers	Residents / workers	Temporary Workers	Trespassers	Recreation users	Temporary Workers
SURFACE AND SUBSURFACE LANDFILL CONTENTS (within OU1 Parcels)	direct contact					INCIDENTAL INGESTION DERMAL CONTACT	--	X	X	X	--	na	na	na	na	na	na	na	na	na	na
	waste decomposition/ volatilization	LANDFILL / SUBSURFACE GAS / VAPOR	subsurface migration	INDOOR AIR		INHALATION OF VAPORS (and accumulation of explosive gas)	--	X	--	--	--	X	--	--	--	--	X	--	--	--	--
			discharge to atmosphere	AMBIENT AIR	dispersion	INHALATION OF VAPORS	--	X	X	X	--	X	X	X	X	X	X	X	X	X	X
	volatilization/ wind erosion	AMBIENT AIR/ FUGITIVE DUST	dispersion			INHALATION OF VAPORS/ PARTICULATES	--	X	X	X	--	X	X	X	X	X	X	X	X	X	X
	storm water runoff	SURFACE WATER i.e., intermittent drainage pathways	direct contact			INCIDENTAL INGESTION DERMAL CONTACT	--	X	X	X	--	X	X	X	--	--	X	X	X	X	X
		SEDIMENTS i.e., intermittent drainage pathways	direct contact			INCIDENTAL INGESTION DERMAL CONTACT	--	X	X	X	--	X	X	X	--	--	X	X	X	X	X
	storm water runoff	PONDS i.e., existing intermittent ponds	water circulation	SURFACE WATER	direct contact	INCIDENTAL INGESTION DERMAL CONTACT	--	X	X	X	--	na	na	na	na	na	na	na	na	na	na
			sedimentation	SEDIMENT	direct contact	INCIDENTAL INGESTION DERMAL CONTACT	--	X	X	X	--	na	na	na	na	na	na	na	na	na	na
			recharge to gw	GROUNDWATER see below																	
	infiltration / leaching	GROUNDWATER	migration to water wells			INGESTION DERMAL CONTACT INHALATION OF VAPORS	--	X	--	--	--	--	--	--	--	--	X	--	--	--	--
			migration/discharge	SURFACE WATER Quarry Pond	direct contact	INCIDENTAL INGESTION DERMAL CONTACT	na	na	na	na	na	na	na	na	X	X	na	na	na	na	na
			migration/discharge	SURFACE WATER Great Miami River	direct contact	INCIDENTAL INGESTION DERMAL CONTACT	na	na	na	na	na	na	na	na	na	na	na	na	na	X	X
			volatilization and subsurface migration	INDOOR AIR		INHALATION OF VAPORS	--	X	--	--	--	X	--	--	--	--	X	--	--	--	--
			volatilization to atmosphere	AMBIENT AIR	dispersion	INHALATION OF VAPORS	--	X	X	X	--	X	X	X	--	--	X	X	X	X	X

LEGEND

--	incomplete exposure pathway e.g., due to absence of exposure route and/or receptor
na	not applicable due to spatial separation
X	potentially complete exposure pathway to be evaluated/addressed as part of OU1
X	pathway to be addressed as part of vapor intrusion studies (and subject to OU2 groundwater assessment for off-site areas)
X	potentially complete exposure pathway to be evaluated for OU2

FIGURE B-2
HUMAN HEALTH CONCEPTUAL SITE MODEL
OPERABLE UNIT 2 PARCELS
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

PRIMARY SOURCE	release mechanism	SECONDARY SOURCE	release mechanism	TERTIARY SOURCE	release mechanism	EXPOSURE ROUTE	RECEPTOR CHARACTERIZATION														
							POTENTIALLY EXPOSED RECEPTORS (HUMAN HEALTH - BASELINE CONDITIONS)														
							OU1 Parcels				OU2 Parcels (excluding Quarry Pond)				OU2 Quarry Pond		Off-site properties			GMR / floodplain	
							Residents	Site workers	Temporary Workers	Trespassers	Residents	Site Workers	Temporary Workers	Trespassers	Temporary Workers	Trespassers	Residents / workers	Temporary Workers	Trespassers	Recreation users	Temporary Workers
SURFACE AND SUBSURFACE LANDFILL CONTENTS (within OU2 Parcels)	direct contact					INCIDENTAL INGESTION DERMAL CONTACT	na	na	na	na	--	X	X	X	X	X	na	na	na	na	na
	volatilization	SUBSURFACE GAS / VAPOR	subsurface migration	INDOOR AIR		INHALATION OF VAPORS (and accumulation of explosive gas)	--	X	--	--	--	X	--	--	--	--	X	--	--	--	--
			discharge to atmosphere	AMBIENT AIR	dispersion	INHALATION OF VAPORS	--	X	X	X	--	X	X	X	X	X	X	X	X	X	X
	volatilization/ wind erosion	AMBIENT AIR/ FUGITIVE DUST	dispersion			INHALATION OF VAPORS/ PARTICULATES	--	X	X	X	--	X	X	X	X	X	X	X	X	X	X
	storm water runoff	SURFACE WATER i.e., intermittent drainage pathways	direct contact			INCIDENTAL INGESTION DERMAL CONTACT	--	--	--	--	--	X	X	X	--	--	X	X	X	X	X
		SEDIMENTS i.e., intermittent drainage pathways	direct contact			INCIDENTAL INGESTION DERMAL CONTACT	--	--	--	--	--	X	X	X	--	--	X	X	X	X	X
	storm water runoff	QUARRY POND	water circulation	SURFACE WATER	direct contact	INCIDENTAL INGESTION DERMAL CONTACT	--	--	--	--	--	--	--	--	X	X	--	--	--	--	--
			sedimentation	SEDIMENT	direct contact	INCIDENTAL INGESTION DERMAL CONTACT	--	--	--	--	--	--	--	--	X	X	--	--	--	--	--
			recharge to gw	GROUNDWATER see below																	
	infiltration / leaching	GROUNDWATER	migration to water wells			INGESTION DERMAL CONTACT INHALATION OF VAPORS	--	X	--	--	--	--	--	--	--	--	X	--	--	--	--
			migration/discharge	SURFACE WATER Quarry Pond	direct contact	INCIDENTAL INGESTION DERMAL CONTACT	na	na	na	na	na	na	na	na	X	X	na	na	na	na	na
			migration/discharge	SURFACE WATER Great Miami River	direct contact	INCIDENTAL INGESTION DERMAL CONTACT	na	na	na	na	na	na	na	na	na	na	na	na	na	X	X
			volatilization and subsurface migration	INDOOR AIR		INHALATION OF VAPORS	--	X	--	--	--	X	--	--	--	--	X	--	--	--	--
			volatilization to atmosphere	AMBIENT AIR	dispersion	INHALATION OF VAPORS	--	X	X	X	--	X	X	X	--	--	X	X	X	X	X

LEGEND

--	incomplete exposure pathway e.g., due to absence of exposure route and/or receptor
na	not applicable due to spatial separation
X	potentially complete exposure pathway to be evaluated/addressed as part of OU1
X	pathway to be addressed as part of vapor intrusion studies (and subject to OU2 groundwater assessment for off-site areas)
X	potentially complete exposure pathway to be evaluated for OU2

FIGURE B-3
ECOLOGICAL CONCEPTUAL SITE MODEL
OPERABLE UNIT 1 AND 2 PARCELS
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

PRIMARY SOURCE	release mechanism	SECONDARY SOURCE	release mechanism	TERTIARY SOURCE	release mechanism	EXPOSURE ROUTE	RECEPTOR CHARACTERIZATION: POTENTIALLY EXPOSED RECEPTORS (ECOLOGICAL / HUMAN HEALTH - BASELINE CONDITIONS)											
							OU1 Parcels		OU2 Parcels (excluding Quarry Pond)		OU2 Quarry Pond			Off-site properties		Great Miami River / floodplain		
							Terrestrial Biota	Aquatic Biota	Terrestrial Biota	Aquatic Biota	Terrestrial Biota	Aquatic Biota	Humans that consume fish	Terrestrial Biota	Aquatic Biota	Terrestrial Biota	Aquatic Biota	Humans that consume fish
SURFACE LANDFILL CONTENTS (within OU1 Parcels)	direct contact					INGESTION	X	X	na	na	na	na	na	na	na	na	na	na
	plant uptake	VEGETATION	direct contact			INGESTION	X	X	na	na	na	na	na	na	na	na	na	na
	stormwater runoff	SURFACE WATER AND SEDIMENT	direct contact			INGESTION	X	X	(a)	(a)	(a)	(a)	--	X	X	X	X	--
			direct contact	AQUATIC ORGANISMS		INGESTION	X	X	(a)	(a)	(a)	(a)	--	X	X	X	X	X
SURFACE LANDFILL CONTENTS (within OU2 Parcels)	direct contact					INGESTION	na	na	X	--	--	X	--	na	na	na	na	na
	plant uptake	VEGETATION	direct contact			INGESTION	na	na	X	--	--	X	--	na	na	na	na	na
	stormwater runoff	SURFACE WATER AND SEDIMENT	direct contact			INGESTION	(a)	(a)	X	X	--	--	--	X	X	X	X	--
			direct contact	AQUATIC ORGANISMS		INGESTION	(a)	(a)	X	X	--	--	--	X	X	X	X	X
	stormwater runoff and infiltration	QUARRY POND	direct contact			INGESTION	na	na	na	na	X	X	--	na	na	na	na	na
			direct contact	AQUATIC ORGANISMS		INGESTION	na	na	na	na	X	X	X	na	na	na	na	na

LEGEND

--	incomplete exposure pathway e.g., due to absence of exposure route and/or receptor
na	not applicable due to spatial separation
(a)	potential cross-boundary effects between OU1 Parcels and OU2 Parcels will be considered in the OU2 RI/FS
X	potentially complete exposure pathway to be evaluated/addressed as part of OU1
X	potentially complete exposure pathway to be evaluated for OU2

CONCEPTUAL SITE MODEL NOTES
OPERABLE UNIT 1 AND 2 PARCELS
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO

Notes

1 OU1 includes the following parcels:

- Parcel 5054 (Valley Asphalt)
- Parcels 5171, 5172, 5173, 5174, 5175, 5176 (Boesch and Grillot)
- Parcel 5177 including road easement but excluding water and submerged portions of the Quarry Pond (Boesch and Grillot)
- Parcel 3278, 3058, 3057, and 3056 including embankments [owned by the MCD] onto which waste extends
- Part of Parcel 5178 containing north Quarry Pond embankment (Boesch and Grillot)

Collectively, these parcels comprise the presumptive remedy area (PRA).

2 OU2 includes the following areas or media, which are not part of OU1:

- Landfill material, surface and subsurface soil, groundwater, and air outside the OU1 Area attributable to historic Site operations
- Parcel 3274 and parts of Parcels 5177 and 5178 not addressed in OU1, including submerged portions of the Quarry Pond
- Portions of Parcel 3275 upon which waste has been placed (owned by MCD)
- Parcels 3753, 4423, 4610, and 3252, including active businesses along the southeast portion of the Site
- Shallow groundwater (i.e., nominally at elevations above 675 feet above mean sea level [ft AMSL]), outside the OU1 Area
- Deeper groundwater (i.e., nominally at elevations below 675 ft AMSL), outside the OU1 Area
- Leachate outside the OU1 Area (e.g., the floodplain area between the Site and the GMR
- Landfill gas (LFG) and soil vapor outside the OU1 Area
- Surface water and sediment outside the OU1 Area (e.g., in the Quarry Pond and in the GMR adjacent to and downstream of the Site)
- Air outside the OU1 Area

[1] The MCD defines a floodplain as a strip of relatively flat and normally dry land alongside a stream, river or lake that is covered by water during a flood. The floodplain area between the Site and the GMR is not the same as the 100‑year floodway and 100‑year floodplain areas at the Site based on Federal Emergency Management Agency (FEMA) flood insurance maps, which are more extensive than the MCD definition.

APPENDIX C

SCREENING LEVELS

TABLE C.1

SOIL SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [1]				*Ecological Screening Levels* [2]	*Ohio EPA VAP Derived Leach-Based Soil Values 2008*				
			Protection of Ground Water			*Table I*			*Table II*	
	Residential Soil	*Industrial Soil*	*Risk-based SSL*	*MCL-based SSL*		*Soil Type I*	*Soil Type II*	*Soil Type III*	*Sources ≥ ½ Acre*	*Sources < ½ Acre*
	ug/kg	*ug/kg*	*ug/kg*	*ug/kg*	µg/kg	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*
Parameter										
Volatile Organic Compounds										
1,1,1-Trichloroethane	8700000	38000000	2600	70	29800	1.2	0.74	1.3	-	-
1,1,2,2-Tetrachloroethane	560	2800	0.026	-	127	-	-	-	-	-
1,1,2-Trichloroethane	1100	5300	0.077	1.6	28600	-	-	-	-	-
1,1-Dichloroethane	3300	17000	0.68	-	20100	-	-	-	-	-
1,1-Dichloroethene	240000	1100000	93	2.5	8280	0.28	0.10	0.24	-	-
1,1-Dichloropropane	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	5	95	0.00028	-	3360	-	-	-	-	-
1,2,4-Trichlorobenzene	22000	99000	2.9	200	11100	-	-	-	-	-
1,2-Dibromo-3-chloropropane (DBCP)	5.4	69	0.00014	0.086	35.2	-	-	-	-	-
1,2-Dibromoethane (Ethylene dibromide)	34	170	0.0018	0.014	1230	-	-	-	-	-
1,2-Dichlorobenzene	1900000	9800000	270	580	2960	-	-	-	-	-
1,2-Dichloroethane	430	2200	0.042	1.4	21200	0.0030	0.0020	0.0030	-	-
1,2-Dichloroethene (total)	700000	9200000	37	-	-	-	-	-	-	-
1,2-Dichloropropane	940	4700	0.13	1.7	32700	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	37700	-	-	-	-	-
1,4-Dichloro-2-butene	6.9	35	0.00054	-	-	-	-	-	-	-
1,4-Dichlorobenzene	2400	12000	0.4	72	546	-	-	-	-	-
2-Butanone (Methyl ethyl ketone) (MEK)	28000000	200000000	1000	-	89600	1.8	1.8	1.8	-	-
2-Chloroethyl vinyl ether	-	-	-	-	-	-	-	-	-	-
2-Hexanone	210000	1400000	7.9	-	12600	-	-	-	-	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	5300000	53000000	230	-	443000	-	-	-	-	-
Acetone	61000000	630000000	2400	-	2500	-	-	-	-	-
Acrolein	150	650	0.0084	-	5270	-	-	-	-	-
Acrylonitrile	240	1200	0.0098	-	23.9	-	-	-	-	-
Benzene	1100	5400	0.2	2.6	255	0.017	0.0090	0.015	-	-
Bromodichloromethane	270	1400	0.032	22	540	-	-	-	-	-
Bromoform	62000	220000	2.1	21	15900	-	-	-	-	-
Bromomethane (Methyl bromide)	7300	32000	1.8	-	235	-	-	-	-	-
Carbon disulfide	820000	3700000	210	-	94.1	-	-	-	-	-
Carbon tetrachloride	610	3000	0.15	1.9	2980	0.25	0.25	0.28	-	-
Chlorobenzene	290000	1400000	49	68	13100	-	-	-	-	-
Chloroethane	15000000	61000000	5900	-	-	-	-	-	-	-
Chloroform (Trichloromethane)	290	1500	0.053	22	1190	-	-	-	-	-
Chloromethane (Methyl chloride)	120000	500000	49	-	10400	-	-	-	-	-
cis-1,2-Dichloroethene	160000	2000000	8.2	21	-	0.12	0.070	0.12	-	-
cis-1,3-Dichloropropene	-	-	-	-	398	-	-	-	-	-
Cyclohexane	7000000	29000000	13000	-	-	-	-	-	-	-
Dibromochloromethane	680	3300	0.039	21	2050	-	-	-	-	-
Dibromomethane	25000	110000	1.9	-	65000	-	-	-	-	-
Dichlorodifluoromethane (CFC-12)	94000	400000	300	-	39500	-	-	-	-	-
Dichlorofluoromethane	-	-	-	-	-	-	-	-	-	-
Ethyl methacrylate	1500000	7500000	99	-	30000	-	-	-	-	-
Ethylbenzene	5400	27000	1.5	780	5160	12	7.9	16	-	-
Iodomethane	-	-	-	-	1230	-	-	-	-	-
Isopropyl benzene (Cumene)	2100000	11000000	640	-	-	-	-	-	-	-
Methyl acetate	78000000	1000000000	3200	-	-	-	-	-	-	-
Methyl cyclohexane	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether (MTBE)	43000	220000	2.8	-	-	-	-	-	-	-
Methylene chloride	56000	960000	2.5	1.3	4050	-	-	-	-	-
n-Hexane	-	-	-	-	-	121	111	104	-	-
Styrene	6300000	36000000	1200	110	4690	0.46	0.37	0.62	-	-
Tetrachloroethene	22000	110000	4.4	2.3	9920	0.15	0.11	0.27	-	-
Toluene	5000000	45000000	590	690	5450	6.8	4.1	7.7	-	-
trans-1,2-Dichloroethene	150000	690000	25	29	784	0.036	0.023	0.048	-	-
trans-1,3-Dichloropropene	-	-	-	-	398	-	-	-	-	-
Trichloroethene	910	6400	0.16	1.8	12400	0.036	0.023	0.048	-	-

TABLE C.1

SOIL SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [1]				*Ecological Screening Levels* [2]	*Ohio EPA VAP Derived Leach-Based Soil Values 2008*				
			Protection of Ground Water			*Table I*			*Table II*	
	Residential Soil	*Industrial Soil*	*Risk-based SSL*	*MCL-based SSL*		*Soil Type I*	*Soil Type II*	*Soil Type III*	*Sources ≥ ½ Acre*	*Sources < ½ Acre*
	ug/kg	*ug/kg*	*ug/kg*	*ug/kg*	µg/kg	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*
Parameter										
Trichlorofluoromethane (CFC-11)	790000	3400000	690	-	16400	-	-	-	-	-
Trifluorotrichloroethane (Freon 113)	43000000	180000000	130000	-	-	-	-	-	-	-
Vinyl acetate	970000	4100000	87	-	12700	-	-	-	-	-
Vinyl chloride	60	1700	0.0053	0.69	646	0.0090	0.0050	0.012	-	-
Xylenes (total)	630000	2700000	190	9800	10000	156	96	191	-	-
Semi-Volatile Organic Compounds										
1,2,4-Trichlorobenzene	22000	99000	2.9	200	11100	-	-	-	-	-
1,2-Dichlorobenzene	1900000	9800000	270	580	2960	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	37700	-	-	-	-	-
1,4-Dichlorobenzene	2400	12000	0.4	72	546	-	-	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	4600	22000	0.11	-	19900	-	-	-	-	-
2,4,5-Trichlorophenol	6100000	62000000	3300	-	14100	-	-	-	-	-
2,4,6-Trichlorophenol	44000	160000	13	-	9940	-	-	-	-	-
2,4-Dichlorophenol	180000	1800000	41	-	87500	-	-	-	-	-
2,4-Dimethylphenol	1200000	12000000	320	-	10	-	-	-	-	-
2,4-Dinitrophenol	120000	1200000	34	-	60.9	-	-	-	-	-
2,4-Dinitrotoluene	1600	5500	0.28	-	1280	-	-	-	-	-
2,6-Dinitrotoluene	61000	620000	20	-	32.8	-	-	-	-	-
2-Chloronaphthalene	6300000	82000000	2900	-	12.2	-	-	-	-	-
2-Chlorophenol	390000	5100000	57	-	243	-	-	-	-	-
2-Methylnaphthalene	230000	2200000	140	-	3240	-	-	-	-	-
2-Methylphenol	3100000	31000000	580	-	40400	-	-	-	-	-
2-Nitroaniline	610000	6000000	62	-	74100	-	-	-	-	-
2-Nitrophenol	-	-	-	-	1600	-	-	-	-	-
3&4-Methylphenol	-	-	-	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine	1100	3800	0.71	-	646	-	-	-	-	-
3-Nitroaniline	-	-	-	-	3160	-	-	-	-	-
4,6-Dinitro-2-methylphenol	4900	49000	2	-	144	-	-	-	-	-
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	6100000	62000000	1300	-	7950	-	-	-	-	-
4-Chloroaniline	2400	8600	0.13	-	1100	-	-	-	-	-
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-	-	-
4-Methylphenol	6100000	62000000	1100	-	163000	-	-	-	-	-
4-Nitroaniline	24000	86000	1.4	-	21900	-	-	-	-	-
4-Nitrophenol	-	-	-	-	5120	-	-	-	-	-
Acenaphthene	3400000	33000000	4100	-	682000	-	-	-	-	-
Acenaphthylene	-	-	-	-	682000	-	-	-	-	-
Acetophenone	7800000	100000000	450	-	300000	-	-	-	-	-
Anthracene	17000000	170000000	42000	-	1480000	-	-	-	-	-
Atrazine	2100	7500	0.17	1.9	-	-	-	-	-	-
Benzaldehyde	7800000	100000000	330	-	-	-	-	-	-	-
Benzo(a)anthracene	150	2100	10	-	5210	-	-	-	-	-
Benzo(a)pyrene	15	210	3.5	240	1520	-	-	-	-	-
Benzo(b)fluoranthene	150	2100	35	-	59800	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	-	-	119000	-	-	-	-	-
Benzo(k)fluoranthene	1500	21000	350	-	148000	-	-	-	-	-

TABLE C.1

SOIL SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [1]				*Ecological Screening Levels* [2]	*Ohio EPA VAP Derived Leach-Based Soil Values 2008*				
			Protection of Ground Water			*Table I*			*Table II*	
	Residential Soil	*Industrial Soil*	*Risk-based SSL*	*MCL-based SSL*		*Soil Type I*	*Soil Type II*	*Soil Type III*	*Sources ≥ ½ Acre*	*Sources < ½ Acre*
	ug/kg	*ug/kg*	*ug/kg*	*ug/kg*	µg/kg	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*
Parameter										
Biphenyl (1,1-Biphenyl)	51000	210000	8.7	-	-	-	-	-	-	-
bis(2-Chloroethoxy)methane	180000	1800000	11	-	302	-	-	-	-	-
bis(2-Chloroethyl)ether	210	1000	0.0031	-	23700	-	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	35000	120000	1100	1400	925	-	-	-	-	-
Butyl benzylphthalate (BBP)	260000	910000	200	-	239	-	-	-	-	-
Caprolactam	31000000	310000000	1900	-	-	-	-	-	-	-
Carbazole	-	-	-	-	-	-	-	-	-	-
Chrysene	15000	210000	1100	-	4730	-	-	-	-	-
Dibenz(a,h)anthracene	15	210	11	-	18400	-	-	-	-	-
Dibenzofuran	78000	1000000	110	-	-	-	-	-	-	-
Diethyl phthalate	49000000	490000000	4700	-	24800	-	-	-	-	-
Dimethyl phthalate	-	-	-	-	734000	-	-	-	-	-
Di-n-butylphthalate (DBP)	6100000	62000000	1700	-	150	-	-	-	-	-
Di-n-octyl phthalate (DnOP)	730000	7400000	53000	-	709000	-	-	-	-	-
Fluoranthene	2300000	22000000	70000	-	122000	-	-	-	-	-
Fluorene	2300000	22000000	4000	-	122000	-	-	-	-	-
Hexachlorobenzene	300	1100	0.53	13	199	-	-	-	-	-
Hexachlorobutadiene	6200	22000	0.5	-	39.8	-	-	-	-	-
Hexachlorocyclopentadiene	370000	3700000	70	160	755	-	-	-	-	-
Hexachloroethane	12000	43000	0.48	-	596	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	150	2100	200	-	109000	-	-	-	-	-
Isophorone	510000	1800000	22	-	139000	-	-	-	-	-
Naphthalene	3600	18000	0.47	-	99.4	0.27	0.28	0.36	-	-
Nitrobenzene	4800	24000	0.079	-	1310	-	-	-	-	-
N-Nitrosodi-n-propylamine	69	250	0.007	-	544	-	-	-	-	-
N-Nitrosodiphenylamine	99000	350000	57	-	545	-	-	-	-	-
Pentachlorophenol	890	2700	0.36	10	119	-	-	-	-	-
Phenanthrene	-	-	-	-	45700	-	-	-	-	-
Phenol	18000000	180000000	2600	-	120000	1.1	1.1	1.2	-	-
Pyrene	1700000	17000000	9500	-	78500	-	-	-	-	-
Metals										
Aluminum	77000000	990000000	23000000	-	-	-	-	-	-	-
Antimony	31000	410000	270	270	142	-	-	-	3.6	7.2
Arsenic	390	1600	1.3	290	5700	-	-	-	3	6
Barium	15000000	190000000	120000	82000	1040	-	-	-	56000	110000
Beryllium	160000	2000000	13000	3200	1060	-	-	-	57	114
Cadmium	70000	800000	520	380	2.22	-	-	-	21	42
Calcium	-	-	-	-	-	-	-	-	-	-
Chromium	-	-	-	180000000	400	-	-	-	56	113
Cobalt	23000	300000	210	-	140	-	-	-	-	-
Copper	3100000	41000000	22000	46000	5400	-	-	-	-	-
Iron	55000000	720000000	270000	-	-	-	-	-	-	-
Lead	400000	800000	-	14000	53.7	-	-	-	89	178
Magnesium	-	-	-	-	-	-	-	-	-	-
Manganese	1800000	23000000	21000	-	-	-	-	-	-	-
Mercury	10000	43000	33	100	100	-	-	-	12	23
Nickel	1500000	20000000	20000	-	13600	-	-	-	182	363
Potassium	-	-	-	-	-	-	-	-	-	-
Selenium	390000	5100000	400	260	27.6	-	-	-	2.15	4.3
Silver	390000	5100000	600	-	4040	-	-	-	3120	6240
Sodium	-	-	-	-	-	-	-	-	-	-
Thallium	780	10000	11	140	56.9	-	-	-	1.5	3.0
Vanadium	390000	5200000	78000	-	1590	-	-	-	130	65
Zinc	23000000	310000000	290000	-	6620	-	-	-	44000	88000

TABLE C.1

SOIL SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [1]				*Ecological Screening Levels* [2]	*Ohio EPA VAP Derived Leach-Based Soil Values 2008*				
			Protection of Ground Water				*Table I*		*Table II*	
Parameter	*Residential Soil ug/kg*	*Industrial Soil ug/kg*	*Risk-based SSL ug/kg*	*MCL-based SSL ug/kg*	*µg/kg*	*Soil Type I mg/kg*	*Soil Type II mg/kg*	*Soil Type III mg/kg*	*Sources ≥ ½ Acre mg/kg*	*Sources < ½ Acre mg/kg*
PCBs										
Aroclor-1016 (PCB-1016)	3900	21000	92	-	-	-	-	-	-	-
Aroclor-1221 (PCB-1221)	140	540	0.069	-	-	-	-	-	-	-
Aroclor-1232 (PCB-1232)	140	540	0.069	-	-	-	-	-	-	-
Aroclor-1242 (PCB-1242)	220	740	5.3	-	-	-	-	-	-	-
Aroclor-1248 (PCB-1248)	220	740	5.2	-	-	-	-	-	-	-
Aroclor-1254 (PCB-1254)	220	740	8.8	-	-	-	-	-	-	-
Aroclor-1260 (PCB-1260)	220	740	24	-	-	-	-	-	-	-
Pesticides										
4,4'-DDD	2000	7200	6.4	-	758	-	-	-	-	-
4,4'-DDE	1400	5100	46	-	596	-	-	-	-	-
4,4'-DDT	1700	7000	67	-	3.5	-	-	-	-	-
Aldrin	29	100	0.65	-	3.32	-	-	-	-	-
alpha-BHC	77	270	0.036	-	99.4	-	-	-	-	-
alpha-Chlordane	-	-	-	-	-	-	-	-	-	-
beta-BHC	270	960	0.13	-	3.98	-	-	-	-	-
Chlordane	-	-	-	-	224	-	-	-	-	-
delta-BHC	-	-	-	-	9940	-	-	-	-	-
Dieldrin	30	110	0.061	-	2.38	-	-	-	-	-
Endosulfan I	-	-	-	-	119	-	-	-	-	-
Endosulfan II	-	-	-	-	119	-	-	-	-	-
Endosulfan sulfate	-	-	-	-	35.8	-	-	-	-	-
Endrin	18000	180000	68	81	10.1	-	-	-	-	-
Endrin aldehyde	-	-	-	-	10.5	-	-	-	-	-
Endrin ketone	-	-	-	-	-	-	-	-	-	-
gamma-BHC (lindane)	520	2100	0.21	1.2	5	-	-	-	-	-
gamma-Chlordane	-	-	-	-	-	-	-	-	-	-
Heptachlor	110	380	0.14	33	5.98	-	-	-	-	-
Heptachlor epoxide	53	190	0.068	4.1	152	-	-	-	-	-
Methoxychlor	310000	3100000	1500	2200	19.9	-	-	-	-	-
Toxaphene	440	1600	2.1	460	119	-	-	-	-	-
Herbicides										
2,4,5-TP (Silvex)	490000	4900000	46	28	109	-	-	-	-	-
2,4-Dichlorophenoxyacetic acid (2,4-D)	690000	7700000	35	18	27.2	-	-	-	-	-
Petroleum Hydrocarbonds										
Total Petroleum Hydrocarbons - Extractable (DRO)	-	-	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons - Purgeable (GRO)	-	-	-	-	-	-	-	-	-	-

TABLE C.1

SOIL SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [1]				*Ecological Screening Levels* [2]	*Ohio EPA VAP Derived Leach-Based Soil Values 2008*				
			Protection of Ground Water				*Table I*		*Table II*	
	Residential Soil	*Industrial Soil*	*Risk-based SSL*	*MCL-based SSL*		*Soil Type I*	*Soil Type II*	*Soil Type III*	*Sources ≥ ½ Acre*	*Sources < ½ Acre*
	ug/kg	*ug/kg*	*ug/kg*	*ug/kg*	µg/kg	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*	*mg/kg*
Parameter										
Dioxins/Furans										
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	-	-	-	-	-	-	-	-	-	-
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	-	-	-	-	-	-	-	-	-	-
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	-	-	-	-	-	-	-	-	-	-
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	-	-	-	-	-	-	-	-	-	-
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	-	-	-	-	-	-	-	-	-	-
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	-	-	-	-	-	-	-	-	-	-
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	-	-	-	-	-	-	-	-	-
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	-	-	-	-	-	-	-	-	-
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	-	-	-	-	-	-	-	-	-	-
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	-	-	-	-	-	-	-	-	-	-
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	-	-	-	-	-	-	-	-	-	-
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	-	-	-	-	-	-	-	-	-	-
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	-	-	-	-	-	-	-	-	-	-
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	-	-	-	-	-	-	-	-	-	-
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	-	-	-	-	-	-	-	-	-	-
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	-	-	-	-	0.0386	-	-	-	-	-
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.0045	0.018	0.00026	0.015	0.000199	-	-	-	-	-
Total heptachlorodibenzofuran (HpCDF)	-	-	-	-	-	-	-	-	-	-
Total heptachlorodibenzo-p-dioxin (HpCDD)	-	-	-	-	-	-	-	-	-	-
Total hexachlorodibenzofuran (HxCDF)	-	-	-	-	-	-	-	-	-	-
Total hexachlorodibenzo-p-dioxin (HxCDD)	-	-	-	-	-	-	-	-	-	-
Total pentachlorodibenzofuran (PeCDF)	-	-	-	-	-	-	-	-	-	-
Total pentachlorodibenzo-p-dioxin (PeCDD)	-	-	-	-	-	-	-	-	-	-
Total TEQ (ND=0.5)	-	-	-	-	-	-	-	-	-	-
Total tetrachlorodibenzofuran (TCDF)	-	-	-	-	-	-	-	-	-	-
Total tetrachlorodibenzo-p-dioxin (TCDD)	-	-	-	-	-	-	-	-	-	-
General Chemistry										
Asbestos	-	-	-	-	-	-	-	-	-	-
Cellulose	-	-	-	-	-	-	-	-	-	-
Chrysotile asbestos	-	-	-	-	-	-	-	-	-	-
Cyanide (total)	22000	140000	14	2000	1330	-	-	-	-	-
Ignitability	-	-	-	-	-	-	-	-	-	-
Nitrite/Nitrate	-	-	-	-	-	-	-	-	-	-
pH corrosivity	-	-	-	-	-	-	-	-	-	-
Reactivity	-	-	-	-	-	-	-	-	-	-
Sulfide	-	-	-	-	3.58	-	-	-	-	-
Sulfide (acid soluble)	-	-	-	-	-	-	-	-	-	-
Temperature, sample	-	-	-	-	-	-	-	-	-	-
Total solids	-	-	-	-	-	-	-	-	-	-

Notes:

Chemicals of Concern
- - Not applicable.
[1] - United States Environmental Protection Agency Regional Screening Levels (RSL), November 2012
[2] - United States Environmental Protection Agency RCRA Ecological Screening Levels, August 22, 2003

TABLE C.2

GROUNDWATER SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [1]		*Ecological Screening Levels* [2]
	Tapwater	*MCL*	
Parameter	*µg/L*	*µg/L*	*µg/L*
Volatile Organic Compounds			
1,1,1-Trichloroethane	7500	200	76
1,1,2,2-Tetrachloroethane	0.066	-	380
1,1,2-Trichloroethane	0.24	5	500
1,1-Dichloroethane	2.4	-	47
1,1-Dichloroethene	260	7	65
1,2,4-Trichlorobenzene	0.99	70	30
1,2,4-Trimethylbenzene	15	-	-
1,2-Dibromo-3-chloropropane (DBCP)	0.00032	0.2	-
1,2-Dibromoethane (Ethylene dibromide)	0.0065	0.05	-
1,2-Dichlorobenzene	280	600	14
1,2-Dichloroethane	0.15	5	910
1,2-Dichloroethene (total)	130	-	-
1,2-Dichloropropane	0.38	5	360
1,3-Dichlorobenzene	-	-	38
1,4-Dichlorobenzene	0.42	75	9.4
2-Butanone (Methyl ethyl ketone) (MEK)	4900	-	2200
2-Hexanone	34	-	99
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1000	-	170
Acetone	12000	-	1700
Benzene	0.39	5	114
Bromodichloromethane	0.12	80	-
Bromoform	7.9	80	230
Bromomethane (Methyl bromide)	7	-	16
Carbon disulfide	720	-	15
Carbon tetrachloride	0.39	5	240
Chlorobenzene	72	100	47
Chloroethane	21000	-	-
Chloroform (Trichloromethane)	0.19	80	140
Chloromethane (Methyl chloride)	190	-	-
cis-1,2-Dichloroethene	28	70	-
cis-1,3-Dichloropropene	-	-	-
Cyclohexane	13000	-	-
Dibromochloromethane	0.15	80	-
Dichlorodifluoromethane (CFC-12)	190	-	-
Ethylbenzene	1.3	700	14
Isopropyl benzene	390	-	-
m&p-Xylenes	190	10000	-
Methyl acetate	16000	-	-
Methyl cyclohexane	-	-	-
Methyl tert butyl ether (MTBE)	12	-	-
Methylene chloride	9.9	5	940
o-Xylene	190	-	-
Styrene	1100	100	32
Tetrachloroethene	9.7	5	45
Toluene	860	1000	253
trans-1,2-Dichloroethene	86	100	970
trans-1,3-Dichloropropene	-	-	-
Trichloroethene	0.44	5	47
Trichlorofluoromethane (CFC-11)	1100	-	-
Trifluorotrichloroethane (Freon 113)	53000	-	-
Vinyl chloride	0.015	2	930
Xylenes (total)	190	10000	27
Semi-Volatile Organic Compounds			
1,2,4-Trichlorobenzene	0.99	70	30
1,2-Dichlorobenzene	280	600	14
1,3-Dichlorobenzene	-	-	38
1,4-Dichlorobenzene	0.42	75	9.4
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	0.31	-	-
2,4,5-Trichlorophenol	890	-	-
2,4,6-Trichlorophenol	3.5	-	4.9
2,4-Dichlorophenol	35	-	11
2,4-Dimethylphenol	270	-	100
2,4-Dinitrophenol	30	-	19
2,4-Dinitrotoluene	0.2	-	44
2,6-Dinitrotoluene	15	-	81
2-Chloronaphthalene	550	-	0.396
2-Chlorophenol	71	-	24
2-Methylnaphthalene	27	-	330

TABLE C.2

GROUNDWATER SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [1]		*Ecological Screening Levels* [2]
	Tapwater	*MCL*	
Parameter	*µg/L*	*µg/L*	*µg/L*
2-Methylphenol	720	-	67
2-Nitroaniline	150	-	-
2-Nitrophenol	-	-	-
3&4-Methylphenol	-	-	-
3,3'-Dichlorobenzidine	0.11	-	4.5
3-Nitroaniline	-	-	-
4,6-Dinitro-2-methylphenol	1.2	-	23
4-Bromophenyl phenyl ether	-	-	1.5
4-Chloro-3-methylphenol	1100	-	34.8
4-Chloroaniline	0.32	-	232
4-Chlorophenyl phenyl ether	-	-	-
4-Methylphenol	1400	-	25
4-Nitroaniline	3.3	-	-
4-Nitrophenol	-	-	60
Acenaphthene	400	-	38
Acenaphthylene	-	-	4840
Acetophenone	1500	-	-
Anthracene	1300	-	0.035
Atrazine	0.26	3	-
Benzaldehyde	1500	-	-
Benzo(a)anthracene	0.029	-	0.025
Benzo(a)pyrene	0.0029	0.2	0.014
Benzo(b)fluoranthene	0.029	-	9.07
Benzo(g,h,i)perylene	-	-	7.64
Benzo(k)fluoranthene	0.29	-	-
Biphenyl (1,1-Biphenyl)	0.83	-	-
bis(2-Chloroethoxy)methane	46	-	-
bis(2-Chloroethyl)ether	0.012	-	19000
bis(2-Ethylhexyl)phthalate (DEHP)	4.8	6	0.3
Butyl benzylphthalate (BBP)	14	-	23
Caprolactam	7700	-	-
Carbazole	-	-	-
Chrysene	2.9	-	-
Dibenz(a,h)anthracene	0.0029	-	-
Dibenzofuran	5.8	-	4
Diethyl phthalate	11000	-	110
Dimethyl phthalate	-	-	-
Di-n-butylphthalate (DBP)	670	-	9.7
Di-n-octyl phthalate (DnOP)	190	-	30
Fluoranthene	630	-	1.9
Fluorene	220	-	19
Hexachlorobenzene	0.042	1	0.0003
Hexachlorobutadiene	0.26	-	0.053
Hexachlorocyclopentadiene	22	50	77
Hexachloroethane	0.79	-	8
Indeno(1,2,3-cd)pyrene	0.029	-	4.31
Isophorone	67	-	920
Naphthalene	0.14	-	13
Nitrobenzene	0.12	-	220
N-Nitrosodi-n-propylamine	0.0093	-	-
N-Nitrosodiphenylamine	10	-	-
Pentachlorophenol	0.035	1	4.0
Phenanthrene	-	-	3.6
Phenol	4500	-	180
Pyrene	87	-	0.3
Metals			
Aluminum	16000	-	-
Aluminum (dissolved)	16000	-	-
Antimony	6	6	80
Antimony (dissolved)	6	6	80
Arsenic	0.045	10	148
Arsenic (dissolved)	0.045	10	148
Barium	2900	2000	220
Barium (dissolved)	2900	2000	220
Beryllium	16	4	3.6
Beryllium (dissolved)	16	4	3.6
Cadmium	6.9	5	0.15
Cadmium (dissolved)	6.9	5	0.15
Calcium	-	-	-
Calcium (dissolved)	-	-	-

TABLE C.2

GROUNDWATER SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [1]		*Ecological Screening Levels* [2]
	Tapwater	*MCL*	
Parameter	*µg/L*	*µg/L*	*µg/L*
Chromium	-	100	42
Chromium (dissolved)	-	100	42
Cobalt	4.7	-	24
Cobalt (dissolved)	4.7	-	24
Copper	620	1300	1.58
Copper (dissolved)	620	1300	1.58
Iron	11000	-	-
Iron (dissolved)	11000	-	-
Lead	-	15	1.17
Lead (dissolved)	-	15	1.17
Magnesium	-	-	-
Magnesium (dissolved)	-	-	-
Manganese	320	-	-
Manganese (dissolved)	320	-	-
Manganese 2+	-	-	-
Mercury	0.63	2	0.0013
Mercury (dissolved)	0.63	2	0.0013
Nickel	300	-	28.9
Nickel (dissolved)	300	-	28.9
Potassium	-	-	-
Potassium (dissolved)	-	-	-
Selenium	78	50	5
Selenium (dissolved)	78	50	5
Silver	71	-	0.12
Silver (dissolved)	71	-	0.12
Sodium	-	-	-
Sodium (dissolved)	-	-	-
Thallium	0.16	2	10
Thallium (dissolved)	0.16	2	10
Vanadium	78	-	12
Vanadium (dissolved)	78	-	12
Zinc	4700	-	65.7
Zinc (dissolved)	4700	-	65.7
PCBs			
Aroclor-1016 (PCB-1016)	0.96	-	-
Aroclor-1221 (PCB-1221)	0.004	-	-
Aroclor-1232 (PCB-1232)	0.004	-	-
Aroclor-1242 (PCB-1242)	0.034	-	-
Aroclor-1248 (PCB-1248)	0.034	-	-
Aroclor-1254 (PCB-1254)	0.034	-	-
Aroclor-1260 (PCB-1260)	0.034	-	-
Pesticides			
4,4'-DDD	0.027	-	-
4,4'-DDE	0.2	-	0.00000000451
4,4'-DDT	0.2	-	0.000011
Aldrin	0.004	-	0.017
alpha-BHC	0.0062	-	12.4
alpha-Chlordane	-	-	-
beta-BHC	0.022	-	0.495
delta-BHC	-	-	667
Dieldrin	0.0015	-	0.000071
Endosulfan I	-	-	0.056
Endosulfan II	-	-	0.056
Endosulfan sulfate	-	-	2.22
Endrin	1.7	2	0.036
Endrin aldehyde	-	-	0.15
Endrin ketone	-	-	-
gamma-BHC (lindane)	0.036	0.2	0.026
gamma-Chlordane	-	-	-
Heptachlor	0.0018	0.4	0.0038
Heptachlor epoxide	0.0033	0.2	0.0038
Methoxychlor	27	40	0.019
Toxaphene	0.013	3	0.00014

TABLE C.2

GROUNDWATER SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [1]		*Ecological Screening Levels* [2]
	Tapwater	*MCL*	
Parameter	*µg/L*	*µg/L*	*µg/L*
Herbicides			
2,4,5-TP (Silvex)	84	50	30
2,4-Dichlorophenoxyacetic acid (2,4-D)	130	70	220
Gases			
Ethane	-	-	-
Ethene	-	-	-
Methane	-	-	-
General Chemistry			
Alkalinity, total (as CaCO3)	-	-	-
Ammonia-N	-	-	-
Chloride	-	-	-
Cyanide (total)	1.4	200	5.2
Dissolved organic carbon (DOC)	-	-	-
Dissolved organic carbon (DOC) (dissolved)	-	-	-
Hardness	-	-	-
Nitrate	-	-	-
Nitrate (as N)	25000	10000	-
Nitrite	-	-	-
Nitrite (as N)	1600	1000	-
Sulfate	-	-	-
Sulfide	-	-	-
Sulfide (acid soluble)	-	-	-
Total organic carbon (TOC)	-	-	-

Notes:

Chemicals of Concern

- - Not applicable.

[1] - United States Environmental Protection Agency Regional Screening Levels (RSL), November 2012

[2] - United States Environmental Protection Agency RCRA Ecological Screening Levels, August 22, 2003

TABLE C.3

SOIL GAS SCREENING AND ACTION LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [5]				USEPA Regional Screening Levels (RSLs) [5]								Ohio Department of Health							
	Residential Air	Industrial Air	Residential "Near-source" exterior soil gas [6]	Industrial "Near-source" exterior soil gas [6]	Residential Soil Vapor Screening Levels for Further Investigation		Residential Soil Vapor Screening Levels for Monitoring		Industrial Soil Vapor Screening Levels for Further Investigation		Industrial Soil Vapor Screening Levels for Monitoring		Screening Levels				Action Levels			
Parameter					Carcinogenic Target ELCR of 10^{-6} assuming DAF=0.1	Non-Carcinogenic Target HI of 0.1 assuming DAF=0.1	Carcinogenic Target ELCR of 10^{-5} assuming DAF=0.1	Non-Carcinogenic, Target HI of 1 assuming DAF=0.1	Carcinogenic Target ELCR of 10^{-6} assuming DAF=0.1	Non-Carcinogenic Target HI of 0.1 assuming DAF=0.1	Carcinogenic Target ELCR of 10^{-5} assuming DAF=0.1	Non-Carcinogenic, Target HI of 1 assuming DAF=0.1	Residential		Non-Residential		Residential		Non-Residential	
Units	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	ppb	µg/m³	ppb	µg/m³	ppb	µg/m³	ppb	µg/m³
Volatile Organic Compounds																				
1,1,1-Trichloroethane	5200	22000	173333	733333	-	5200	-	52000	-	22000	-	220000	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	0.042	0.21	1	7	0.42	-	4.2	-	2.1	-	21	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	0.15	0.77	5	26	1.5	0.21	15	2.1	7.7	0.88	77	8.8	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1.5	7.7	50	257	15	-	150	-	77	-	770	-	37	150	160	630	370	1500	1600	6300
1,1-Dichloroethene	210	880	7000	29333	-	210	-	2100	-	880	-	8800	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	2.1	8.8	70	293	-	2.1	-	21	-	8.8	-	88	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	7.3	31	243	1033	-	7.3	-	73	-	31	-	310	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane (DBCP)	0.00016	0.002	0	0	0.0016	0.21	0.016	2.1	0.02	0.88	0.20	8.8	-	-	-	-	-	-	-	-
1,2-Dibromoethane (Ethylene dibromide)	0.0041	0.02	0	1	0.041	9.4	0.41	94	0.20	39	2.0	390	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	210	880	7000	29333	-	210	-	2100	-	880	-	8800	-	-	-	-	-	-	-	-
1,2-Dichloroethane	0.094	0.47	3	16	0.94	7.3	9.4	73	4.7	31	47	310	-	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	0.24	1.2	8	40	2.4	4.2	24	42	12	18	120	180	-	-	-	-	-	-	-	-
1,2-Dichlorotetrafluoroethane (CFC 114)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Butadiene	0.081	0.41	3	14	0.81	2.1	8.1	21	4.1	8.8	41	88	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene[1]	-	-	-	-	2.2	830	22	8300	11	3500	110	35000	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	0.22	1.1	7	37	2.2	830	22	8300	11	3500	110	35000	-	-	-	-	-	-	-	-
1,4-Dioxane	0.32	1.6	11	53	3.2	3100	32	31000	16	13000	160	130000	-	-	-	-	-	-	-	-
2,2,4-Trimethylpentane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone (Methyl ethyl ketone) (MEK)	5200	22000	173333	733333	-	5200	-	52000	-	22000	-	220000	-	-	-	-	-	-	-	-
2-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	31	130	1033	4333	-	31	-	310	-	130	-	1300	-	-	-	-	-	-	-	-
2-Phenylbutane (sec-Butylbenzene)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Ethyl toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	3100	13000	103333	433333	-	3100	-	31000	-	13000	-	130000	-	-	-	-	-	-	-	-
Acetone	32000	140000	1066667	4666667	-	32000	-	320000	-	140000	-	1400000	-	-	-	-	-	-	-	-
Allyl chloride	0.41	2	14	67	4.1	1	41	10	20	4.4	200	44	-	-	-	-	-	-	-	-
Benzene	0.31	1.6	10	53	3.1	31	31	310	16	130	160	1300	4	10	20	40	40	100	200	400
Benzyl chloride	0.05	0.25	2	8	0.5	1	5	10	2.5	4.4	25	44	-	-	-	-	-	-	-	-
Bromodichloromethane	0.066	0.33	2	11	0.66	-	6.6	-	3.3	-	33	-	-	-	-	-	-	-	-	-
Bromoform	2.2	11	73	367	22	-	220	-	110	-	1100	-	-	-	-	-	-	-	-	-
Bromomethane (Methyl bromide)	5.2	22	173	733	-	5.2	-	52	-	22	-	220	-	-	-	-	-	-	-	-
Butane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	730	3100	24333	103333	-	730	-	7300	-	3100	-	31000	-	-	-	-	-	-	-	-
Carbon tetrachloride	0.41	2	14	67	4.1	100	41	1000	20	440	200	4400	-	-	-	-	-	-	-	-
Chlorobenzene	52	220	1733	7333	-	52	-	520	-	220	-	2200	-	-	-	-	-	-	-	-
Chlorodifluoromethane	52000	220000	1733333	7333333	-	52000	-	520000	-	220000	-	2200000	-	-	-	-	-	-	-	-
Chloroethane	10000	44000	333333	1466667	-	10000	-	100000	-	44000	-	440000	-	-	-	-	-	-	-	-
Chloroform (Trichloromethane)	0.11	0.53	4	18	1.1	100	11	1000	5.3	430	53	4300	200	1000	800	4000	2000	10000	8000	40000
Chloromethane (Methyl chloride)	94	390	3133	13000	-	94	-	940	-	390	-	3900	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene[2]	63	260	2100	8667	-	63	-	630	-	260	-	2600	88	350	370	1500	880	3500	3700	15000
cis-1,3-Dichloropropene[3]	-	-	-	-	6.1	21	61	210	31	88	310	880	-	-	-	-	-	-	-	-
Cyclohexane	6300	26000	210000	866667	-	6300	-	63000	-	26000	-	260000	-	-	-	-	-	-	-	-
Cymene (p-Isopropyltoluene)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	0.09	0.45	3	15	0.9	-	9.0	-	4.5	-	45	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane (CFC-12)	100	440	3333	14667	-	100	-	1000	-	440	-	4400	-	-	-	-	-	-	-	-
Ethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.97	4.9	32	163	9.7	1000	97	10000	49	4400	490	44000	600	3000	2500	13000	6000	30000	25000	130000
Helium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	0.11	0.56	4	19	1.1	-	11	-	5.6	-	56	-	-	-	-	-	-	-	-	-
Hexane	730	3100	24333	103333	-	730	-	7300	-	3100	-	31000	-	-	-	-	-	-	-	-
Isopropyl alcohol	7300	31000	243333	1033333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropyl benzene	420	1800	14000	60000	-	420	-	4200	-	1800	-	18000	-	-	-	-	-	-	-	-
m&p-Xylenes	-	-	-	-	-	100	-	1000	-	440	-	4400	500	2000	2000	8000	5000	20000	20000	80000
Methyl methacrylate	730	3100	24333	103333	-	730	-	7300	-	3100	-	31000	-	-	-	-	-	-	-	-
Methyl tert butyl ether (MTBE)	9.4	47	313	1567	94	3100	940	31000	470	13000	4700	130000	-	-	-	-	-	-	-	-
Methylene chloride	96	1200	3200	40000	960	630	9600	6300	12000	2600	120000	26000	-	-	-	-	-	-	-	-
Naphthalene	0.072	0.36	2	12	0.72	3.1	7.2	31	3.6	13	36	130	7	36.7	29	152	-	-	-	-
N-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Decane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C.3

SOIL GAS SCREENING AND ACTION LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	USEPA Regional Screening Levels (RSLs) [5]				*USEPA Regional Screening Levels (RSLs) [5]*								*Ohio Department of Health*							
	Residential Air	*Industrial Air*	*Residential "Near-source" exterior soil gas [6]*	*Industrial "Near-source" exterior soil gas [6]*	*Residential Soil Vapor Screening Levels for Further Investigation*		*Residential Soil Vapor Screening Levels for Monitoring*		*Industrial Soil Vapor Screening Levels for Further Investigation*		*Industrial Soil Vapor Screening Levels for Monitoring*		*Screening Levels*				*Action Levels*			
Parameter					*Carcinogenic Target ELCR of 10^{-6} assuming DAF=0.1*	*Non-Carcinogenic Target HI of 0.1 assuming DAF=0.1*	*Carcinogenic Target ELCR of 10^{-5} assuming DAF=0.1*	*Non-Carcinogenic, Target HI of 1 assuming DAF=0.1*	*Carcinogenic Target ELCR of 10^{-6} assuming DAF=0.1*	*Non-Carcinogenic Target HI of 0.1 assuming DAF=0.1*	*Carcinogenic Target ELCR of 10^{-5} assuming DAF=0.1*	*Non-Carcinogenic, Target HI of 1 assuming DAF=0.1*	*Residential*		*Non-Residential*		*Residential*		*Non-Residential*	
Units	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	*ppb*	$\mu g/m^3$	*ppb*	$\mu g/m^3$	*ppb*	$\mu g/m^3$	*ppb*	$\mu g/m^3$
N-Dodecane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Heptane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonane	210	880	7000	29333	-	210	-	2100	-	880	-	8800	-	-	-	-	-	-	-	-
N-Propylbenzene	1000	4400	33333	146667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Undecane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Octane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	100	440	3333	14667	-	100	-	1000	-	440	-	4400	500	2000	2000	8000	5000	20000	20000	80000
Pentane	1000	4400	33333	146667	-	1000	-	10000	-	4400	-	44000	-	-	-	-	-	-	-	-
Styrene	1000	4400	33333	146667	-	1000	-	10000	-	4400	-	44000	-	-	-	-	-	-	-	-
tert-Butyl alcohol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	9.4	47	313	1567	94	42	940	420	470	180	4700	1800	60	400	250	1700	600	4000	2500	17000
Tetrahydrofuran	2100	8800	70000	293333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	5200	22000	173333	733333	-	5200	-	52000	-	22000	-	220000	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	63	260	2100	8667	-	63	-	630	-	260	-	2600	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene[4]	-	-	-	-	6.1	21	61	210	31	88	310	880	-	-	-	-	-	-	-	-
Trichloroethene	0.43	3	14	100	4.3	2.1	43	21	30	8.8	300	88	4	20	20	100	40	200	200	1000
Trichlorofluoromethane (CFC-11)	730	3100	24333	103333	-	730	-	7300	-	3100	-	31000	-	-	-	-	-	-	-	-
Trifluorotrichloroethane (Freon 113)	31000	130000	1033333	4333333	-	31000	-	310000	-	130000	-	1300000	-	-	-	-	-	-	-	-
Vinyl bromide (Bromoethene)	0.076	0.38	3	13	0.76	3.1	7.6	31	3.8	13	38	130	-	-	-	-	-	-	-	-
Vinyl chloride	0.16	2.8	5	93	1.6	100	16	1000	28	440	280	4400	4	10	20	40	40	100	200	400
Xylenes (total)	100	440	3333	14667	-	100	-	1000	-	440	-	4400	-	-	-	-	-	-	-	-
Radiology																				
Radon-222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons																				
Total hydrocarbons - FID	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total hydrocarbons - PID	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gases																				
Methane	0.5	0.5	5	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Field Parameters																				
Barometric pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon dioxide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lower explosive limit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methane, field	0.5	0.5	5	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Oxygen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PID reading	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pressure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature, ambient	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Chemicals of Concern

- - Not applicable.

[1] - An RSL is not available for 1,3-dichlorobenzene; the RSL for 1,4-dichlorobenzene was considered an evaluation surrogate for 1,3-dichlorobenzene.

[2] - An RSL is not available for cis-1,2-dichloroethene; the RSL for trans-1,2-dichloroethene was considered an evaluation surrogate for cis-1,2-dichloroethene.

[3] - An RSL is not available for cis-1,3-dichloropropene; the RSL for 1,3-dichloropropene was considered an evaluation surrogate for cis-1,3-dichloropropene.

[4] - An RSL is not available for trans-1,3-dichloropropene; the RSL for 1,3-dichloropropene was considered an evaluation surrogate for trans-1,3-dichloropropene.

[5] - United States Environmental Protection Agency Regional Screening Levels (RSL), November 2012

[6] - The Soil Gas screening levels are based on the USEPA RSLs by applying the 'OSWER Final Guidance for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Sources to Indoor Air' (USEPA, 2013) default "near-source" exterior soil gas to indoor air attenuation factor of 0.03.

TABLE C.4

SURFACE WATER SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	Ecological Screening Levels [2]		*Aquatic Life* [3]			*Human Health* [3]	
		Tier	IMZM	OMZM	OMZA	Drink	Nondrink
Parameter	*mg/L*		*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*
Volatile Organic Compounds							
1,1,1-Trichloroethane	0.076	II	1400	690	76	200a	
1,1,2,2-Tetrachloroethane	0.38	II	1800	910	260	1.7c	110c
1,1,2-Trichloroethane	0.5	II	6600	3300	740	5.0a,c	420c
1,1-Dichloroethane	0.047		ID	ID	ID		
1,1-Dichloroethene	0.065	II	3800	1900	210	0.57c	32c
1,2,4-Trichlorobenzene	0.03					70a	940
1,2,4-Trimethylbenzene	-	II	280	140	15		
1,2-Dibromo-3-chloropropane (DBCP)	-		ID	ID	ID	0.2a	
1,2-Dibromoethane (Ethylene dibromide)	-		ID	ID	ID	0.050a	
1,2-Dichlorobenzene	0.014	II	260	130	23	600a	17000
1,2-Dichloroethane	0.91	II	19000	9600	2000	3.8c	990c
1,2-Dichloroethene (total)	-	II	18000	8800	970	See criteria for individual chemicals	
1,2-Dichloropropane	0.36	II	6500	3300	520	5.0a,c	390c
1,3-Dichlorobenzene	0.038	II	160	79	22	400	2600
1,4-Dichlorobenzene	0.0094	II	110	57	9.4	75a	2600
2-Butanone (Methyl ethyl ketone) (MEK)	2.2	II	400000	200000	22000		
2-Hexanone	0.099						
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	0.17		ID	ID	ID		
Acetone	1.7						
Benzene	0.114	II	1400	700	160	5.0a,c	710c
Bromodichloromethane	-		ID	ID	ID	5.6c	460c
Bromoform	0.23						
Bromomethane (Methyl bromide)	0.016	II	75	38	16	48	4000
Carbon disulfide	0.015	II	260	130	15		
Carbon tetrachloride	0.24	II	4400	2200	240	2.5c	44c
Chlorobenzene	0.047	II	850	420	47	100a	21000
Chloroethane	-						
Chloroform (Trichloromethane)	0.14	II	2600	1300	140	57c	4,700c
Chloromethane (Methyl chloride)	-						
cis-1,2-Dichloroethene	-	II	18000	8800	970	70a	
cis-1,3-Dichloropropene	-	II	30	15	1.7	10	1700
Cyclohexane	-						
Dibromochloromethane	-		ID	ID	ID	4.1c	340c
Dichlorodifluoromethane (CFC-12)	-		ID	ID	ID		
Ethylbenzene	0.014	II	1100	550	61	700a	29000
Isopropyl benzene	-	II	86	43	4.8		
m&p-Xylenes	-						
Methyl acetate	-						
Methyl cyclohexane	-						
Methyl tert butyl ether (MTBE)	-	II	13000	6500	730		
Methylene chloride	0.94	II	22000	11000	1900	5.0c	16,000c
o-Xylene	-						
Styrene	0.032	II	570	290	32	100a	
Tetrachloroethene	0.045	II	850	430	53	5.0a,c	89c
Toluene	0.253	II	1100	560	62	1,000a	200000
trans-1,2-Dichloroethene	0.97	II	18000	8800	970	100a	140000
trans-1,3-Dichloropropene	-	II	30	15	1.7	10	1700
Trichloroethene	0.047	II	4000	2000	220	5.0a,c	810c
Trichlorofluoromethane (CFC-11)	-						
Trifluorotrichloroethane (Freon 113)	-						
Vinyl chloride	0.93	II	17000	8400	930	2.0a,c	5,300c
Xylenes (total)	0.027						
		II	480	240	27	10,000a	

TABLE C.4

SURFACE WATER SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	Ecological Screening Levels [2]		*Aquatic Life* [3]			*Human Health* [3]	
		Tier	IMZM	OMZM	OMZA	Drink	Nondrink
Parameter	*mg/L*		*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*
Semi-Volatile Organic Compounds							
1,2,4-Trichlorobenzene	0.03						
1,2-Dichlorobenzene	0.014						
1,3-Dichlorobenzene	0.038						
1,4-Dichlorobenzene	0.0094						
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	-						
2,4,5-Trichlorophenol	-					2600	9800
2,4,6-Trichlorophenol	0.0049	II	79	39	4.9	21c	65c
2,4-Dichlorophenol	0.011	II	210	110	11	0.3f	790
2,4-Dimethylphenol	0.1	II	280	140	15	540	2300
2,4-Dinitrophenol	0.019						
2,4-Dinitrotoluene	0.044	II	790	390	44	1.1c	91c
2,6-Dinitrotoluene	0.081	II	1500	730	81		
2-Chloronaphthalene	0.000396						
2-Chlorophenol	0.024	II	580	290	32	0.1f	400
2-Methylnaphthalene	0.33						
2-Methylphenol	0.067	II	1200	600	67		
2-Nitroaniline	-						
2-Nitrophenol	-	II	1300	650	73		
3-Methylphenol		II	1100	560	62		
3&4-Methylphenol	-						
3,3'-Dichlorobenzidine	0.0045					0.40c	0.77c
3-Nitroaniline	-						
4,6-Dinitro-2-methylphenol	0.023					13	770
4-Bromophenyl phenyl ether	0.0015						
4-Chloro-3-methylphenol	0.0348						
4-Chloroaniline	0.232						
4-Chlorophenyl phenyl ether	-						
4-Methylphenol	0.025	II	960	480	53		
4-Nitroaniline	-						
4-Nitrophenol	0.06						
Acenaphthene	0.038	I	38	19	15	1200	2700
Acenaphthylene	4.84						
Acetophenone	-						
Anthracene	0.000035	II	0.35	0.18	0.02	9600	110000
Atrazine	-					3.0a	
Benzaldehyde	-						
Benzo(a)anthracene	0.000025		ID	ID	ID	0.044c	0.49c
Benzo(a)pyrene	0.000014		ID	ID	ID	0.044c	0.49c
Benzo(b)fluoranthene	0.00907		ID	ID	ID	0.044c	0.49c
Benzo(g,h,i)perylene	0.00764		ID	ID	ID		
Benzo(k)fluoranthene	-		ID	ID	ID	0.044c	0.49c
Biphenyl (1,1-Biphenyl)	-	II	51	26	6.5		
bis(2-Chloroethoxy)methane	-						
bis(2-Chloroethyl)ether	19					0.31c	14c
bis(2-Ethylhexyl)phthalate (DEHP)	0.0003	II	2100	1100	8.4	6.0a,c	59c
Butyl benzylphthalate (BBP)	0.023						
Caprolactam	-						
Carbazole	-						
Chrysene	-		ID	ID	ID	0.044c	0.49c
Dibenz(a,h)anthracene	-		ID	ID	ID	0.044c	0.49c
Dibenzofuran	0.004	II	71	36	4		
Diethyl phthalate	0.11	II	2000	980	220	23000	120000
Dimethyl phthalate	-	II	6400	3200	1100	310000	2900000
Di-n-butylphthalate (DBP)	0.0097					2700	12000
Di-n-octyl phthalate (DnOP)	0.03						
Fluoranthene	0.0019	II	7.4	3.7	0.8	300	370
Fluorene	0.019	I,I,II	220	110	19	1300	14000
Hexachlorobenzene	0.0000003					0.0075c	0.0077c
Hexachlorobutadiene	0.000053					4.4c	500c
Hexachlorocyclopentadiene	0.077					50a	17000
Hexachloroethane	0.008					19c	89c
Indeno(1,2,3-cd)pyrene	0.00431		ID	ID	ID	0.044c	0.49c
Isophorone	0.92	II	15000	7500	920	360c	26,000c
Naphthalene	0.013	II	340	170	21		
Nitrobenzene	0.22	II	4000	2000	380	17	1900
N-Nitrosodi-n-propylamine	-					0.050c	14c
N-Nitrosodiphenylamine	-					50c	160c
Pentachlorophenol	0.004	I		Table 7-10		1.0a,c	82c
Phenanthrene	0.0036	II	61	31	2.3		
Phenol (wwh, ewh, mwh)		I,I,II	9400	4700	400	1.0f	4600000
Phenol (lrw)		I,I,II	9400	4700	NA	1.0f	4600000
Phenol (cwh, ssh)		I,I,II	9100	4600	160	1.0f	4600000
Phenol	0.18						
Pyrene	0.0003	II	83	42	4.6	960	11000

TABLE C.4

SURFACE WATER SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	Ecological Screening Levels [2]		*Aquatic Life* [3]			*Human Health* [3]	
		Tier	IMZM	OMZM	OMZA	Drink	Nondrink
Parameter	*mg/L*		*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*
Metals							
Aluminum	-						
Aluminum (dissolved)	-						
Antimony	0.08	II	1800	900	190	6.0a	4300
Antimony (dissolved)	0.08						
Arsenic	0.148	I	680	340	150	10a	
Arsenic (dissolved)	0.148	I	680	340	150		
Barium	0.22	II	4000	2000	220	2,000a	
Barium (dissolved)	0.22						
Beryllium	0.0036	II	g	g	g	4.0a	280
Beryllium (dissolved)	0.0036						
Cadmium	0.00015	I		Table 7-9		5.0a	
Cadmium (dissolved)	0.00015	I		Table 7-9			
Calcium	-						
Calcium (dissolved)	-						
Chromium	0.042	I		Table 7-9		100a	
Chromium (dissolved)	0.042	I		Table 7-9			
Cobalt	0.024	II	440	220	24		
Cobalt (dissolved)	0.024						
Copper	0.00158			Table 7-9			1,300
Copper (dissolved)	0.00158			Table 7-9			
Iron	-						
Iron (dissolved)	-					300a	
Lead	0.00117	I		Table 7-9		ID	ID
Lead (dissolved)	0.00117	I		Table 7-9			
Magnesium	-						
Magnesium (dissolved)	-						
Manganese	-						
Manganese (dissolved)	-						
Manganese 2+	-						
Mercury	0.0000013	I	3.4	1.7	0.91	0.012	0.012
Mercury (dissolved)	0.0000013	I	2.9	1.4	0.77		
Nickel	0.0289			Table 7-9		610	4600
Nickel (dissolved)	0.0289			Table 7-9			
Potassium	-						
Potassium (dissolved)	-						
Selenium	0.005	I			5.0	50a	11000
Selenium (dissolved)	0.005	I			4.6		
Silver	0.00012						
Silver (wwh, ewh, mwh) - TR		I	h	h	1.3	50	
Silver (lrw) - TR		I	h	h		50	
Silver (ssh, cwh) - TR		I	h	h	0.06	50	
Silver (dissolved)	0.00012	I			ID		
Sodium	-						
Sodium (dissolved)	-						
Thallium	0.01	II	160	79	17	1.7	6.3
Thallium (dissolved)	0.01						
Vanadium	0.012	II	300	150	44		
Vanadium (dissolved)	0.012						
Zinc	0.0657	I		Table 7-9		9100	69000
Zinc (dissolved)	0.0657	I		Table 7-9			

TABLE C.4

SURFACE WATER SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	Ecological Screening Levels [2]	*Aquatic Life* [3]				*Human Health* [3]	
		Tier	IMZM	OMZM	OMZA	Drink	Nondrink
Parameter	*mg/L*		*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*
PCBs							
PCBs						0.0017c	0.0017c
Aroclor-1016 (PCB-1016)	-						
Aroclor-1221 (PCB-1221)	-						
Aroclor-1232 (PCB-1232)	-						
Aroclor-1242 (PCB-1242)	-						
Aroclor-1248 (PCB-1248)	-						
Aroclor-1254 (PCB-1254)	-						
Aroclor-1260 (PCB-1260)	-						
Pesticides							
4,4'-DDD	-					0.0083c	0.0084c
4,4'-DDE	0.00000000000451					0.0059c	0.0059c
4,4'-DDT	0.000000011					0.0059c	0.0059c
Aldrin	0.000017					0.0013c	0.0014c
alpha-BHC	0.0124					0.039c	0.13c
alpha-Chlordane	-						
beta-BHC	0.000495					0.14c	0.46c
delta-BHC	0.667						
Dieldrin	0.000000071						
Endosulfan						110	240
Endosulfan I	0.000056					110	240
Endosulfan II	0.000056					110	240
Endosulfan sulfate	0.00222					110	240
Endrin	0.000036	I	0.17	0.086	0.036	0.76	0.81
Endrin aldehyde	0.00015					0.76	0.81
Endrin ketone	-						
gamma-BHC (lindane)	0.000026	I,I,II	1.9	0.95	0.057	0.19c	0.63c
gamma-Chlordane	-						
Heptachlor	0.0000038					0.0021c	0.0021c
Heptachlor epoxide	0.0000038					0.0010c	0.0011c
Methoxychlor	0.000019					40a	
Toxaphene	0.00000014					0.0073c	0.0075c
Herbicides							
2,4,5-TP (Silvex)	0.03						
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.22						
Gases							
Ethane	-						
Ethene	-						
Methane	-						

TABLE C.4

SURFACE WATER SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

	Ecological Screening Levels [2]	*Aquatic Life* [3]				*Human Health* [3]	
		Tier	IMZM	OMZM	OMZA	Drink	Nondrink
Parameter	*mg/L*		*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*
General Chemistry							
Alkalinity, total (as CaCO3)	-						
Ammonia-N	-						
Chloride	-					250,000a	
Cyanide (total)	0.0052						
Cyanide - free (wwh, ewh, mwh)		I	92	46	12	200a	220000
Cyanide - free (lwh)		I	92	46	NA	200a	220000
Cyanide - free (ssh, cwh)		I	45	22	5.2	200a	220000
Dissolved organic carbon (DOC)	-						
Dissolved organic carbon (DOC) (dissolved)	-						
Hardness	-						
Nitrate + Nitrite (as N)						10,000a	
Nitrate	-						
Nitrate (as N)	-						
Nitrite	-						
Nitrite (as N)	-					1,000a	
Sulfate	-					250,000a	
Sulfide	-						
Sulfide (acid soluble)	-						
Total organic carbon (TOC)	-						

Notes:

Chemicals of Concern
- - Not applicable.
[1] - United States Environmental Protection Agency Regional Screening Levels (RSL), November 2012
[2] - United States Environmental Protection Agency RCRA Ecological Screening Levels, August 22, 2003
[3] - Ohio River Basin Aquatic Life and Human Health Tier 1 Criteria and Tier II Values
ID - Insufficient data available to calculate criterion
NA - Not applicable.
IMNM - Inside Mixing Zone Maximum
OMZM - Outside Mixing Zone Maximum.
OMZA - Outside Mixing Zone Average.
Drink - Human health criterion applicable to Public Water Supply streams (2-route exposure).
Nondrink - Human health criterion - non Public Water Supply (1-route exposure).

a - This criterion is the maximum contaminant level (MCL) developed under the “Safe Drinking Water Act”.
b - No chlorine is to be discharged.
c - This criterion is based on a carcinogenic endpoint.
d - Equivalent 25°C specific conductance value is 2400 micromhos/cm.
e - Equivalent 25°C specific conductance values are 1200 micromhos/cm as a maximum and 800 micromhos/cm as a thirty-day average.
f - This criterion is based on protection against adverse aesthetic effects.

TABLE C.5

SEDIMENT SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Parameter	*USEPA Ecological Screening Levels* [1] *µg/kg*
Volatile Organic Compounds	
1,1,1-Trichloroethane	213
1,1,2,2-Tetrachloroethane	850
1,1,2-Trichloroethane	518
1,1-Dichloroethane	0.575
1,1-Dichloroethene	19.4
1,2-Dichloroethane	260
1,2-Dichloroethene (total)	-
1,2-Dichloropropane	333
2-Butanone (Methyl ethyl ketone) (MEK)	42.4
2-Hexanone	58.2
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	25.1
Acetone	9.9
Benzene	142
Bromodichloromethane	-
Bromoform	492
Bromomethane (Methyl bromide)	1.37
Carbon disulfide	23.9
Carbon tetrachloride	1450
Chlorobenzene	291
Chloroethane	-
Chloroform (Trichloromethane)	121
Chloromethane (Methyl chloride)	-
cis-1,3-Dichloropropene	-
Dibromochloromethane	-
Ethylbenzene	175
Methylene chloride	159
Styrene	254
Tetrachloroethene	990
Toluene	1220
trans-1,3-Dichloropropene	-
Trichloroethene	112
Vinyl chloride	202
Xylenes (total)	433
Semi-Volatile Organic Compounds	
1,2,4-Trichlorobenzene	5062
1,2-Dichlorobenzene	294
1,3-Dichlorobenzene	1315
1,4-Dichlorobenzene	318
2,4,5-Trichlorophenol	-
2,4,6-Trichlorophenol	208
2,4-Dichlorophenol	81.7
2,4-Dimethylphenol	304
2,4-Dinitrophenol	6.21

TABLE C.5

SEDIMENT SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Parameter	*USEPA Ecological Screening Levels* [1] *µg/kg*
2,4-Dinitrotoluene	14.4
2,6-Dinitrotoluene	39.8
2-Chloronaphthalene	417
2-Chlorophenol	31.9
2-Methylnaphthalene	20.2
2-Methylphenol	55.4
2-Nitroaniline	-
2-Nitrophenol	-
3,3'-Dichlorobenzidine	127
3-Nitroaniline	-
4,6-Dinitro-2-methylphenol	104
4-Bromophenyl phenyl ether	1550
4-Chloro-3-methylphenol	388
4-Chloroaniline	146
4-Chlorophenyl phenyl ether	-
4-Methylphenol	20.2
4-Nitroaniline	-
4-Nitrophenol	13.3
Acenaphthene	6.71
Acenaphthylene	5.87
Anthracene	57.2
Benzo(a)anthracene	108
Benzo(a)pyrene	150
Benzo(b)fluoranthene	10400
Benzo(g,h,i)perylene	170
Benzo(k)fluoranthene	240
bis(2-Chloroethoxy)methane	-
bis(2-Chloroethyl)ether	3520
bis(2-Ethylhexyl)phthalate (DEHP)	182
Butyl benzylphthalate (BBP)	1970
Carbazole	-
Chrysene	166
Dibenz(a,h)anthracene	33
Dibenzofuran	449
Diethyl phthalate	295
Dimethyl phthalate	-
Di-n-butylphthalate (DBP)	1114
Di-n-octyl phthalate (DnOP)	40600
Fluoranthene	423
Fluorene	77.4
Hexachlorobenzene	20
Hexachlorobutadiene	26.5
Hexachlorocyclopentadiene	901
Hexachloroethane	584
Indeno(1,2,3-cd)pyrene	200

TABLE C.5

SEDIMENT SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Parameter	*USEPA Ecological Screening Levels* [1] *µg/kg*
Isophorone	432
Naphthalene	176
Nitrobenzene	145
N-Nitrosodi-n-propylamine	-
N-Nitrosodiphenylamine	-
Pentachlorophenol	23000
Phenanthrene	204
Phenol	49.1
Pyrene	195
Metals	
Aluminum	-
Antimony	-
Arsenic	9790
Barium	-
Beryllium	-
Cadmium	990
Calcium	-
Chromium	43400
Cobalt	50000
Copper	31600
Cyanide (total)	0.1
Iron	-
Lead	35800
Magnesium	-
Manganese	-
Mercury	174
Nickel	22700
Potassium	-
Selenium	-
Silver	500
Sodium	-
Thallium	-
Vanadium	-
Zinc	121000
PCBs	
Aroclor-1016 (PCB-1016)	-
Aroclor-1221 (PCB-1221)	-
Aroclor-1232 (PCB-1232)	-
Aroclor-1242 (PCB-1242)	-
Aroclor-1248 (PCB-1248)	-
Aroclor-1254 (PCB-1254)	-
Aroclor-1260 (PCB-1260)	-

TABLE C.5

SEDIMENT SCREENING LEVELS
OU2 RI/FS WORK PLAN
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Parameter	*USEPA Ecological Screening Levels* [1] *µg/kg*
Pesticides	
4,4'-DDD	4.88
4,4'-DDE	3.16
4,4'-DDT	4.16
Aldrin	2
alpha-BHC	6
alpha-Chlordane	-
beta-BHC	5
delta-BHC	71500
Dieldrin	1.9
Endosulfan I	3.26
Endosulfan II	1.94
Endosulfan sulfate	34.6
Endrin	2.22
Endrin aldehyde	480
Endrin ketone	-
gamma-BHC (lindane)	2.37
gamma-Chlordane	-
Heptachlor	0.6
Heptachlor epoxide	2.47
Methoxychlor	13.6
Toxaphene	0.077
General Chemistry	
Percent moisture	-
Total organic carbon (TOC)	-

Notes:

- - Not applicable.
[1] - United States Environmental Protection Agency RCRA Ecological Screening Levels, August 22, 2003

APPENDIX D

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED

TABLE D.1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Chemical Specific	This regulation establishes ambient air quality standards and best available technology for the emissions of carbon monoxide, ozone, and hydrocarbons.	Use of a process emitting one of the listed pollutants.	OAC 3745-21	Applicable	Substantive requirements are applicable for onsite waste treatment operations that may generate regulated hydrocarbon air emissions. This would include vapor intrusion mitigation
Chemical Specific	This regulation governs surface water quality criteria with qualitative rules for specific Ohio water bodies/rivers and water body types. These rules establish minimum water quality requirements for all surface waters of the state.	Conducting a response action that includes a discharge to surface water	OAC 3745-1	Applicable	Applicable for off-site discharges of water to surface water; substantive requirements are applicable for onsite discharges
Chemical Specific	These regulations establish the requirements for storage, handling, and disposal of materials containing PCBs greater than 50ppm that may be generated during remedial actions, included as contingency if PCBs are found in the future.	Generation of PCB remediation waste	40 CFR 761	Applicable	Substantive requirements are applicable if any PCB-containing materials are removed or handled.

TABLE D.1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Location Specific	Requires that wetlands be maintained such that there is no net loss of wetland acreage or functions. If impacts cannot be avoided compensatory mitigation may be required.	Activities within wetlands.	OAC 3745-1-54	Applicable	Remedial actions may disturb onsite wetland areas (large and small ponds). If the disturbance results in a net loss of wetland, a mitigation plan will be prepared and implemented. Only those substantive requirements relevant for the category of wetland will apply.
Location Specific	Requires that impacts to wetlands be mitigated in accordance with set mitigation ratios.	Activities impacting wetlands.	ORC 6111.027	Applicable	Remedial actions may disturb onsite wetland areas (large and small ponds). If the disturbance results in a net loss of wetland, a mitigation plan will be prepared and implemented. Only those substantive requirements relevant for the category of wetland will apply.
Location Specific	Protects almost all species of native birds in the United States from unregulated taking.	Presence of migratory birds.	*Migratory Bird Treaty Act*, 16 USC 703	Applicable	The site is located in the Mississippi Migratory Flyway. If migratory birds, or their nests or eggs, are identified at the site, operations will not destroy the birds, nests, or eggs.
Location Specific	Establishes a covenant for the restriction of activity and use at contaminated properties by maintaining institutional controls	Remedial actions at sites where waste is left in place.	ORC 5301.80-5301.92	Applicable	Applicable to remedial actions that rely on institutional controls using Ohio's Environmental Covenants Act.

TABLE D.1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	Requires that best management practices be employed to prevent stormwater pollution caused by erosion and sedimentation as well as any other potential pollutants during construction activities.	Any use of the land, comprising an area that is one acre or more, that results in a change in the natural cover or topography and that may cause or contribute to sedimentation.	NPDES Permit OHC000003 (substantive requirements only)	Applicable	Since this is an onsite CERCLA action, coverage under the permit is not required. The substantive requirements of the permit will be complied with for onsite actions. For hot spot remedies that do not disturb greater than one acre of land these requirements would be relevant and appropriate.
Action Specific	This regulation governs and places limits on the particulate matter emissions from air pollution sources.	Conducting any activity which may cause particulate matter to become airborne.	OAC 3745-17	Applicable	During all land disturbing activities reasonable precautions will be taken to prevent particulate matter from becoming airborne.
Action Specific	Prohibits filling, grading, excavating, building, drilling, or mining on land where a hazardous waste facility or solid waste facility was operated without prior authorization from the Director.	Filling, grading, excavating, building, drilling, or mining activities at a current or former hazardous waste facility or solid waste facility.	ORC 3734.02(H)	Applicable	Substantive requirements are applicable to remedial actions that include excavations onsite.

TABLE D.1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	Construction of groundwater monitoring well(s)	Installation, maintenance, and abandonment of wells (including temporary) other than for water supply	OAC 3745-9	Applicable	Substantive requirements are applicable to any remedial alternative where well installation and maintenance is required.
Action Specific	These regulations specify the requirements for construction, operation, and closure of solid waste disposal facilities. Requires completion of final closure in a manner that minimizes the need for further maintenance and minimizes post-closure formation and release of leachate and explosive gases to air, soil, ground water, or surface water to the extent necessary to protect human health and the environment.	Closure and post-closure activities of a landfill	OAC 3745-27	Applicable	Substantive requirements are applicable when a landfill is closed with waste left in place. Topics include but are not limited to cap design, groundwater monitoring, explosive gas monitoring, explosive gas management, surface water management and design of control structures, pest control, deed notifications, signage, access restrictions, post-closure care, and accumulation of solid waste onsite in containers.
Action Specific	These regulations set forth general requirements for the RCRA hazardous waste management system	Generation and management of hazardous waste	OAC 3745-50	Applicable	Substantive requirements are applicable onsite if hazardous waste is generated.

TABLE D.1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	Set for definitions and procedures related to the identification and listing of hazardous waste.	Management of hazardous waste	OAC 3745-51	Applicable	Substantive requirements are applicable onsite if hazardous waste is generated.
Action Specific	These regulations set forth RCRA generator requirements of manifests, pre-transport labeling, marking, placarding, recordkeeping, and reporting	Generation of hazardous waste	OAC 3745-52	Applicable	Substantive requirements are applicable onsite if hazardous waste is generated through removal of any hazardous wastes or hazardous constituents and will be disposed of offsite.
Action Specific	Set forth RCRA transporter standards for compliance with manifest and record keeping, and cleanup of discharge. Pertains to sites where hazardous waste will be transported off site for treatment, storage, or disposal.	Offsite transportation of hazardous waste	OAC 3745-53	Applicable	Substantive requirements are applicable if hazardous waste is transported on a public roadway that is onsite but outside of and not adjacent to the facility boundary.
Action Specific	Restricts land disposal of RCRA hazardous wastes; outlines treatment standards and prohibitions on storage of restricted wastes.	Disposal of hazardous waste onsite	OAC 3745-270	Applicable	Substantive requirements are applicable if hazardous waste is disposed of onsite.

TABLE D.1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	Prohibits causing pollution or causing to be placed any sewage, sludge, sludge materials, industrial wastes, or other wastes in a location where they cause pollution of any waters of the state.	Management of sewage, sludge, sludge materials, industrial wastes, or other wastes	ORC 6111.04	Applicable	Substantive requirements are applicable for onsite discharges.
Action Specific	Accumulations of offal, filth, or noisome substances that are a nuisance are prohibited. Obstruction and pollution of any water course is prohibited. Discharges of oil from an oil well, oil tank, oil vat, or place of deposit of crude or refined oil to any surface water body or to any conveyance to a surface water body are prohibited.	Conducting any onsite activity that may result in a nuisance.	ORC 3767.13 (B) and (C); and 3767.14	Applicable	Substantive requirements are applicable for onsite discharges or disposal.
Action Specific	Sets forth requirements for management of solid and hazardous waste.	Generation and management of waste and waste disposal facilities	ORC 3734	Applicable	Substantive requirements are applicable for onsite activities.

TABLE D.1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	These regulations set forth standards for the construction of landfills, Incinerators, CAMUs, drip pads, and Miscellaneous Units	Management of hazardous waste in onsite units.	OAC 3745-57	Applicable	Substantive requirements are applicable only if hazardous wastes are generated and managed (stored or treated) onsite. Hazardous waste unit closure requirements are not applicable for any remedial action at this site.
		Closure and post-closure care of a hazardous waste landfill		Relevant and appropriate	Substantive requirements are relevant and appropriate to the closure and post-closure care for these remedial alternatives specified because the landfill was never subject to hazardous waste permitting.
Action Specific	This document contains USEPA guidance for construction of hazardous waste caps	Construction of a hazardous waste landfill cap	EPA 530-SW-89-047	TBC	The cap will be constructed in accordance with these requirements if a hazardous waste cap is needed. USEPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments, USEPA, Office of Research and Development, July 1989.
Action Specific	If storage capacity limits are exceeded a Spill, Prevention, Control, and Countermeasures Plan must be prepared and implemented with procedures, methods, equipment, and other requirements to prevent the discharge of into or upon the navigable waters of the United States.	Total onsite storage capacity exceeding 1,320 gallons in containers that are 55 gallons or larger in size.	40 CFR 112	Applicable	It is anticipated that fuels may be stored onsite during construction If the storage capacity in containers that are 55 gallons or greater is equal to or exceeds 1,320 gallons a Spill Prevention, Control, and Countermeasure (SPCC) Plan must be prepared and implemented. Containers include oil and fuel reservoirs in equipment.

TABLE D.1

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	Requires a 2.5h:1v minimum slope, with a preferred 3h:1v slope or flatter.	Constructing an embankment at the South Dayton Dump site.	Miami Conservancy District Requirements	TBC	The embankment will be constructed in accordance with these requirements.
Action Specific	Requires the use of clean compactable material with topsoil to support vegetation.	Constructing an embankment at the South Dayton Dump site.	Miami Conservancy District Requirements	TBC	The embankment will be constructed in accordance with these requirements.
Action Specific	Requires no trees or woody vegetation, and no flowering plants or shrubs with bare soil that could allow concentrated erosion areas or provide shelter for burrowing animals. Turf-grass type mixture preferred.	Constructing an embankment at the South Dayton Dump site.	Miami Conservancy District Requirements	TBC	The embankment will be constructed in accordance with these requirements.
Action Specific	Recommends placing fence at top of slope on adjacent property. If on MCD, stipulates that the owner would need a permit from MCD providing for installation, maintenance, repair, and replacement.	Constructing an embankment at the South Dayton Dump site.	Miami Conservancy District Requirements	TBC	Fencing will be constructed in accordance with these requirements.

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POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED
SOUTH DAYTON DUMP AND LANDFILL
MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	Prohibits construction of permanent or temporary structures within the floodway.	Construction within 500 feet of the river channel.	MCD Land Use Policy Item 204.04.01	Applicable	If structures are constructed within the flood way then they will conform with these standards.
Action Specific	Restricts or prohibits uses which result in damaging increases in flood heights or velocities.	Any construction or development activity in a special flood hazard area, or within 500 feet of the river channel.	Montgomery County Stormwater Flood Damage Prevention Regulations (substantive requirements only); MCD Land Use Policy Items 204.04.02 and 206.04.03	Applicable	Portions of the site are located in a FEMA-designated special flood hazard area. Since this is an onsite CERCLA action, a floodplain development permit and post-construction certification are not required. The substantive requirements of the regulations will be complied with for onsite actions.
Action Specific	Specifies performing a HEC- RAS water surface profile analysis along Great Miami River modeling existing and proposed conditions with MCD discharge = 120,000 cfs to ensure that proposed design would not increase flood profile upstream in Dayton flood protection channel and levees.	Designing a cap for the South Dayton Dump site.	Requirements established for the South Dayton Dump site by the Miami Conservancy District as authorized by ORC 6101.19	Applicable	The HEC-RAS model will be run in accordance with these requirements.

TABLE D.1

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MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	Prohibits levee excavations requiring open cutting, jacking, and boring but permits boring beneath the levee or river channel subject to MCD approval. Stipulates that the levee may not remain open for more than five days or over the weekend.	Performing excavating or boring activities on the levee or under the river channel.	MCD Land Use Policy Items 204.03.01, 204.03.02	Applicable	Any activities taking place on the levee will be performed in accordance with these requirements.
Action Specific	Requires compaction of material at 95% proctor following restoration of a levee.	Performing construction activities that disturb the levee.	MCD Land Use Policy Item 209.06.01	Applicable	The levee material will be restored to this compaction level following any activity requiring restoration of the levee.
Action Specific	Requires seeding or sodding of all levee slopes within seven days of construction causing a disturbance to the levee and maintenance and monitoring of the regrowth until it is established.	Performing construction activities that disturb the levee.	MCD Land Use Policy Item 209.06.02	Applicable	The levee vegetation will be restored in accordance with this requirement following any activity requiring restoration of the levee.

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Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	Requires covering the asbestos-containing waste material and posting warning signs to deter access by the public, or using an alternative control method.	Evidence of asbestos disposal at the site.	OAC 3745-20-07	Applicable	Substantive requirements apply to onsite activities that are subject to regulation.
Action Specific	Prohibits emission of an air contaminant in violation of Sec. 3704 or any rules, permit, order, or variance issued pursuant to that section of the Ohio Revised Code.	Conducting any activity that results in emission of an air contaminant in violation of Sec. 3704 or any rules, permit, order, or variance issued pursuant to that section of the ORC.	ORC 3704.05(B)	Applicable	Substantive requirements apply to onsite activities that are subject to regulation.
Action Specific	Prohibits emission of smoke, ashes, dust, dirt, grime, acids, fumes, gases, vapors, odors, or any other substances or combination of substances, in such manner or in such amounts as to endanger the health, safety, or welfare of the public, or cause unreasonable injury or damage to property.	Conducting any activity that results in an emission of any of the listed contaminants in such a manner as to endanger health, safety, welfare, or property.	OAC 3745-15	Applicable	Substantive requirements would apply to onsite activities that are regulated. None of the listed contaminants will be emitted in a manner or amount that will endanger health, safety, welfare, or property while carrying out any of the response actions.

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POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND GUIDANCE TO BE CONSIDERED
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Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	Prohibits hazardous waste facilities from emitting any particulate matter, dust, fumes, gas, mist, smoke, vapor, or odorous substance that interferes with the comfortable enjoyment of life or property or is injurious to public health.	Conducting any activity at a hazardous waste facility that results in emission of particulate matter, dust, fumes, gas, mist, smoke, vapor, or odorous substance that interferes with the comfortable enjoyment of life or property or is injurious to public health.	ORC 3734.02(I)	Applicable	Substantive requirements apply to onsite activities that are subject to regulation.
Action Specific	Requires the use of Good Engineering Practice stack heights. Specifies emission limits and monitoring and inspection requirements for process vents regulated under RCRA Includes requirements for closure and post-closure care of permitted hazardous waste disposal facilities.	Emitting air contaminants through a stack.	OAC 3745-16-02	Applicable	Substantive requirements apply to onsite activities that are subject to regulation.
		Closure or post closure of a permitted hazardous waste unit	OAC 3745-55	Relevant and appropriate	Substantive requirements are relevant and appropriate to the closure and post-closure care for these remedial alternatives specified because the landfill was never subject to hazardous waste permitting.

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MORAINE, OHIO

Category	*Requirement*	*Prerequisite*	*Citation*	*Preliminary Expected ARAR Determination*	*Comment*
Action Specific	Sets requirements for emissions from highway vehicles and engines by model year.	Use of vehicles on site.	40 CFR 86	Applicable	Vehicles used on-site will conform to the EPA requirements for their model year.
Action Specific	Establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the NPDES permit process.	Discharges to the storm sewer system.	Codified Ordinances of Moraine--Title Nine Stormwater Plan, Chapter 945 Storm Sewer System Illicit Discharge Detection and Elimination and OAC 3745- 39-04	Applicable	Discharges to the storm sewer are an off-site activity, however onsite actions will be conducted in a manner that will not create run off that would eventually discharge to this system causing a violation of these requirements. Applicable because these ordinances are promulgated to maintain compliance with Ohio's NPDES program.
Action Specific	Provides standards for the operation and maintenance of private water systems.	Operation of a private water system consisting of less than 15 service connections.	ORC 3701.334 - 347 and OAC 3701-28	Applicable	Institutional controls will be included in the remedial design to prevent the onsite consumption of contaminated water from the Valley Asphalt well. The water from this well is not intended for public consumption, however if it is determined that institutional controls are not sufficient to protect against accidental ingestion then the well will become subject to the substantive provisions included in this statute and regulations.