RESOURCE CONSERVATION AND RECOVERY ACT
CA725 ENVIRONMENTAL INDICATORS REPORT

VERNAY LABORATORIES, INC.
PLANT 2/3 FACILITY
875 DAYTON STREET
YELLOW SPRINGS, OHIO

OHD 004 243 002

Prepared for

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Yellow Springs, Ohio

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EXECUTIVE SUMMARY

The Vernay Laboratories, Inc. (“Vernay”) Facility (the “Facility”) is located at 875 Dayton Street in the Village of Yellow Springs, Ohio. The Facility is comprised of approximately ten acres and includes two main operations buildings (Plant 2 and Plant 3); a storage building located south of Plant 2; various asphalt driveways and parking lots; and a grass field located along the western portion of the property. The Facility is bounded by Dayton Street to the north; East Enon Road to the west; commercial, agricultural, and residential properties to the east; and residential properties to the south. Land use to the north of the Facility consists of residential properties and the Antioch Publishing Company. The area to the west consists of residential and agricultural land and the Yellow Springs High School.

This Resource Conservation and Recovery Act (RCRA) Current Human Exposures Environmental Indicators (EI) Report was prepared to fulfill provisions under Paragraph 17 of the Administrative Order on Consent (Order) for the Vernay Facility. The Order, effective on September 27, 2002, included goals for completing the Corrective Action EI determinations for current human exposures (CA725) by June 30, 2004 and migration of contaminated ground water (CA750) 180 days following the approval of the Phase I or Phase II Facility Investigation Report. Based on comments received from USEPA on June 29, 2004 relating to the draft CA 725 report submitted by Vernay to USEPA on April 9, 2004 USEPA agreed to extend the final deliverable date for the CA 725 to July 15, 2004. Documentation of the CA750 will be provided at a later date in accordance with the Order.

This EI Report evaluates and discusses information that is pertinent to the RCRA CA725 determination, and includes data collected during the Phase I Facility Investigation and from prior investigations that were summarized in the Facility Current Conditions Report. Based on these data, and a consideration of potential exposure pathways and site-specific conditions, current human exposures are determined to be under control according to the provisions of CA725.

1.0 INTRODUCTION

1.1 Purpose

This Resource Conservation and Recovery Act (RCRA) Current Human Exposures Environmental Indicators (EI) Report was prepared to fulfill provisions under Paragraph 17 of the Administrative Order on Consent (Order) for the Vernay Laboratories, Inc. ("Vernay") Facility (the "Facility") located at 875 Dayton Street in the Village of Yellow Springs, Ohio (see Figure 1). The United States Environmental Protection Agency (USEPA) Identification Number for the Facility is OHD 004 243 002. The Order, effective on September 27, 2002, included goals for completing the Corrective Action EI determinations for current human exposures (CA725) by June 30, 2004 and migration of contaminated ground water (CA750) 180 days following the approval of the Phase I or Phase II Facility Investigation Report. Based on comments received from USEPA on June 29, 2004 relating to the draft CA 725 report submitted by Vernay to USEPA on April 9, 2004, USEPA agreed to extend the final deliverable date for the CA 725 to July 15, 2004. Documentation of the CA750 will be provided at a later date in accordance with the Order.

This EI Report evaluates and discusses information that is pertinent to the RCRA corrective action CA725 determination that all current human exposures to contamination at or from the Facility are under control. This information includes the data collected during the Phase I Facility Investigation and data from prior investigations that were summarized in the *Current Conditions Report* (CCR; Payne Firm, 2002).

The evaluation and discussion in this EI Report are organized to follow USEPA's CA725 form (Interim Final 2/5/99). A completed CA725 form that is based on the discussion in this report is provided in Appendix A.

1.2 Facility Description

The Facility is located at 875 Dayton Street in the Village of Yellow Springs, Ohio at latitude 39°48'10" and longitude 84°54'19" (Figure 1). Yellow Springs is located in the north-central portion of Greene County (Miami Township), which is located in the southeastern portion of Ohio. The bordering Clark County is located approximately 1.5 miles north of the Facility. The nearest major city to Yellow Springs is the City of Dayton, which is located approximately 15 miles to the west.

The Facility is comprised of approximately ten acres and is bound by Dayton Street to the north; East Enon Road to the west; commercial, agricultural, and residential properties to the east; and residential properties to the south (Figure 2).

The primary features at the Facility include: Plant 2 and Plant 3 buildings; a storage building located south of Plant 2; various asphalt driveways and parking lots; and, a grass field located along the western portion of the Facility. Approximately two-thirds of the Facility is covered by Plant 2 and Plant 3 and parking lots, with the remaining area being the grass field. The features of the Facility, as they currently exist[1], are shown on Figure 2. A number of underground utilities, including sanitary and storm sewers, hydraulic oil pipe system, a utility tunnel between Plant 2 and Plant 3, municipal water, and natural gas exist at the Facility. A detailed description of the underground utilities was provided in the CCR (Payne Firm, 2002).

Plant 2 is currently used for the manufacturing of rubber products, primarily for the medical industry and covers approximately 9,000 square feet. Plant 3, which is approximately 100,000 square feet in area, is used primarily for offices and maintenance; very limited manufacturing operations are conducted in Plant 3. The majority of manufacturing operations ceased in Plant 3 in 2003. A detailed description of the specific manufacturing areas and processes that were conducted prior to the ceasing of operations in Plant 3 are discussed in the June 1, 2001 TechLaw, Inc. (TechLaw) report entitled Final Preliminary Assessment/Visual Site Inspection Report for Vernay Laboratories, Inc., 875 Dayton Street, Yellow Springs, Ohio, EPA ID No. OHD004243002 (TechLaw, 2001) and summarized in Section 1.4.

1.3 Land Use

The Facility is located in a mixed industrial, commercial and residential area (Figure 2). The area to the north consists of residential properties along Dayton Street and the Antioch Publishing Company. The area to the south consists of residential properties along Omar Circle. The area to the east consists of a recording studio, residential properties, and agricultural land. The area to the west consists of residential and agricultural land and the Yellow Springs High School.

Adjoining and surrounding areas have been primarily used for agricultural and residential purposes over the years. The adjoining and surrounding areas north and west of the Facility were developed into commercial and industrial properties in the l970s and early 1980s; residential areas north and east of the Facility were developed prior to the 1960s; residential areas to the south were developed during the 1960s.

1.4 Background to RCRA Corrective Action

As specified under Paragraph 10 of the Order, Vernay prepared a CCR (Payne Firm, 2002) that described investigations performed by Vernay during its Ohio EPA Voluntary Action Program (VAP) Phase I and Phase II assessments. As outlined in the CCR, Tech Law (TechLaw, 2001) on behalf of the USEPA, identified a total of 39 Solid Waste Management Units (SWMUs) and

1 The aerial photographs displayed on figures in this report were obtained from the Greene County Auditors Office, dated 1998.

four Areas of Concern (AOCs) at the Facility during a Preliminary Assessment/Visual Site Inspection (PA/VSI). Of the 39 SWMUs identified, 31 were defined by TechLaw as having low release potential, with the remaining SWMUs and AOCs identified as having moderate and/or high release potential. The CCR also described the physical conditions, historical operations, and any previous investigation, remedial action and/or interim measures at the Facility. Rationale for not further investigating other SWMUs was also provided in the CCR.

As specified under Paragraph 12 of the Order, Vernay is conducting an investigation of the Facility (RCRA Facility Investigation, RFI) to identify the nature and extent of any releases of hazardous wastes and hazardous constituents at or from the Facility that may pose an unacceptable risk to human health and the environment. The Payne Firm, Inc. (Payne Firm) and ENVIRON International Corporation (ENVIRON) are implementing the scope of work required by the Order, on the behalf of Vernay.

In accordance with the Order, Vernay is conducting the investigation in two phases. Phase I of the RFI was completed between October 2002 and June 2004 and addressed the Cedarville Aquifer and sewer lines beneath the Vernay Facility, and beneath Dayton Street located north of the Facility. The Phase I RFI also included the investigation of the nature and extent of soil and air contamination in and around identified SWMUs and AOCs, an evaluation of the extent of surface water and sediment contamination in an unnamed creek located east of the Facility, and a water well survey of properties within a designated area around the Facility. The results of the Phase I RFI, including detailed summaries of the CCR and technical memorandums prepared during the Phase I RFI, are presented in a RCRA Facility Investigation Report (Phase I RFI report) prepared by the Payne Firm (Payne Firm, 2004d). The Phase I RFI report was presented to the USEPA under a separate cover.

In accordance with Paragraph 13 of the Order and as part of the Phase I RFI, Vernay commenced a quarterly ground water monitoring program, installed additional monitoring wells in the upper, middle and lower portions of the Cedarville Aquifer, and installed monitoring wells along the sewer lines. Vernay conducted ground water sampling for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and eight RCRA metals to confirm sampling results collected during the VAP investigation, and to complete the evaluation of the nature and extent of ground water contamination in the Cedarville Aquifer. Based on information generated during the Phase I RFI, Vernay will commence a Phase II RFI to complete the requirements of the Order.

The scope of work, rationale, and data quality objectives implemented during the Phase I RFI are summarized in detail in the Phase I RFI report (Payne Firm, 2004d). The Phase I RFI was conducted in accordance with the Statements of Work (SOWs) #1 through #12. Quarterly progress reports, technical memorandums and the Phase I RFI report describe field investigation activities completed by Vernay as part of the Phase I RFI.

In addition to the field investigations to support the Phase I RFI, Vernay has continued to operate interim measures in accordance with Paragraph 11 of the Order, including the operation of a Ground Water Capture Treatment System (GWCTS) for hydraulic control of Cedarville Aquifer ground water containing site-related VOCs. An assessment of the efficacy of the GWCTS is conducted monthly at the Facility. Vernay has also established procedures at the Facility to monitor and control worker activities to prevent unacceptable exposures to contaminated media identified during the Phase I RFI by implementing a site-specific Health and Safety Policy (Appendix E).

1.5 Facility Geology and Hydrogeology

Detailed information on the subsurface geology and hydrogeology is documented in the Phase I RFI report (Payne Firm, 2004d). The information on the pertinent medium of interest for completing the EI CA725 is summarized below. Figure 3 displays a diagram for each medium of interest sampled for the purposes of this EI determination.

1.5.1 Unconsolidated Unit

<u>Unconsolidated Unit Geology</u>

The Unconsolidated Unit beneath the Facility and the surrounding area consists of surface sediment, fill and glacial till. The Unconsolidated Unit comprises the vadose zone beneath the Facility and the surrounding area. The vadose zone is limited above by the land surface and below by the uppermost bedrock aquifer beneath the Facility (Cedarville Aquifer).

Through the inspection of borehole logs during the Facility investigations, the Unconsolidated Unit beneath the Facility and vicinity consists of a very firm, slightly moist silt and clay matrix. This low permeability silt and clay matrix contains laterally discontinuous poorly sorted sand lenses at or near the bedrock surface, and also interbedded discontinuous poorly sorted sand seams in the upper and middle portions of the Unconsolidated Unit that vary in thickness (a few feet) and vary in moisture content (dry to saturated). Soil borings installed by Vernay to the top of bedrock indicate the thickness of the Unconsolidated Unit ranges from approximately 11 to 26 feet.

Also present within the Unconsolidated Unit are storm and sanitary sewer lines beneath the Facility and beneath Dayton Street. The sewer lines are contained within backfill material ranging from silt and clay sediment to granular engineered fill; the sewer backfill was observed to be saturated at certain locations in the investigation area.

<u>Unconsolidated Unit Hydrogeology</u>

Buildings and asphalt and/or concrete parking areas on the central and eastern portions of the Facility restrict recharge into the Unconsolidated Unit. Recharge to the Unconsolidated Unit is primarily from the western portion of the Facility, and at locations off of the Facility's property to the northwest.

Most of the discontinuous sand seams that were observed in boreholes drilled within the Unconsolidated Unit were dry or slightly moist. These discontinuous sand seams are separated from the Cedarville Aquifer by at least 3 to 10 feet of unsaturated silty clay soil. The few saturated sand seams that were observed are not interpreted to be connected to the underlying Cedarville Aquifer (Payne Firm, 2003d).

Some discontinuous sand lenses were observed at or near the surface of the underlying bedrock unit (Cedarville Dolomite). These sand lenses that were encountered during borehole drilling were typically saturated and are interpreted to be hydraulically connected with the underlying saturated Cedarville Dolomite. This observation is based on equivalent water level measurements from the sand lens when compared to the Cedarville Aquifer potentiometric surface at the same location.

Unconsolidated Unit Sampling

Media within the Unconsolidated Unit that were sampled for the purposes of this EI determination include the following (Figure 3):

- Surface Sediment
- Surface Water
- Storm Sewer Water
- Subsurface Soil
- Subsurface Water
  - Sewer Backfill Water
  - Saturated Sand Seam Water

1.5.2 Cedarville Aquifer

Cedarville Aquifer Geology

Beneath the Unconsolidated Unit, two consolidated bedrock aquifers, the Cedarville and the Brassfield aquifers, are present beneath the Facility and vicinity. The aquifers are separated by two aquitards. The vertical and horizontal extent regionally of the aquifers (and aquitards) is presented in the RFI Phase I report (Payne Firm, 2004d). Both aquifers are used by some private well users for potable and non-potable purposes in the Yellow Springs area. However, based on the results of the water well survey conducted during the RFI Phase I, there are no private water wells in the lowermost Brassfield Aquifer within the

Vernay water well survey area. Therefore, for the purposes of this EI determination, a discussion is not pertinent of the lowermost aquifer (and aquitards) since the nature and extent of contamination has been defined to risk-based levels in the uppermost Cedearville Aquifer and there is not a complete pathway for human exposure to the lowermost Brassfield Aquifer. The Cedarville Aquifer is described below.

The uppermost aquifer beneath the Facility and the surrounding area is called the Cedarville Aquifer, and includes the discontinuous sand lenses at the base of the Unconsolidated Unit together with the Silurian-aged carbonate bedrock units (dolomite and some shale). The aquifer is approximately 74 to 89 feet in thickness beneath the Facility and vicinity. As described in the RFI Phase I report, the three rock formations (youngest to oldest) comprising the Cedarville Aquifer are the Cedarville Dolomite, the Springfield Dolomite and the Euphemia Dolomite. At the Facility and vicinity, the depth to the top of the Cedarville Dolomite (uppermost bedrock unit) ranges from 11 to 26 feet below the surface.

Cedarville Aquifer Hydrogeology

Because of the lack of ground water in the Unconsolidated Unit, the private water wells identified within the Vernay water well survey area are located within the Cedarville Aquifer (Payne Firm, 2004d). Vernay has also installed a total of 57 monitoring wells, extraction wells and remediation wells within the Cedarville Aquifer on and off the Facility.

The Cedarville Aquifer is fully saturated beneath the Facility and vicinity. Regionally, the Cedarville Aquifer is at least partially confined by the overlying glacial till. Ground water stored in the bedrock occurs within intergranular and vugular pore spaces and along joints and bedding plane partings. Some discontinuous sand lenses were observed at or near the surface of the underlying bedrock unit (Cedarville Dolomite). The sand lenses that were encountered during borehole drilling were typically saturated and are interpreted to be hydraulically connected with the underlying saturated Cedarville Dolomite. The average ground water yield from the Cedarville Aquifer is about 5 to 15 gpm (Maxfield, 1975).

Currently, Vernay operates two extraction wells on the eastern portion of the Facility that control ground water flow locally within a zone of influence caused by pumping. Prior to the operation of these extraction wells, ground water flow direction was predominantly to the east and south of the Facility. The current ground water flow and potentiometric surface of the Cedarville Aquifer beneath the Facility and vicinity are described in detail in the RFI Phase I report (Payne Firm, 2004d).

Cedarville Aquifer Sampling

Media within the Cedarville Aquifer that were sampled for the purposes of this EI determination include the following (Figure 3):

- Upper Cedarville Aquifer Ground Water
    - Including sand lenses at or near the surface of bedrock
- Middle Cedarville Aquifer Ground Water
- Lower Cedarville Aquifer Ground Water

1.6 Ground Water Use

The properties that were identified from the water well survey as having a water well are presented on Figure 4. The Cedarville Aquifer ground water and Unconsolidated Unit subsurface water on-Facility is not currently used as a water supply. Additionally, Unconsolidated Unit subsurface water bearing zones are limited in extent and are not used as a source of water in off-site areas surrounding the Facility. Some residents in the vicinity of the Facility use Cedarville Aquifer ground water as a potable or non-potable source.

1.7 Areas of Interest (AOI) for Environmental Indicator Determination

For the Environmental Indicator determination, a total of six Areas of Interest (AOIs) were defined by ENVIRON based on the previously identified SWMUs and AOCs and on investigations performed at and near the Facility. The designated AOIs are depicted on Figure 5 and described as follows:

AOI-1 – Undeveloped Western Fill Area

AOI-1 is defined as the fill area (SWMU 39) located on the western portion of the Facility (Figure 5). This area is the result of the placement of fill material from a road construction project on Dayton Street in the early 1960s. Soil contamination in this area consists primarily of polynuclear aromatic hydrocarbons (PAHs) believed to be due to asphalt within the road construction fill. This area is currently grass covered. No buildings or structures exist within AOI-1 except for a fire line pump station (Figure 2), and there are no routine Facility activities in this area except for seasonal grass mowing.

AOI-2 – Developed Area of Facility

AOI-2 is defined as the active operations area of the Facility, and includes Plants 2 and 3, the Facility parking area, and adjoining driveways (Figure 5). The majority of AOI-2 is paved with concrete or asphalt, or under concrete building floors. Soil contamination from past site activities in this area consists primarily of volatile organic compounds (VOCs) and PAHs. VOC concentrations are present from the surface down to the top of bedrock within this area, and are concentrated in the central portion of AOI-2 (Figure 5). This area of the

Facility is the primary source area for ground water contamination beneath the Facility and the surrounding area. Backfill materials around sewer lines beneath this area are also a source of soil contamination on the Facility as described below in AOI-2A.

AOI 2A – On-Facility Sewer Lines Area

AOI-2A is defined as the on-Facility portion of the sewer system. Waste liquids, including waste solvents and waste oils, previously used in Plant 2 and Plant 3 reportedly entered into the sewer system beneath the Facility via floor drains formerly located inside the two buildings. Soil and subsurface water samples collected near floor drains and sewer lines, within sewer backfill, and native soil material around the sewer backfill contain elevated concentrations of VOCs. Exposures to water within the sewer line and sewer backfill are addressed separately in Section 2.0.

AOI 3 – Off-Facility Soils

AOI-3 consists of off-Facility soils in the vicinity of the Facility. With the exception of Off-Facility sewer backfill as described below (AOI-3A), Facility related contamination has not been identified in off-Facility soils.

AOI 3A – Off-Facility Sewer Lines Area

AOI-3A consists of sewer backfill soil and water, water in the sewer lines, and soil in the immediate vicinity of sewer backfill along the off-Facility sewer lines located beneath Dayton Street to the north and east of the Facility. Contamination in the sewer lines area consists primarily of VOCs detected beneath the invert of the sewer line and native soil material around the sewer backfill. Exposures to water within the sewer line and sewer backfill are addressed separately in Section 2.0.

AOI 4 - Creek Sediment and Surface Water

AOI-4 is defined as off-Facility sediment and surface water. Storm water from the Facility discharges to a storm sewer beneath Dayton Street. The Dayton Street storm sewer discharges to an Unnamed Creek located northeast of the Vernay Facility. VOCs have been detected in the surface water at the sewer outfall discharge and in surface water and sediments in the Unnamed Creek. The VOC concentrations in surface water decrease to the reporting limit within a few hundred feet of the discharge in the Unnamed Creek; VOC concentrations in sediments decrease to the reporting limit within 50 feet of the discharge in the Unnamed Creek.

1.8 Conceptual Site Model For Human Exposures

Detailed information on the Facility setting, surrounding land use, geology, hydrogeology, surface water hydrology, ground water use, water well locations near the Facility, and identification of potentially exposed populations is documented in the Phase I RFI report (Payne, 2004d). The information pertinent to completing the EI CA725 is summarized below. The potential for exposure to the contamination (as defined in Section 2.2) detected at the Facility is summarized in the conceptual site model for human exposures presented on Table 1-1.

Current Facility-specific conditions make many of the exposure pathways incomplete or insignificant:

On-Facility Routine Worker Direct Exposures

- Direct exposures to "contamination" in soil, and/or subsurface water or ground water, in on-Facility areas are not reasonably expected for routine workers at the Facility. As discussed above, the majority of the soil and subsurface or ground water VOC contamination on the Facility is within AOI-2 and AOI-2A. The majority of the soil contamination in these areas is paved with asphalt or concrete, or under Plant 2 and Plant 3 building floor slabs. There is no regular routine worker activity in unpaved areas with the exception of seasonal grass mowing in AOI-1. Also, there are no water wells at the Facility, except for an unused well located in Plant 2. The well is capped and has not been in operation since the 1950s. There is no pump in the well.

On-Facility Pathway to Indoor Air

- The potential pathway to indoor air from soils, shallow saturated sand seams, and sewer backfill water in the Unconsolidated Unit, and Cedarville Aquifer ground water beneath the Plant 2 and Plant 3 buildings is insignificant based on direct monitoring of indoor air at locations most likely to be impacted by vapor migration into the Plant 2 and Plant 3 buildings.

On-Facility Trespassers

- Potential direct exposures of occasional trespassers to "contamination" in surface soil in on-Facility areas are possible in unpaved areas of the Facility. Potential exposures to trespassers in on-Facility areas would be considerably less than routine worker potential exposures. Therefore, routine worker exposures are assumed to represent the highest potential on-Facility exposures.

On-Facility Excavation/Construction Worker Exposure

- Potential on-Facility worker exposures to subsurface soil and water in discontinuous sand seams or saturated sewer backfill locations may occur during occasional excavation activities. The potential exposures for excavation/construction workers in on-Facility areas is controlled by an existing Facility policy which requires monitoring and HAZWOPER training for personnel that conduct excavation in specified impacted areas (e.g. sewer line repairs and utility line construction). The site-specific Health and Safety Policy for on-Facility excavations is included in Appendix E of this report.

<u>Off-Facility Subsurface Water Exposure</u>

- Off-Facility subsurface water that occurs within discontinuous saturated sand seams or saturated sewer backfill of the Unconsolidated Unit are not a source of potable or non-potable water because of the extremely low yield and poor water quality (i.e., high turbidity and suspended solids) associated with the seams and sewer backfill. Potential off-Facility worker exposures to subsurface water in these discontinuous locations may occur during occasional excavation activities.

<u>Off-Facility Cedarville Aquifer Exposure</u>

- Off-Facility bedrock ground water in the Cedarville Aquifer is currently used on a limited basis as a source of potable water or non-potable water. A water well survey was conducted during the Phase I RFI to locate wells within the area of known ground water contamination that has emanated from the Facility, and in a designated area surrounding the area of contamination (Figure 4). Certain residences identified during the survey that had water wells being used for potable purposes were connected to the Village's public water supply or, confirmed to be no longer in operation. Potable water wells that could not be abandoned and were in operation, were sampled by the Payne Firm to determine if they may have been impacted by the Facility. As reported in the Phase I RFI, none of the few remaining properties with active potable wells contain VOCs above drinking water standards or VOCs above the laboratory reporting limit. Water wells used for non-potable purposes were also sampled and do not contain VOCs at concentrations above acceptable risk-based levels. A detailed discussion of the scope and results of the water well survey are presented in the Phase I RFI report.

<u>Off-Facility Pathway to Indoor Air</u>

- The potential pathway to indoor air from off-Facility saturated sand seams in the Unconsolidated Unit is not complete. The Phase I RFI has determined that "contamination" in discontinuous shallow sand seams is limited to on-Facility areas.

More detailed information related to the demonstration that current human exposures are under control is presented in Section 2 of the report.

2.0 CURRENT HUMAN EXPOSURES UNDER CONTROL

2.1 Information Reviewed

Question 1 of the CA725 form asks whether all relevant information on known and reasonably suspected releases subject to RCRA corrective action has been considered in making the EI determination.

All relevant information has been considered in preparing this report. Specifically, the following documents have been consulted to support the evaluation of whether current human exposures at the Facility are under control:

- Current Conditions Report (Payne Firm 2002)
- First Quarter 2003 Progress Report (Payne Firm 2003a)
- Second Quarter 2003 Progress Report (Payne Firm 2003b)
- Third Quarter 2003 Progress Report (Payne Firm 2003c)
- RCRA Corrective Action Technical Memorandum No. 3 Groundwater Monitoring (Payne Firm 2003d)
- Fourth Quarter 2003 Progress Report (Payne Firm 2004a)
- RCRA Corrective Action Technical Memorandum No. 4 Soil Confirmation (Payne Firm, 2004b)
- First Quarter 2004 Progress Report (Payne Firm, 2004c)
- RCRA Phase I Facility Investigation Report (Payne Firm, 2004d)

The above reports have been provided to USEPA.

2.2 Presence of Contamination

Question 2 of the CA725 form asks whether ground water, soil, surface water, sediment, or air is known or reasonably suspected to be “contaminated” above appropriately protective risk-based levels from releases subject to RCRA corrective action. According to the CA725 form:

> “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

In this report, the identification of contamination for soil, subsurface water, Cedarville Aquifer ground water, sediment, surface water, and indoor air is based on comparison of the Phase I RFI characterization data with generic risk-based screening criteria. The following is a list of screening criteria selected based on the conceptual site model for current human exposures to identify contamination in each of the environmental media investigated during the Phase I Facility Investigation:

Soil

- Background concentrations of three metals (As, Cu and Zn) in soil (see Appendix B);
- Risk-based screening levels calculated using the methodology and conservative exposure factors for deriving USEPA Region 9 Preliminary Remediation Goals (PRGs) for industrial and/or residential land use (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents); and
- For on-Facility areas, risk-based screening levels for evaluating soil vapor migration to indoor air based on meeting OSHA criteria for industrial chemical exposures, or in the absence of an OSHA criterion, risk-based screening levels calculated using the methodology and conservative exposure factors published by Michigan Department of Environmental Quality (MDEQ) for evaluating the soil to indoor air pathway for industrial land use (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents) (see Appendix C).

Cedarville Aquifer Ground Water

- Federal and Ohio Maximum Contaminant Levels (MCLs) for drinking water, or in the absence of an MCL, equivalent drinking water levels (EDWLs; set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents);
- For off-Facility areas, risk-based screening levels for evaluating ground water vapor migration to indoor air based on risk-based screening levels calculated using the methodology and conservative exposure factors published by Michigan Department of Environmental Quality (MDEQ) for evaluating the ground water to indoor air pathway for residential land use (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents) (see Appendix C);
- For on-Facility areas, risk-based screening levels for evaluating ground water vapor migration to indoor air based on meeting OSHA criteria for industrial chemical

exposures, or in the absence of an OSHA criterion, risk-based screening levels calculated using the methodology and conservative exposure factors published by Michigan Department of Environmental Quality (MDEQ) for evaluating the ground water to indoor air pathway for industrial land use (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents) (see Appendix C); and

- Risk-based criteria derived for assessing direct contact exposures to ground water ("ground water contact criteria") during routine utility excavation activities (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents) (see Appendix H).

Subsurface Water

- Risk-based criteria derived for assessing direct contact exposures to subsurface water ("ground water contact criteria") during routine utility excavation activities (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents);
- For off-Facility areas, risk-based screening levels for evaluating subsurface water vapor migration to indoor air based on risk-based screening levels calculated using the methodology and conservative exposure factors published by Michigan Department of Environmental Quality (MDEQ) for evaluating the ground water to indoor air pathway for residential land use (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents) (see Appendix C); and
- For on-Facility areas, risk-based screening levels for evaluating subsurface water vapor migration to indoor air based on meeting OSHA criteria for industrial chemical exposures, or in the absence of an OSHA criterion, risk-based screening levels calculated using the methodology and conservative exposure factors published by MDEQ for evaluating the subsurface water to indoor air pathway for industrial land use (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents).

Sediment

- Risk-based screening levels calculated using the methodology and conservative exposure factors for deriving USEPA Region 9 PRGs for residential land use (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents).

Surface Water

- Federal and Ohio Maximum Contaminant Levels (MCLs) for drinking water, or in the absence of an MCL, equivalent drinking water levels (EDWLs; set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents); and
- Site-specific non-potable criteria based on direct contact and inhalation associated with use of ground water in a residential "kiddie pool" scenario (see Appendix G).

Storm Sewer Water

- Risk-based criteria derived for assessing direct contact exposures to ground water ("ground water contact criteria") during routine utility excavation activities (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents).

Contamination identified based on comparison of detected constituent concentrations in the media sampled with these criteria is discussed below. The sampling locations for each of the media discussed below are presented in Figures 6a through 6e.

2.2.1 Soil

The Phase I RFI soil characterization data are summarized on Table 2-1 and Table 2-2 by AOI for on-Facility and off-Facility soils, respectively. The data on Tables 2-1 and 2-2 include only valid data (i.e., no R-qualified data), and concentrations among duplicate pairs have been averaged to obtain a representative concentration for each pair. For each AOI, Table 2-1 and Table 2-2 lists the detected constituents, the detection frequencies, the ranges of detected concentrations, and the ratios of the highest measured concentrations to the screening criteria. As discussed above, the screening criteria used to identify "contamination" in this evaluation are based on the risk-based EPA Region 9 preliminary remediation goals (PRGs) for soil at industrial and residential sites (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents). For the off-Facility sewer lines area (AOI 3A), both industrial and residential PRGs are used to identify "contamination", although residential exposure to subsurface soils is not expected. Potential exposures in this area are expected to be limited to occasional excavation workers.

Contamination is identified in each AOI when the ratio of the highest measured Facility-related concentration at the AOI to the screening criterion exceeds 1 (for inorganics, Facility-related concentrations are those that are higher than the site-specific background levels discussed in Appendix B). Such ratios are highlighted on Table 2-1 and Table 2-2 to facilitate identification of AOIs where soil is considered to meet the definition of "contaminated".

The AOIs that have "contaminated" soil and the contaminants in each AOI that exceed the screening criteria are:

AOI-1 – Undeveloped Western Fill Area

- 1,2-dichloropropane
- benzo(a)pyrene

AOI-2 – Developed Area of Facility

- tetrachloroethene
- trichloroethene
- benzo(a)pyrene
- dibenz(a,h)anthracene

AOI-2A – On-Facility Sewer Lines Area

- tetrachloroethene
- trichloroethene

AOI-3A – Off-Facility Sewer Lines Area

- tetrachloroethene
- trichloroethene

The potential for human exposure to "contamination" in soil is discussed below in Section 2.3 and the significance of any potential exposures is discussed in Section 2.4.

2.2.2 Subsurface Water/Ground Water

Subsurface water and ground water data collected from on-Facility and off-Facility are summarized on Tables 2-3, 2-4, 2-5, 2-6, 2-7, 2-8, 2-9, and 2-10. The data on these tables include only valid data (i.e., no R-qualified data), and concentrations among duplicate pairs have been averaged to obtain a representative concentration for each pair. For each area where sampling was conducted, Tables 2-3 through 2-10 list the detected constituents, the detection frequencies, the range of detected concentrations, and the ratios of the highest measured concentration to the screening criteria.

On-Facility Unconsolidated Unit Subsurface Water

Subsurface water data collected in the on-Facility sewer backfill wells are summarized on Table 2-3. Data from water samples collected for screening purposes in saturated sand seams and sewer backfill from borings in the Unconsolidated Unit are summarized on Table 2-4.[2] As discussed in Section 2.2, the screening criteria used to identify "contamination" in this evaluation are criteria defined to evaluate potential exposures during short-term excavation activities and criteria defined to evaluate potential vapor migration to indoor air.

Contamination of Unconsolidated Unit subsurface water is identified on Tables 2-3 and 2-4 by a ratio of the highest measured concentration to the screening criterion that exceeds 1. Such ratios are highlighted to facilitate identification of locations where subsurface water is considered to meet the definition of "contaminated". As shown on Tables 2-3 and 2-4, the maximum detected concentration of the following constituent in AOI-2A exceeds the screening criteria for the excavation worker scenario:

- tetrachloroethene

The concentrations of tetrachloroethene in Unconsolidated Unit subsurface water, however, were below the volatilization to indoor air screening criteria.

The potential for human exposure to this constituent in the Unconsolidated Unit subsurface water is discussed below in Section 2.3 and the significance of any potential exposure is discussed in Section 2.4.

On-Facility Cedarville Aquifer Ground Water

The ground water monitoring data collected from on-Facility Cedarville Aquifer monitoring wells and data from ground water samples collected for screening purposes from borings into the upper Cedarville Aquifer are summarized on Table 2-5 and Table 2-6. As discussed in Section 2.2, the screening criteria used to identify "contamination" in this evaluation are criteria defined to evaluate potential exposures during short-term excavation activities[3] and criteria defined to evaluate potential vapor migration to indoor air. Tables 2-5 and 2-6 lists the detected constituents, the detection frequencies, the range of detected concentrations, and the ratio of the highest measured concentration to volatilization screening criteria for on-

[2] These screening samples were collected from boreholes during the field investigations to screen ground water conditions. Although the procedures for collecting ground water screening samples were intended to minimize the potential for introducing contaminants (including soil particles) into the sample by the sampling procedure, such influence could not be entirely eliminated because of the nature of the sample collection method. As such, the ground water screening data do not necessarily represent ground water quality in the saturated zone, and sample collection influences should be taken into consideration in the interpretation of these data.

[3] The results are screened against the excavation worker criteria although based on the depth to bedrock and the confined aquifer direct contact with ground water during excavation activities is not reasonably expected.

Facility monitoring wells. Contamination of Cedarville Aquifer ground water is identified on Tables 2-5 and 2-6 by a ratio of the highest measured concentration to the screening criterion that exceeds 1. Such ratios are highlighted to facilitate identification of locations where ground water is considered to meet the definition of "contaminated". As shown on Tables 2-5 and 2-6, the maximum detected concentrations of constituents that met the definition of "contaminated" in Cedarville Aquifer ground water were identified only for potential exposures during short-term excavation activities as follows:

- tetrachloroethene
- vinyl chloride

Although ground water concentrations of tetrachloroethene and vinyl chloride exceed the screening criteria for potential exposures during short-term excavation activities, direct contact with Cedarville Aquifer ground water is not reasonably expected because the depth to bedrock is greater than the maximum depth of on-Facility utilities.

Off-Facility Unconsolidated Unit Subsurface Water

Subsurface water data collected in the off-Facility sewer backfill monitoring wells are summarized on Table 2-7. Data from subsurface water samples collected for screening purposes in saturated sand seams and sewer backfill from borings in the Unconsolidated Unit are summarized on Table 2-8. As discussed in Section 2.2, the screening criteria used to identify "contamination" in this evaluation are criteria defined to evaluate potential exposures during short-term excavation activities and criteria defined to evaluate potential vapor migration to indoor air. Subsurface water in the Unconsolidated Unit is present in sporadic, discontinuous sand seams and sewer backfill that is not used for potable or non-potable purposes. As shown on Tables 2-7 and 2-8, no exceedances of the screening criteria were identified in the Unconsolidated Unit subsurface water.

Off-Facility Cedarville Aquifer Ground Water

The ground water monitoring data collected from off-Facility Cedarville Aquifer monitoring wells and data from ground water samples collected for screening purposes from borings into the Cedarville Aquifer are summarized on Table 2-9 and Table 2-10. Potable and non-potable water data collected from Cedarville Aquifer water wells are summarized on Table 2-10a. As discussed in Section 2.2, the screening criteria used to identify "contamination" in this evaluation are drinking water criteria and volatilization to indoor air. Contamination of Cedarville Aquifer ground water is identified on Tables 2-9 and 2-10 by a ratio of the highest measured concentration to the screening criterion that exceeds 1. Such ratios are highlighted to facilitate identification of locations where ground water is considered to meet the definition of "contaminated". As shown on Tables 2-9 and 2-10, although no exceedances of the volatilization to indoor criteria were identified, the maximum detected concentrations of the following constituents met the definition of "contaminated" at Cedarville Aquifer monitoring wells or borehole water sampling locations relative to the drinking water criteria:

- tetrachloroethene
- trichloroethene

As shown on Table 2-10a, the maximum concentration of the following constituent met the definition of "contaminated" at Cedarville Aquifer potable or non-potable water well sampling locations relative to the drinking criteria:

- tetrachloroethene

The potential for human exposure to these constituents in Cedarville Aquifer ground water is discussed below in Section 2.3 and the significance of any potential exposure is discussed in Section 2.4.

2.2.3 Indoor Air

As indicated in the conceptual site model (see Table 1-1), routine workers at the Facility could be exposed to constituents that volatilize from soil and water beneath the buildings and migrate into indoor air through cracks in building foundations. To evaluate potential exposure of routine indoor workers via this pathway, soil, Unconsolidated Unit subsurface water and Cedarville Aquifer ground water concentrations were compared with occupational screening criteria for inhalation exposure to vapor from soil and water that migrate into building indoor air. As shown on Tables 2-1, 2-3, 2-4, 2-5, and 2-6 no constituent concentrations in soil or water are greater than these criteria. Similarly as shown on Tables 2-2, 2-7, 2-8, 2-9, and 2-10, potential exposures to residents are all below the risk based screening criteria for inhalation exposure to vapor from soil and water that could potentially migrate into building indoor air.

In addition, Vernay conducted direct measurement of On-Facility indoor air quality. Areas selected for direct measurement included locations where subgrade structures are present where vapors may tend to accumulate. The indoor air sampling approach and the sampling locations are presented in Appendix D. As shown on Table 2-11, the direct measurement of indoor air constituent concentrations are all below the occupational criteria.

Therefore, on-Facility indoor air was determined to not be “contaminated”.

2.2.4 Sediment

The Phase I RFI sediment characterization data for the unnamed creek are summarized on Table 2-12. The data on Table 2-12 include only valid data (i.e., no R-qualified data), and concentrations among duplicate pairs have been averaged to obtain a representative concentration for each pair. Table 2-12 lists the detected constituents, the detection frequencies, the range of detected concentrations, and the ratio of the highest measured concentration to the screening criteria. The screening criteria used in this evaluation to identify “contamination” are based on the EPA Region 9 preliminary remediation goals (PRGs) for soil at residential sites (set at a TCRL of 10^{-5} for carcinogenic constituents and a target HQ of 1 for non-carcinogenic constituents).

Contamination of sediments is identified on Table 2-12 by a ratio of the highest measured concentration to the screening criterion that exceeds 1. Such ratios are highlighted to facilitate identification of AOIs where sediment is considered to meet the definition of “contaminated”. As shown on Table 2-12, the maximum detected sediment constituent concentrations are all below the conservative screening criteria. Therefore, sediment in the unnamed creek was determined to not be “contaminated”.

2.2.5 Surface Water

The surface water data collected in the unnamed creek are summarized on Table 2-13. The table lists the detected constituents, the detection frequencies, the range of detected concentrations, and the ratio of the highest measured concentration to the screening criteria. As discussed in Section 2.2, the screening criteria used in this evaluation to identify “contamination” are drinking water criteria (MCLs or EDWLs) and non-potable “kiddie pool” criteria.

The data on Table 2-13 include only valid data (i.e., no R-qualified data). Contamination of surface water is identified on Table 2-13 by a ratio of the highest measured concentration to the screening criterion that exceeds 1. Such ratios are highlighted to facilitate identification of surface water considered to meet the definition of “contaminated”. As shown on Table 2-13, maximum concentrations of tetrachloroethene exceed the conservative drinking water standard. No exceedances of the non-potable “kiddie-pool” criteria, however, were identified.

The potential for human exposure to tetrachloroethene in surface water is discussed below in Section 2.3 and the significance of any potential exposure is discussed in Section 2.4.

2.2.6 Storm Sewer Water

On-Facility

Storm sewer water samples collected from the on-Facility storm sewers are summarized on Table 2-14. The table lists the detected constituents, the detection frequencies, the range of detected concentrations, and the ratio of the highest measured concentration to the screening criteria. As discussed in Section 2.2, the screening criteria used in this evaluation to identify "contamination" are criteria defined to evaluate potential exposures during short-term routine utility excavation activities. As shown on Table 2-14, maximum concentrations of constituents in the storm sewer water on the Facility are below levels used to define "contamination".

Off-Facility

Storm sewer water samples collected from the off-Facility storm sewers are summarized on Table 2-15. The table lists the detected constituents, the detection frequencies, the range of detected concentrations, and the ratio of the highest measured concentration to the screening criteria. As discussed in Section 2.2, the screening criteria used in this evaluation to identify "contamination" are criteria defined to evaluate potential exposures during short-term routine utility excavation activities. As shown on Table 2-15, maximum concentrations of constituents in the storm sewer water near the Facility are below levels used to define "contamination".

2.3 Exposure Pathways

Question 3 of the CA725 form asks whether there are complete exposure pathways between the "contamination" identified under Question 2 and human receptors such that exposures can be reasonably expected under current conditions. The potential for exposure to the contamination identified in Section 2.2 under current conditions at the Facility is discussed below and summarized in the conceptual site model for human exposures presented on Table 1-1.

2.3.1 Soil

The on-Facility and off-Facility AOIs identified in Section 2.2 as containing "contamination" include the Undeveloped Western Fill Area (AOI-1), Developed Area of Facility (AOI-2), On-Facility Sewer Lines Area (AOI-2A), and Off-Facility Sewer Lines Area (AOI-3A). The potential for exposure to soil contamination in these exposure areas is discussed below.

AOI-1 Undeveloped Western Fill Area

AOI-1 consists of the maintained lawn area on the western portion of the Facility. There are no routine facility activities in this area with the exception of seasonal grass mowing. Although direct exposure of routine workers is not reasonably expected under current conditions, exposure is possible. Exposure of workers during subsurface excavation in the area, if such activities were to occur, is also possible. Although the frequency and duration of exposure would be much less, potential exposure to trespassers is also possible in this area.

AOI-2 Developed Area of Facility

AOI-2 is located within the operational area of the Facility. The majority of AOI-2 is paved or under concrete floors such that direct exposure of workers to contaminated soil is not reasonably expected under current conditions. However, potential exposure of workers via inhalation of vapors migrating into the building from the subsurface is possible (although as indicated in Section 2.2.3, indoor air was determined to not be contaminated). Exposure of workers during subsurface construction in the area is possible, if such activities were to occur.

AOI-2A On-Facility Sewer Lines Area

AOI 2A consists of soil located in the on-Facility sewer lines area. Contaminated soil in this area is present only at depth, therefore, routine worker direct contact and inhalation of particulates is not reasonably expected under current conditions. Nevertheless, exposure of workers during subsurface excavation in this area, if such activities were to occur, is possible

AOI-3A Off-Facility Sewer Lines Area

AOI-3A consists of soil in the off-Facility sewer lines area located along Dayton Street. Contaminated soil in this area is present only at depths below the sewer line invert, therefore, exposure to residents is not reasonably expected under current conditions. Soil constituent concentrations exceeding the conservative industrial screening criteria in AOI-3A are limited to one boring (GP02-054) at a depth of 14-16 feet. Based on a review of the Village of Yellow Springs sewer line diagrams, Vernay determined that the maximum depth of off-Facility utility lines are approximately nine feet below surface grade. Therefore, excavation worker exposure to contaminated soil in off-Facility sewer lines is not reasonably expected.

2.3.2 Subsurface Water/Ground Water

On-Facility

The Unconsolidated Unit subsurface water and Cedarville Aquifer ground water are not a source of potable water at the Facility. Therefore, potential on-Facility exposure to contaminated water is limited to non-drinking water exposures (i.e., direct contact during excavation activities and vapor migration into on-site buildings). On-Facility direct contact exposure to constituents in Cedarville Aquifer ground water is not reasonably expected under current conditions due to the depth to ground water and the confined nature of the aquifer. Potentially exposed on-Facility populations to Unconsolidated Unit subsurface water include indoor workers via inhalation of subsurface water vapors that migrate through building foundations (although as indicated in Section 2.2.3, indoor air has been determined to not be contaminated), and excavation workers via incidental ingestion, dermal contact, and inhalation of Unconsolidated Unit subsurface water vapor during excavations that extend into the sewer backfill water and/or saturated sand seams.

Off-Facility

Unconsolidated Unit subsurface water is not a source of potable or non-potable water in off-Facility areas. Potentially exposed off-Facility populations to Unconsolidated Unit subsurface water also include excavation workers in the off-Facility sewer lines area via incidental ingestion, dermal contact, and inhalation of subsurface water vapor during excavations that extend into the saturated sand seams and/or sewer backfill water. Ground water in the Cedarville Aquifer is used in the vicinity of the facility as a potable and non-potable source of water. As there are no exceedances of the volatilization to indoor air criteria, potentially exposed off-Facility populations are limited to direct exposures of residents in the area downgradient of the Facility where Cedarville Aquifer ground water is used for potable and non-potable uses.

Subsurface water that met the definition of "contaminated" was not identified in any of the sporadic, discontinuous, Unconsolidated Unit sand seams in the off-Facility area. Therefore, vapor intrusion from Unconsolidated Unit subsurface water into residential buildings is an incomplete pathway under current conditions.

2.3.3 Surface Water

Surface water was identified as "contaminated" in portions of the Unnamed Creek to the northeast of the Facility. Potential exposure to surface water is possible by occasional adolescent "recreators".

2.4 Significance of Potential Exposures

Question 4 of the CA725 form asks whether exposure from the complete exposure pathways identified under Question 3 can be reasonably expected to be "significant" or unacceptable. The significance of potential exposures identified in Section 2.3 to hazardous constituents detected in soil, subsurface and ground water, and surface water is discussed below.

2.4.1 Soil

As described in Section 2.3, under current conditions potential exposures to soil identified as "contaminated" include direct exposures (ingestion, dermal contact and inhalation) by routine workers and excavation workers and exposure to vapors that may migrate from the subsurface to indoor air.

The significance of potential exposures to soil contamination under current conditions can be evaluated by estimating the cumulative cancer and noncancer risks associated with the potential exposures and comparing them with the USEPA-established levels for determining whether corrective measures are warranted under RCRA corrective action. Under USEPA policy, corrective measures are not warranted when the site-related cumulative cancer risk does not exceed 10^{-4} and the noncancer hazard index (HI) does not exceed 1 (61 FR 19432, May 1, 1996; USEPA 1991). The potential significance of exposure to soil by excavation workers, lawn mowers and trespassers is conservatively evaluated based on an assessment of risks to routine workers. Potential excavation worker, lawn mowers and trespasser exposures to soil would be lower than potential routine worker exposures.

Upper-bound estimates of the cumulative cancer risk and noncancer HI for routine worker exposures to on-Facility soil are calculated based on the maximum concentrations of constituents detected in soil in each AOI investigated, and the conservative risk-based screening criteria that are derived from USEPA Region 9 risk-based PRGs for soil exposures in generic commercial/industrial settings (USEPA, 2002). These risk estimates are considered upper-bound estimates because actual cumulative cancer and noncancer HIs for an area would be lower if concentrations representative of the AOI were used instead of maximum concentrations, and if site-specific exposure factors were used to account for the magnitude, frequency, and duration of exposures appropriate for the particular AOI. The estimated cancer risks and HQs based on the maximum detected constituent concentration in each AOI for the routine worker exposure scenario are presented on Table 2-16a. For those areas that exceed the upper-bound cumulative risk estimates, 95% UCLs were calculated for those constituents that contribute most significantly to the initial risk estimates using non-parametric bootstrap techniques (Efron and Tibshirani 1998). The cumulative risk estimates based on the 95% UCL concentrations for the selected constituents and maximum concentrations for all other constituents are presented in Table 2-16b. A discussion of these results is provided below.

AOI-1 Undeveloped Western Fill Area

As shown on Table 2-16a, the upper bound cumulative cancer and noncancer HI's for AOI-1 exceed USEPA's established goal of 10^{-4}. The noncancer HI is above USEPA's established goal of 1 (USEPA 1991). This upper-bound estimate of the cumulative cancer risk and noncancer HI is based on worker exposures to soil in generic industrial settings (USEPA 2002). As shown on Table 2-16b, when conservative concentrations representative of the AOI (i.e., the higher of the 95% UCL on the mean concentration observed in surface soil and the 95% UCL calculated based on concentrations detected in surface and deep soil) were used instead of maximum concentrations, the cumulative cancer risk conservatively estimated for routine workers is less than 10^{-4} and the noncancer HI is less than 1. Therefore, the concentrations of constituents in soils at AOI-1 do not pose an unacceptable risk to potential on-Facility receptors under current conditions.

AOI-2 Developed Area of Facility

As shown on Table 2-16a, the cumulative cancer risk based on maximum concentrations of the constituents detected in soil in AOI-2 exceeds USEPA's established goal of 10^{-4}. The noncancer HI is below USEPA's established goal of 1 (USEPA 1991). This upper-bound estimate of the cumulative cancer risk and noncancer HI is based on routine worker exposures to soil in generic industrial settings (USEPA 2002). As shown on Table 2-16b, when conservative concentrations representative of the AOI based on 95% UCL concentrations for the maximum of either surface soil or depth averaged surface and subsurface soil were used instead of maximum concentrations, the cumulative cancer risk conservatively estimated for routine workers is less than 10^{-4} and the noncancer HI is less than 1. Further, under current conditions none of the concentrations of the constituents would be expected to pose an unacceptable risk to potential receptors because the existing pavement or building foundation would prevent direct human exposures to impacted soil. Additionally, the Facility has an existing policy that specifies the need for monitoring and HAZWOPER training for personnel that conduct excavation in specified impacted areas to limit potential exposures (see Appendix E). Therefore, the presence of constituents in soils AOI-2 does not pose an unacceptable risk to potential on-Facility receptors under current conditions.

AOI-2A On-Facility Sewer Lines Area

As shown on Table 2-16a, the cumulative cancer risk based on maximum concentrations of the constituents detected in soil in AOI-2A exceeds USEPA's established goal of 10^{-4}. The noncancer HI is also above USEPA's established goal of 1 (USEPA 1991). This upper-bound estimate of the cumulative cancer risk and noncancer HI is based on routine worker exposures to soil in generic industrial settings (USEPA 2002), although potential exposures to contaminated soil in the sewer lines area is expected to be limited to excavation workers where frequency of contact would be considerably less than for routine workers. As shown on Table 2-16b, when conservative concentrations representative of the AOI based on 95% UCL concentrations for the maximum of either surface soil or depth averaged surface and subsurface soil were used instead of maximum concentrations, the cumulative cancer risk conservatively estimated for routine workers is less than 10^{-4} and the noncancer HI is less than 1. Further, under current conditions none of the concentrations of the constituents would be expected to pose an unacceptable risk to potential receptors because the Facility has an existing policy that specifies the need for monitoring and HAZWOPER training for personnel that conduct excavation in specified impacted areas to limit potential exposures (see Appendix E). Therefore, the presence of constituents in soils at AOI-2A does not pose an unacceptable risk to potential on-Facility receptors under current conditions.

<u>AOI-3A Off-Facility Sewer Lines Area</u>
As shown on Table 2-16a, the upper bound cumulative cancer for AOI-3A exceeds USEPA's established goal of 10^{-4}. The noncancer HI is also above USEPA's established goal of 1 (USEPA 1991). This upper-bound estimate of the cumulative cancer risk and noncancer HI is based on routine worker exposures to soil in generic industrial settings (USEPA 2002), although potential exposures to contaminated soil in the sewer lines area is expected to be limited to excavation workers where frequency of contact would be considerably less than for routine workers. As shown on Table 2-16b, when conservative concentrations representative of the AOI based on 95% UCL concentrations for the maximum of either surface soil or depth averaged surface and subsurface soil were used instead of maximum concentrations, the cumulative cancer risk conservatively estimated for routine workers is less than 10^{-4} and the noncancer HI is less than 1. Therefore, the concentrations of constituents in soils at AOI-3A do not pose an unacceptable risk to potential off-Facility receptors under current conditions.

In summary, based on the conservative evaluation of hypothetical risks associated with potential exposures to soil contamination during routine and/or excavation activities, these pathways for potential current human exposure are not significant (as defined in the EI CA725).

With respect to potential exposure to VOCs in soils via migration to indoor air, none of the soil samples contain constituent concentrations that exceed screening criteria based on potential migration to indoor air. As discussed in Section 2.2.3, the potential significance of exposure to vapors migrating into the on-Facility buildings from constituents detected in soils beneath the buildings was also investigated directly by indoor air sampling. The indoor air sampling approach is provided in Appendix D. As shown on Table 2-11, based on the direct measurement of indoor air concentrations in on-site building areas identified as most likely to be impacted by VOC migration from underlying soils and subsurface or ground water, the indoor air concentrations meet occupational air quality standards under current operating conditions. Therefore, this pathway for potential current human exposure is not considered to pose an unacceptable risk.

2.4.2 Subsurface Water/Ground Water

On-Facility Subsurface Water and Ground Water

As discussed in Section 2.3, routine workers at the Facility are not exposed to Unconsolidated Unit subsurface water or Cedarville Aquifer ground water directly, but could be exposed to constituents that volatilize from the water and migrate into indoor air through cracks in building foundations. As discussed in Section 2.2.3, Vernay conducted direct measurement of indoor air quality. As indicated in Appendix D, direct measurement of indoor air concentrations in on-Facility building areas identified as most likely to be impacted by VOC migration from water meet occupational air quality standards under current operating conditions. Therefore, this pathway for potential current human exposures is not considered to pose an unacceptable risk.

In addition, workers may be exposed to shallow contaminated subsurface water during short-term excavation activities. The Unconsolidated Unit subsurface water samples exceed conservative screening criteria for excavation workers for only tetrachloroethene (in AOI-2A). The Facility has an existing policy that specifies the need for monitoring and HAZWOPER training for personnel that conduct excavation in specified impacted areas to limit potential exposures (see Appendix E). Therefore, the current exposures are under control.

Off-Facility Subsurface Water and Ground Water

As discussed in Section 2.3, under current conditions, potential receptors could be exposed to constituents in off-Facility Cedarville Aquifer ground water as a result of potable and non-potable water use. As stated in Section 1.8, subsurface water in the Unconsolidated Unit is not a source of usable water off-Facility. A water well survey has been conducted and current users of ground water have been notified of potential contamination. The addresses of those residences identified by Vernay as having potable or non-potable wells in use are shown on Figure 4 and summarized below:

Potable

- 850 Dayton Street
- 825 Dayton Street
- 780 Dayton Street
- 775 Dayton Street
- 324 E. Dayton-Yellow Springs Road

Non-potable

- 420 E. Enon Road
- 860 Dayton Street
- 545 Dayton Street
- 690 Wright Street

For each of the properties with potable and non-potable water wells in use, Vernay conducted sampling to determine if water well concentrations exceed the drinking water criteria. As discussed in Section 2.2.2, tetrachloroethene exceeded the drinking water criteria. Of the water wells sampled, however, terachloroethene concentrations above the drinking water criteria were only identified in one non-potable well located at 690 Wright Street, with no exceedances of the drinking water criteria identified in any of the potable wells. As shown on Table 2-10a, the concentration of tetrachloroethene in this non-potable well is well below the non-potable water use screening criteria (the conservative non-potable criteria used in this preliminary evaluation is based on the use of ground water to fill a small swimming pool or “kiddie pool”; see Appendix G). Therefore, this pathway for potential current human exposure is not considered to pose an unacceptable risk.

In addition to water wells, Vernay identified properties within the water well survey area that contained other water storage structures (i.e., sumps, cisterns, and ponds). Based on the results of the water well survey a total 41 properties with sumps, seven properties with cisterns and 11 properties with small decorative ponds are located in the survey area. Based on information provided in the water well survey and Phase I RFI, none of the cisterns are reported to be in use, and the sumps and decorative ponds are not reasonably expected to be fed by Cedarville Aquifer ground water. Therefore, there is no complete pathway for human exposure between “contaminated” Cedarville Aquifer ground water and the other structures identified.

2.4.3 Surface Water/Sediments

As discussed in Section 2.3, exposures to surface water in the unnamed creek were identified as potentially complete pathways to be evaluated under current conditions. The receptors identified as having the potential for incidental exposures to site-related constituents detected in surface water and sediments in the creek include off-Facility "recreators".

Using the methodology and exposure factors summarized in Appendix F, and the data collected in the Unnamed Creek, including the results of the latest Phase I RFI sampling event, the potential human health risks were calculated for these hypothetical exposures to both surface water and sediments[4] at these locations. The preliminary risk estimates are summarized below:

Area	Receptor	Cumulative Risk	HI
Unnamed Creek	Off-Facility Recreator	3E-07	0.001

These upper-bound estimates of cumulative cancer risk and noncancer HIs are less than USEPA's established goals of 10^{-4} and 1 (USEPA, 1991). Based on the results of this risk evaluation, these potential exposures to current receptors are not significant.

2.5 Conclusion

Concentrations of constituents in the following media are considered to meet the CA725 definition of "contaminated" when the highest constituent concentrations in these media are compared with generic risk-based screening criteria.

- Soil in several on-Facility areas
- Soil in off-Facility sewer line areas
- Surface water in the off-Facility Unnamed Creek
- Unconsolidated Unit subsurface water and Cedarville Aquifer ground water in on-Facility areas
- Cedarville Aquifer ground water in off-Facility areas

However, taking into consideration the likelihood of complete exposure pathways, current site-specific conditions, and cumulative cancer risk and noncancer HI values compared to USEPA's established acceptable risk goals, it is determined that current human exposures to constituent concentrations in these media are under control according to the provisions of CA725.

[4] Sediment was included in the calculation although the constituent concentrations in each of the sediment samples are well below the conservative screening criteria.

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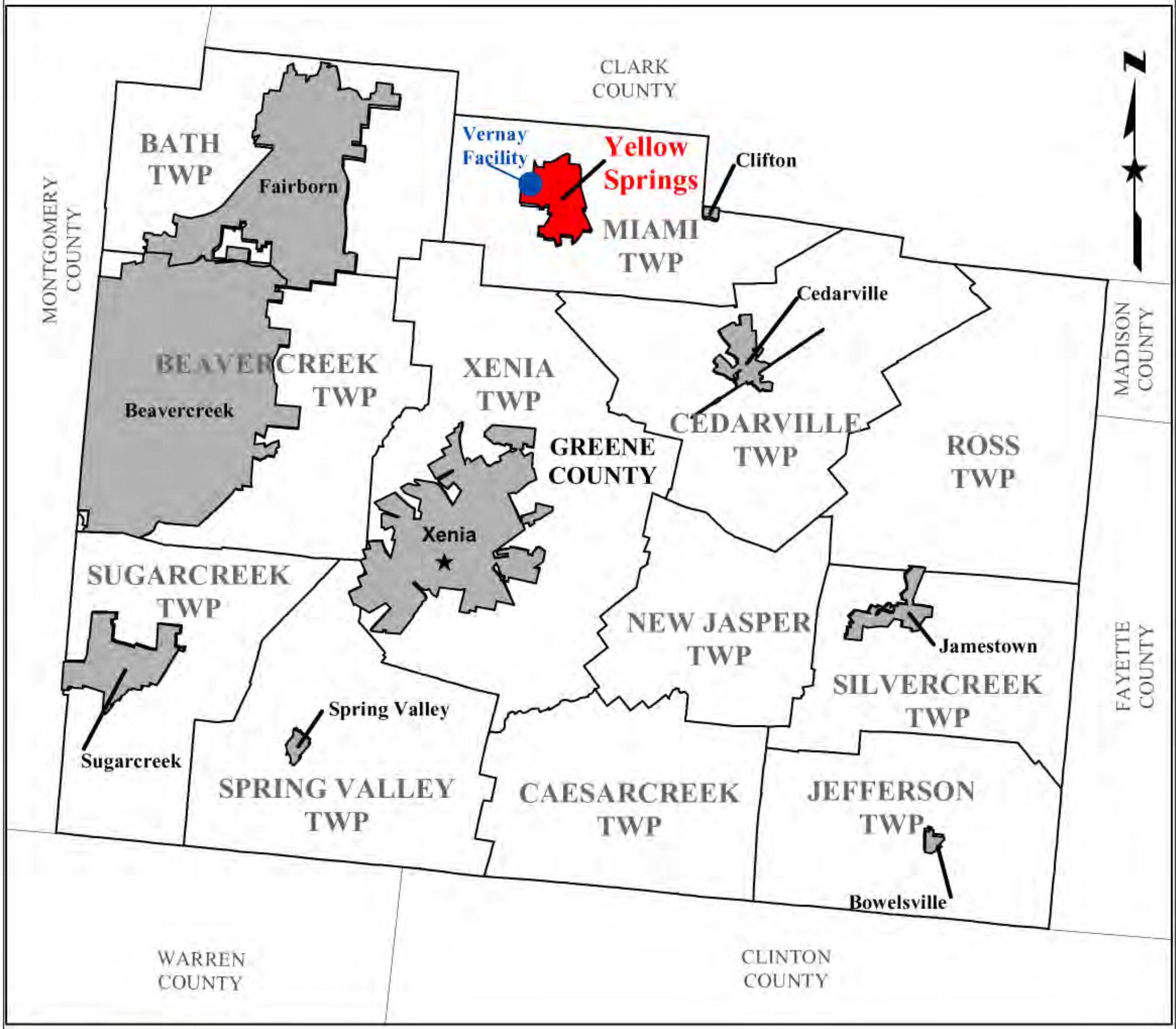
FIGURES



DRAWN BY	APPROVED BY	PROJECT NO.	DATE	FIGURE
ALH	*KDK*	*292.11.31*	*4/15/04*	*1*

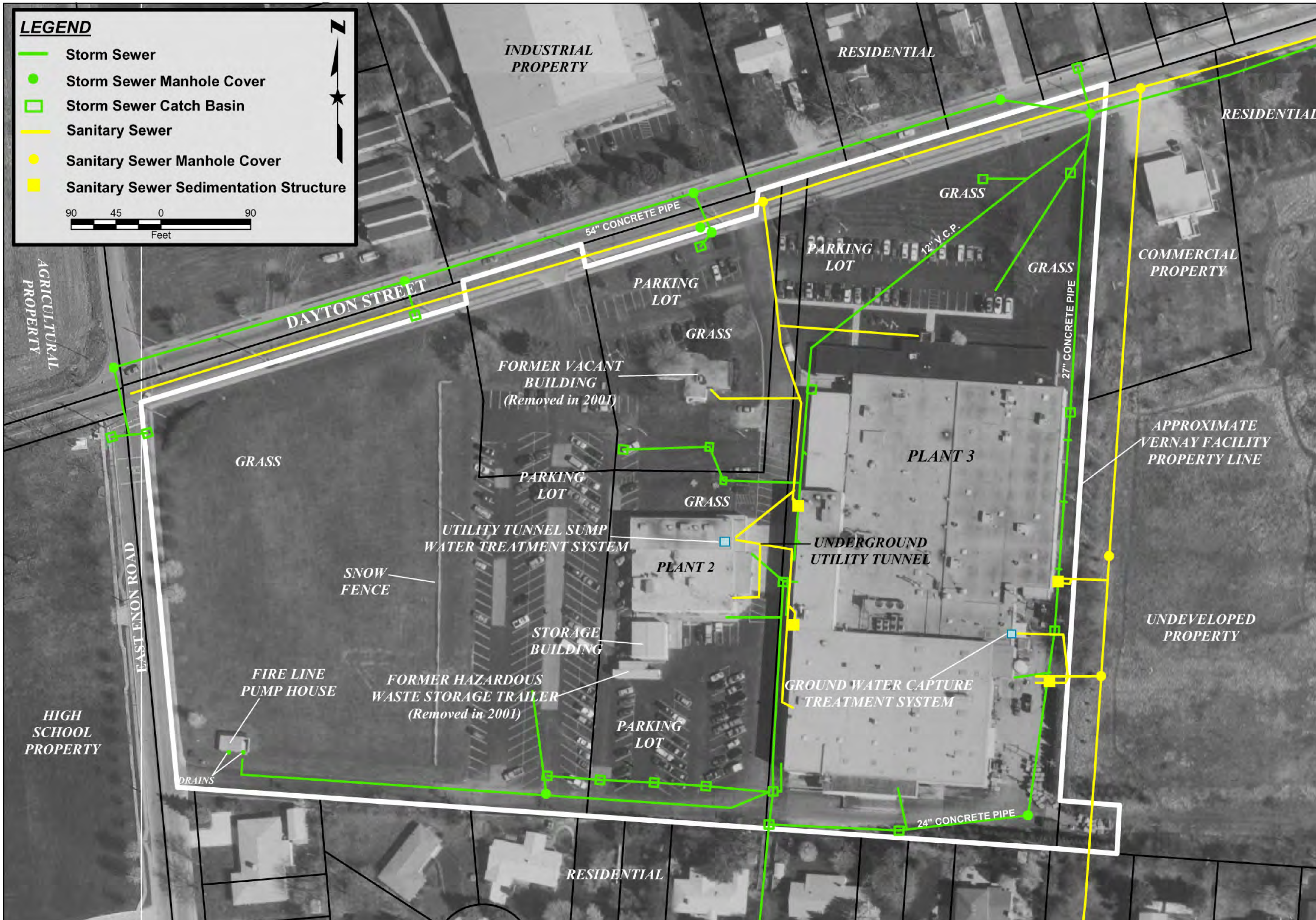
CLIENT
VERNAY LABORATORIES, INC.

The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

TITLE
FACILITY LOCATION

REFERENCE *Greene County Auditors, Digital Data: City, Township, and County Boundaries*

F:/DATA/PFI-MGT/VERNAY/GIS/Q1-2004/Site Location.mxd



The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

DATE	7/13/04
APPROVED BY	KDK
FIGURE NO.	2
DRAWN BY	ALH
PROJECT NO.	292.11.30

CLIENT VERNAY LABORATORIES, INC.

TITLE FACILITY FEATURES

REFERENCE Greene County Auditors, Orthophotograph (1998); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83/NAVD88)

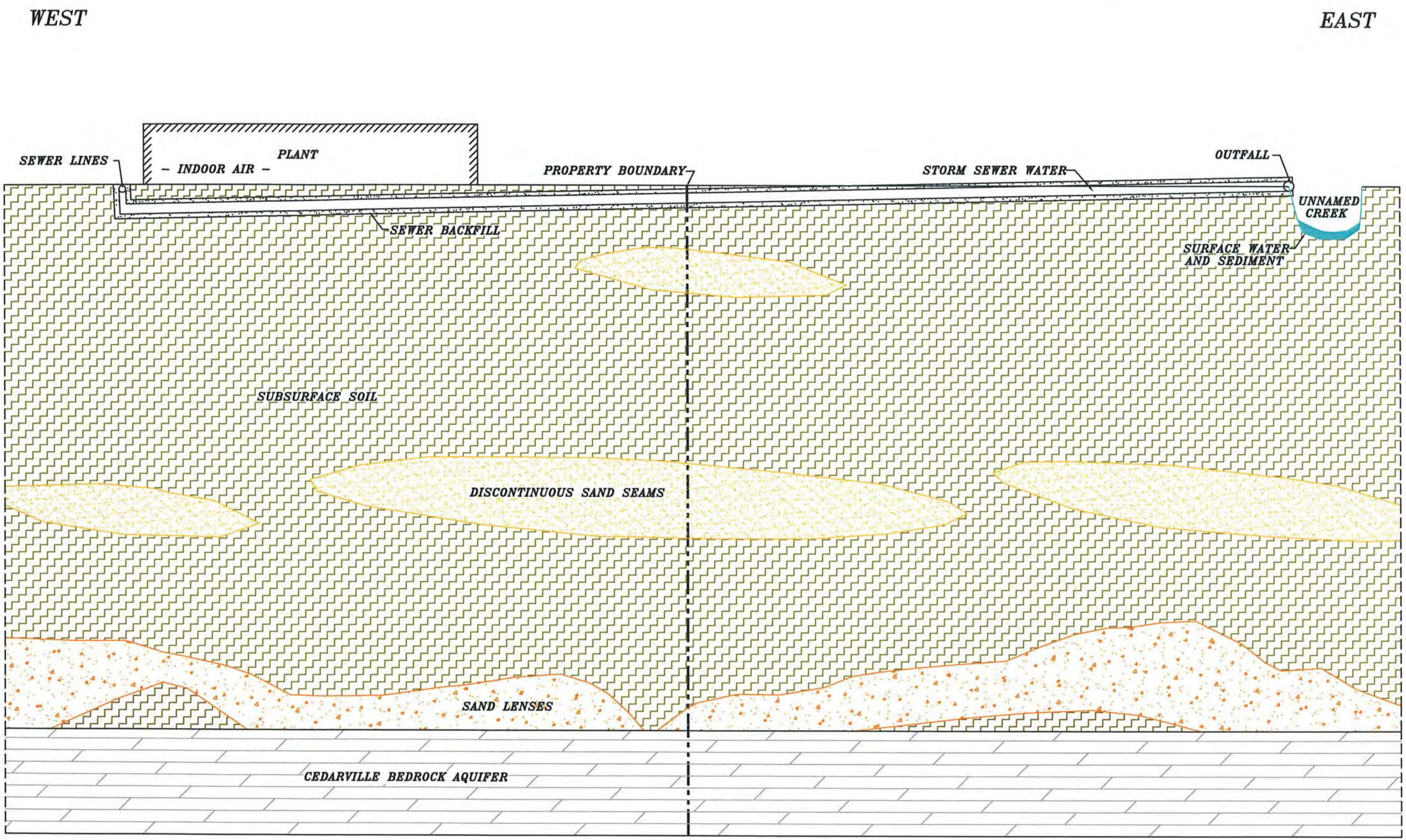


FIGURE NOT TO SCALE

The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio 45242

FIGURE	3	DATE	07/13/04
DRAWN BY	MRD	APPROVED BY	KDK
PROJECT NO.	0292.11.30		

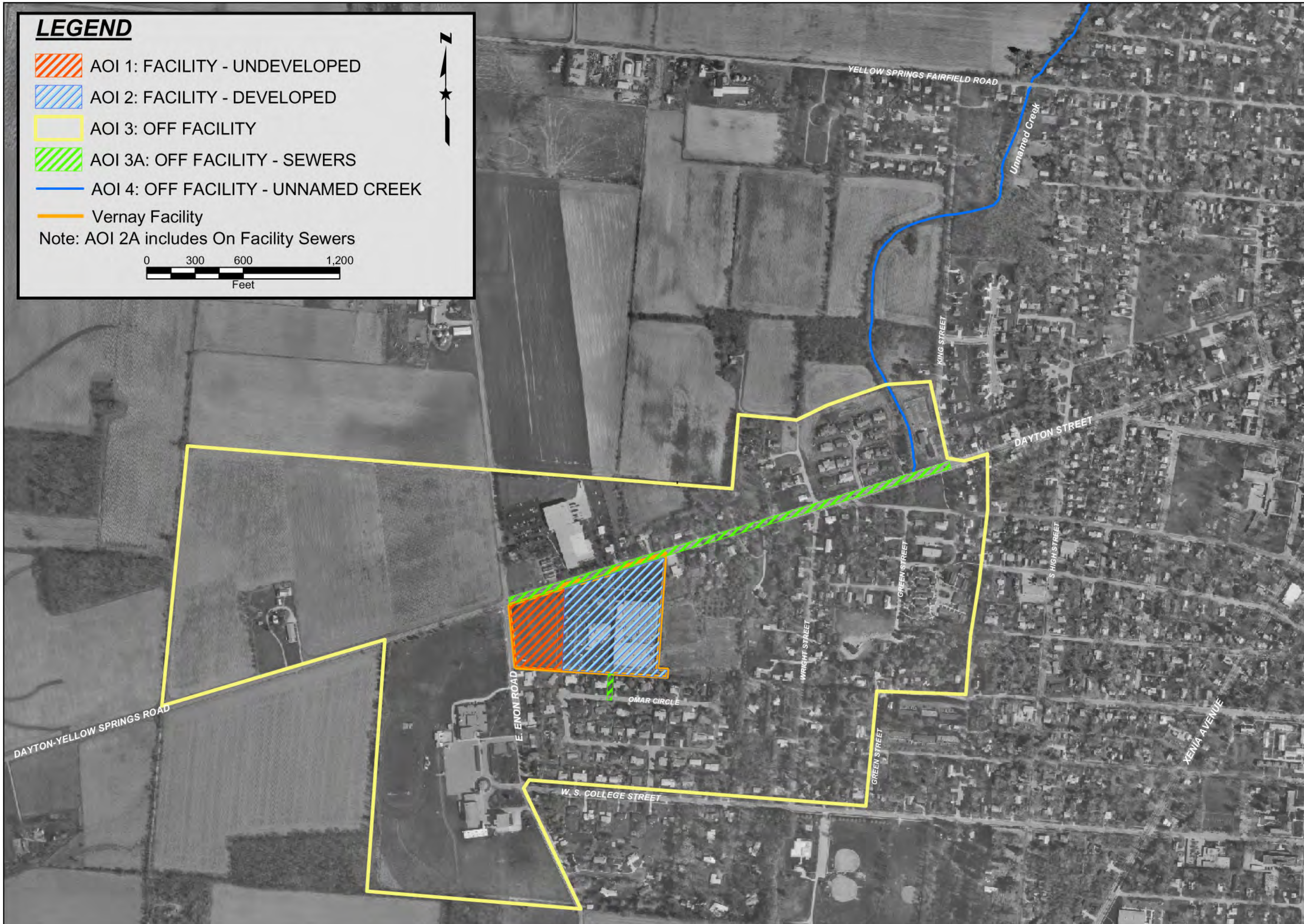
CLIENT VERNAY LABORATORIES, INC.

TITLE SAMPLING MEDIUM

The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

CLIENT	VERNAY LABORATORIES, INC.	FIGURE NO. 4	DATE 7/13/04
TITLE	IDENTIFIED WATER WELL LOCATIONS WITHIN THE SURVEY AREA	DRAWN BY ALH	APPROVED BY KDK
		PROJECT NO. 292.11.30	

REFERENCE Greene County Auditors, Orthophotograph (1998); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83/NAVD88)



F:/DATA/PFI-MGT/Vernay/GIS/3rd Qtr (2004)/CA725_Areas_of_Interest.mxd

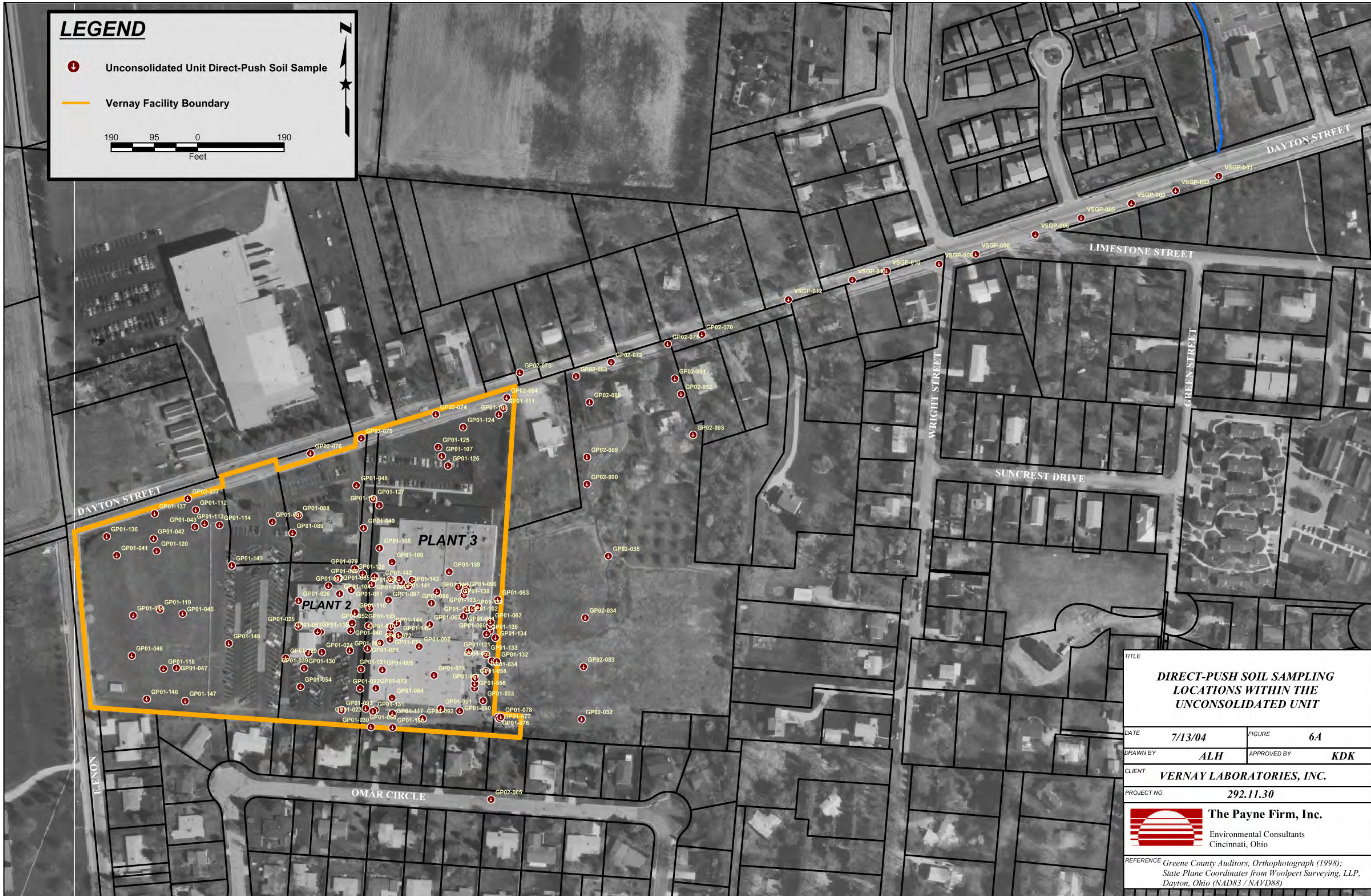
The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

FIGURE NO.	5	DATE	7/13/04
DRAWN BY	ALH	APPROVED BY	DCC
PROJECT NO.	0292.11.30		

PROJECT VERNAY LABORATORIES, INC.

TITLE AREAS OF INTEREST ON AND OFF THE FACILITY

REFERENCE Greene County Auditors, Orthophotograph (1998)



TITLE

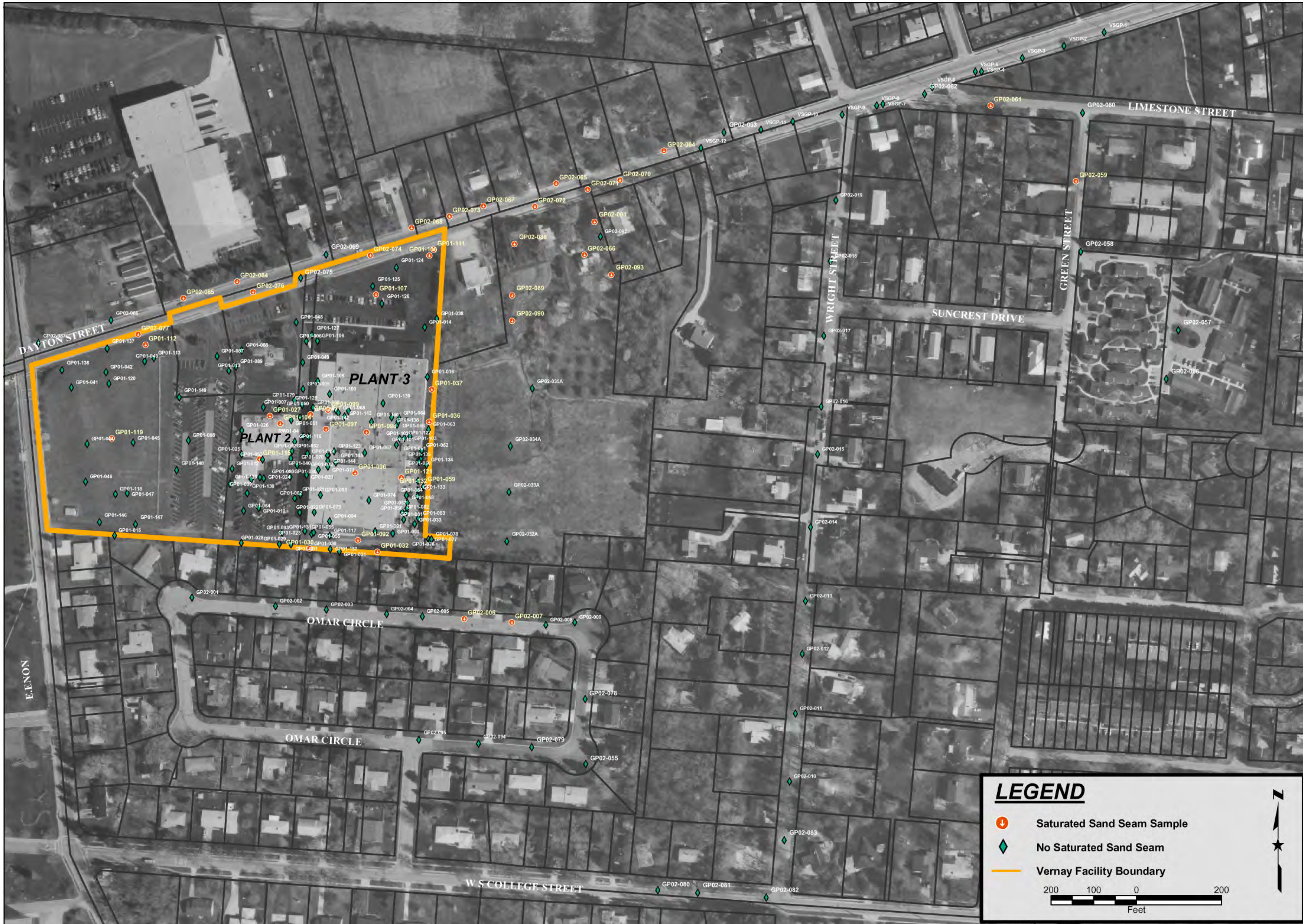
DIRECT-PUSH SOIL SAMPLING LOCATIONS WITHIN THE UNCONSOLIDATED UNIT

DATE	7/13/04	FIGURE	6A
DRAWN BY	ALH	APPROVED BY	KDK
CLIENT	VERNAY LABORATORIES, INC.		
PROJECT NO.	292.11.30		

The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

REFERENCE *Greene County Auditors, Orthophotograph (1998); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83 / NAVD88)*

F:\Data\PFI-MGT\Vernay\GIS\3rd Qtr (2004)\CA725_SoilGP.mxd



The Payne Firm, Inc.
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Cincinnati, Ohio

CLIENT	VERNAY LABORATORIES, INC.
TITLE	DIRECT-PUSH SAMPLING LOCATIONS WITHIN SATURATED SAND SEAMS
FIGURE NO.	6B
DATE	7/13/04
DRAWN BY	ALH
APPROVED BY	KDK
PROJECT NO.	292.11.30

REFERENCE Greene County Auditors, Orthophotograph (1998); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83/NAVD88)

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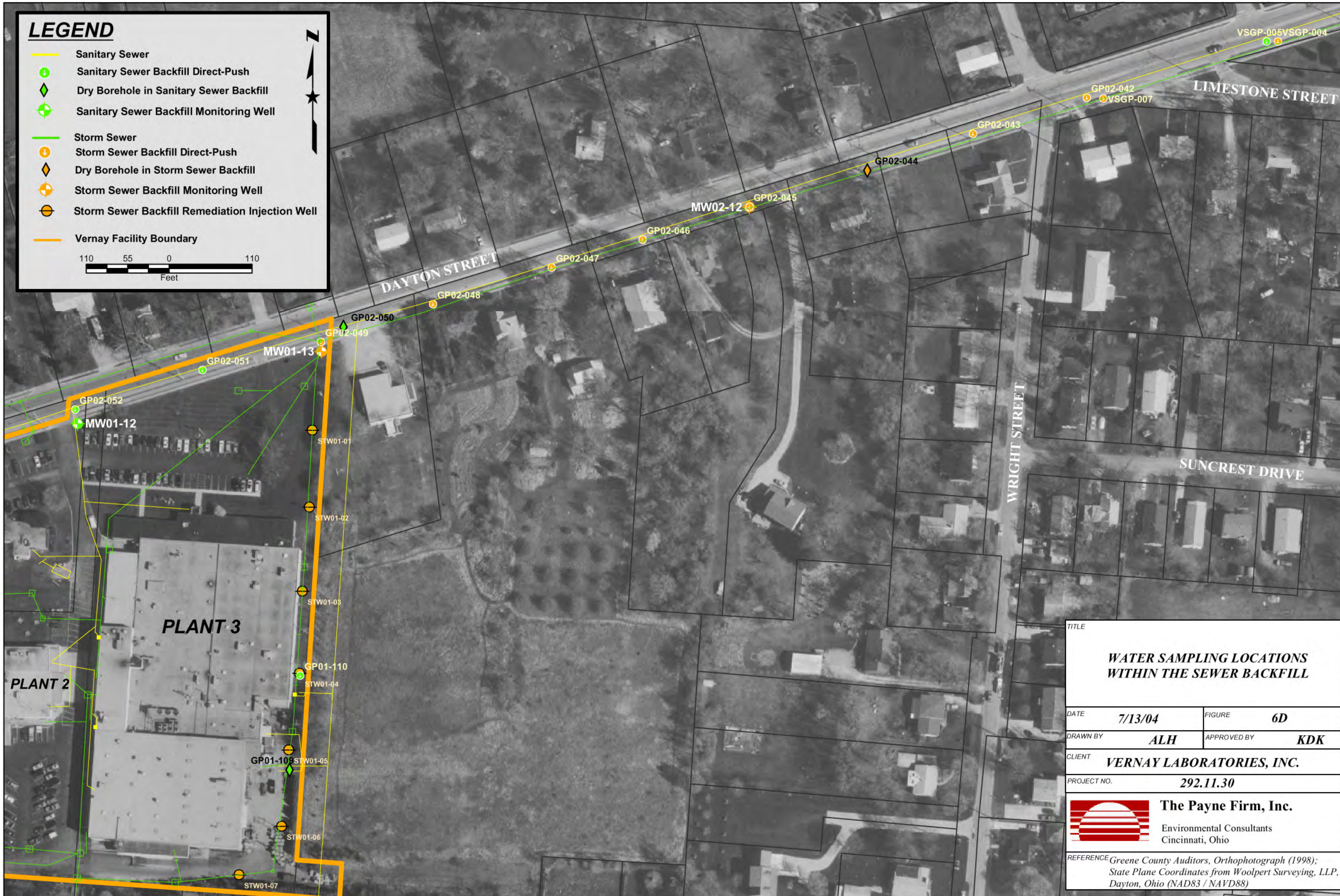
Cincinnati, Ohio

FIGURE NO.	6C
DATE	7/13/04
DRAWN BY	ALH
APPROVED BY	KDK
PROJECT NO.	292.11.30
CLIENT	VERNAY LABORATORIES, INC.
TITLE	CEDARVILLE AQUIFER SAMPLING LOCATIONS
REFERENCE	Greene County Auditors, Orthophotograph (1998); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83/NAVD88)



F:\Data\PFI-MGT\Vernay\GIS\3RD Qtr (2004)\CA725_Sewer Backfill VOCs.mxd

The Payne Firm, Inc.
Environmental Consultants
Cincinnati, Ohio

FIGURE NO.	6E	DATE	7/13/04
DRAWN BY	ALH	APPROVED BY	KDK
PROJECT NO.	292.11.30		

CLIENT: VERNAY LABORATORIES, INC.

TITLE: SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS

REFERENCE: Greene County Auditors, Orthophotograph (1998); State Plane Coordinates from Woolpert Surveying, LLP, Dayton, Ohio (NAD83/NAVD88)

TABLES

Table 1-1: Scenarios for Potential Human Exposure
Vernay Laboratories, Inc. - 875 Dayton Street, Yellow Springs, Ohio

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
On-Facility						
Vernay Laboratories, Inc. -- 875 Dayton Street Facility	Routine Workers	ingestion and dermal contact	surface soil	Yes	Yes	The main (eastern) portion of the facility is covered with building and pavement. The largest unpaved area is in the unused western portion of the facility. Potential exposure of workers may occur at unpaved areas, and (in the future) at areas where pavement is removed. Potential inhalation exposures of workers may also occur due to vapor migration to ambient air and indoor air from VOCs in soil, subsurface water and Cedarville Aquifer ground water. Potential exposure may occur as part of routine activities and/or seasonal grass mowing (grass mowing occurs approximately ten times per year).
		inhalation	particulates in air from surface soil	Yes	Yes	
		inhalation	vapor released to ambient air from soil (surface and subsurface), subsurface water and Cedarville Aquifer ground water	Yes	Yes	
		inhalation	vapor intrusion to indoor air from soil (surface and subsurface), subsurface water and Cedarville Aquifer ground water	Yes	Yes	
	Trespassers	ingestion and dermal contact	surface soil	Yes	Yes	The facility is not fully fenced, therefore, trespassers may cross the property. The main (eastern) portion of the facility is covered with building and pavement. The largest unpaved area is in the unused western portion of the facility. Potential exposure of trespassers may occur at unpaved areas, and (in the future) at areas where pavement is removed. Potential inhalation exposures may also occur due to vapor migration to ambient air from VOCs in soil, subsurface water and Ceddarville Aquifer ground water (in unpaved areas).
		inhalation	particulates in air from surface soil	Yes	Yes	
		inhalation	vapor released to ambient air from soil (surface and subsurface), subsurface water and Cedarville Aquifer groundwater	Yes	Yes	
	Occasional Excavation/Maintenance Workers	ingestion, dermal contact and inhalation	surface and subsurface soil	Yes	Yes	Potential exposure of Vernay maintenance workers is possible to soil and subsurface water and Cedarville Aquifer ground water during excavation activities; to susbsurface water during maintenance in the utility tunnel; and to surface water during maintenance of on-Facility sewer system. Current mainatenance activities consist of quartely inspections (15-20 minutes per inspections) of the utility tunnel and occasional repair of the sump pump in the tunnel as need. Excavation activities have been limited to four events in past 15 years, each limited to approximately 5 days or less. Thus, exposure frequency is conservatively assumed to be 5 days per year for Vernay maintenance worker.
		ingestion, dermal contact and inhalation	subsurface water, sewer backfill water, and Cedarville Aquifer ground water	Yes	Yes	
		ingestion, dermal contact and inhalation	surface water (storm sewer system)	Yes	Yes	
	One-Time Building Construction Workers	ingestion, dermal contact and inhalation	surface and subsurface soil	No	Yes	Vernay has no current plans for building construction. Future commercial/industrial site use could include the construction of a new building.
		ingestion, dermal contact and inhalation	subsurface water, sewer backfill water and Cedarville Aquifer	No	Yes	

Table 1-1: Scenarios for Potential Human Exposure
Vernay Laboratories, Inc. - 875 Dayton Street, Yellow Springs, Ohio

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
O f f - F a c i l i t y						
Local Off-Facility Residential Area	Residents	ingestion, dermal contact and inhalation	Cedarville Aquifer ground water during potable household use	Yes	Yes	Residential areas border the facility to the east and south. Several of these residential properties have ground water wells. Potential exposure of residents may occur from potable and nonpotable (e.g., lawn watering) use; emissions from unpaved on-Facility soils; vapor intrusion into indoor air from subsurface water, Cedarville Aquifer ground water in areas where VOCs exist; and contact with surface water and sediments in an Unnamed Creek located in the study area (identified as an Off-Facility Recreator scenario, which is used to evaluate potehtial exposures to surface water and sediment as described in detail in Appendix F).
			Cedarville Aquifer ground water during nonpotable/outdoor use	Yes	Yes	
		ingestion, dermal contact and inhalation	surface water and sediments	Yes	Yes	
		Inhalation	vapor intrusion to indoor air from susburface water and Cedarville Aquifer ground water	Yes	Yes	
		Inhalation	vapor and particulates in ambient air from soils on the facility	Yes	Yes	
	Occasional Excavation/Maintenance Workers	ingestion, dermal contact and inhalation	subsurface water, sewer backfill water, and Cedarville Aquifer ground water	Yes	Yes	A municipal storm sewer line crosses the facility property and discharges to an Unnamed Creek northeast of the facility. Potential exposure of off-facility utility maintenance and construction workers is possible to susbsurface water, sewer backfill water and Cerdarville Aquifer ground water in excavations; to surface water in maintainance of the off-Facility storm sewer system; and in sediments and surface water in the Unnamed Creek .
		ingestion, dermal contact and inhalation	surface water and sediments	Yes	Yes	

Table 2-1: On-Facility Soil Screening Results
Vernay Laboratories Inc., Yellow Springs, Ohio

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Site Specific Background (mg/kg)	ENVIRON Industrial Soil Volatilization to Indoor Air Criteria (mg/kg)	Industrial Screen-ing Criteria (mg/kg)		Ratio of Max Conc to ENVIRON Industrial Soil Volatilization to Indoor Air Criteria	Ratio of Max Detect to Industrial Screening Criteria
1	VOC	Acetone	67-64-1	ID	34	6	9.80E-03	2.30E-02	4.60E-02		1.4E+06	6.0E+03	nc	3.4E-08	7.7E-06
1	VOC	Benzene	71-43-2	A	38	1	2.90E-03	2.90E-03	2.90E-03		1.4E+02	1.3E+01	c	2.1E-05	2.2E-04
1	VOC	2-Butanone	78-93-3	ID	36	1	3.80E-03	3.80E-03	3.80E-03			2.7E+04	nc		1.4E-07
1	VOC	cis-1,2-Dichloroethene	156-59-2	D	38	3	1.20E-03	3.50E-02	6.00E-02		3.1E+04	1.5E+02	nc	2.0E-06	4.0E-04
1	VOC	trans-1,2-Dichloroethene	156-60-5		38	1	4.90E-04	4.90E-04	4.90E-04		2.0E+04	2.3E+02	nc	2.5E-08	2.1E-06
1	VOC	1,2-Dichloropropane	78-87-5	B2	38	3	4.30E-03	5.70E+01	1.70E+02		2.3E+04	7.4E+00	c	7.4E-03	**2.3E+01**
1	VOC	Ethyl Benzene	100-41-4	D	38	1	4.60E-04	4.60E-04	4.60E-04		7.5E+04	2.0E+02	c	6.2E-09	2.3E-06
1	VOC	Methylene Chloride	75-09-2	B2	38	8	1.00E-03	1.10E-02	7.82E-02		2.7E+03	2.1E+02	c	2.9E-05	3.7E-04
1	VOC	Tetrachloroethene	127-18-4	C-B2	37	5	6.70E-04	7.90E-01	2.50E+00		2.3E+04	3.4E+01	c	1.1E-04	7.4E-02
1	VOC	Toluene	108-88-3	D	38	6	3.80E-04	7.00E-04	1.30E-03		7.9E+04	2.2E+03	nc	1.7E-08	5.9E-07
1	VOC	Trichloroethene	79-01-6	C-B2	37	4	3.60E-03	1.60E-01	5.10E-01		3.4E+04	1.2E+00	c	1.5E-05	4.3E-01
1	VOC	Vinyl Chloride	75-01-4	A	38	1	3.70E-03	3.70E-03	3.70E-03		1.4E+01	7.5E+00	c	2.6E-04	4.9E-04
1	VOC	Xylenes (total)	1330-20-7	ID	38	1	1.10E-03	1.10E-03	1.10E-03		9.2E+04	9.0E+02	nc	1.2E-08	1.2E-06
1	SVOC	Acenaphthylene	208-96-8	D	35	2	3.90E-01	4.20E-01	4.40E-01			2.9E+04	nc		1.5E-05
1	SVOC	Anthracene	120-12-7	D	35	4	2.70E-02	1.30E-01	2.50E-01			2.4E+05	nc		1.0E-06
1	SVOC	Benzo(a)anthracene	56-55-3	B2	35	20	1.30E-02	1.00E+00	4.60E+00			2.1E+01	c		2.2E-01
1	SVOC	Benzo(a)pyrene	50-32-8	B2	35	18	1.10E-02	1.20E+00	4.50E+00			2.1E+00	c		**2.1E+00**
1	SVOC	Benzo(b)fluoranthene	205-99-2	B2	35	20	2.20E-02	1.40E+00	4.80E+00			2.1E+01	c		2.3E-01
1	SVOC	Benzo(g,h,i)perylene	191-24-2	D	35	15	1.20E-02	6.80E-01	2.10E+00			2.9E+04	nc		7.2E-05
1	SVOC	Benzo(k)fluoranthene	207-08-9	B2	35	20	9.10E-03	6.20E-01	2.10E+00			2.1E+02	c		1.0E-02
1	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	28	3	5.50E-02	1.20E-01	1.90E-01		2.7E+12	1.2E+03	c	7.0E-14	1.6E-04
1	SVOC	Carbazole	86-74-8	B2	28	1	1.80E-01	1.80E-01	1.80E-01			8.6E+02	c		2.1E-04
1	SVOC	Chrysene	218-01-9	B2	35	19	1.40E-02	1.10E+00	3.60E+00			2.1E+03	c		1.7E-03
1	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	35	9	1.10E-02	7.10E-01	1.60E+00			2.1E+00	c		7.6E-01
1	SVOC	Di-n-octylphthalate	117-84-0		28	2	6.90E-02	1.10E-01	1.60E-01			2.5E+04	nc		6.4E-06
1	SVOC	Fluoranthene	206-44-0	D	35	22	3.50E-02	2.40E+00	1.30E+01			2.2E+04	nc		5.9E-04
1	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	35	18	1.70E-02	8.30E-01	2.80E+00			2.1E+01	c		1.3E-01
1	SVOC	Phenanthrene	85-01-8	D	35	10	4.80E-02	1.00E+00	3.10E+00			2.9E+04	nc		1.1E-04
1	SVOC	Pyrene	129-00-0	D	35	23	2.70E-02	2.50E+00	1.80E+01			2.9E+04	nc		6.2E-04
1	PDIST	Petroleum Hydrocarbons (recoverable)	68334-30-5R		14	14	1.00E+01	1.70E+02	8.00E+02						
1	P/PCB	PCBs (total)	1336-36-3	B2	7	1	5.50E-02	5.50E-02	5.50E-02		2.2E+05	7.4E+00	c	2.6E-07	7.4E-03
1	P/PCB	4,4'-DDE	72-55-9	B2	7	1	7.40E-03	7.40E-03	7.40E-03			7.0E+01	c		1.1E-04
1	INORG	Arsenic	7440-38-2	A	20	20	5.50E+00	7.40E+00	1.07E+01	1.5E+01		1.6E+01	c		
1	INORG	Barium	7440-39-3	D	14	14	4.68E+01	8.30E+01	1.99E+02			6.7E+04	nc		3.0E-03
1	INORG	Chromium (total)	7440-47-3		14	14	7.50E+00	1.10E+01	1.68E+01			2.5E+03	nc		6.7E-03
1	INORG	Copper	7440-50-8	D	6	6	1.18E+01	1.50E+01	1.97E+01	2.5E+01		4.1E+04	nc		
1	INORG	Lead	7439-92-1	B2	14	14	1.12E+01	2.40E+01	4.82E+01			7.5E+02	nc		6.4E-02
1	INORG	Mercury	7439-97-6	D	14	1	1.20E-01	1.20E-01	1.20E-01		2.2E+03	1.4E+01	nc	5.5E-05	8.8E-03
1	INORG	Selenium	7782-49-2	D	14	1	8.00E-01	8.00E-01	8.00E-01			5.1E+03	nc		1.6E-04
1	INORG	Zinc	7440-66-6	D	6	6	3.62E+01	4.80E+01	5.83E+01	7.1E+01		3.1E+05	nc		
2	VOC	Acetone	67-64-1	ID	184	27	9.50E-03	1.00E-01	6.80E-01		1.4E+06	6.0E+03	nc	5.0E-07	1.1E-04
2	VOC	Benzene	71-43-2	A	190	4	4.50E-04	1.30E-03	2.40E-03		1.4E+02	1.3E+01	c	1.7E-05	1.8E-04
2	VOC	2-Butanone	78-93-3	ID	188	14	2.00E-03	1.50E-02	4.50E-02			2.7E+04	nc		1.7E-06
2	VOC	Carbon Disulfide	75-15-0		190	2	1.40E-03	7.70E-03	1.40E-02		2.6E+02	1.2E+03	nc	5.3E-05	1.2E-05
2	VOC	Chloroethane	75-00-3		190	1	6.00E-02	6.00E-02	6.00E-02			6.5E+01	c		9.2E-04
2	VOC	Cumene	98-82-8	D	52	2	1.80E-03	6.40E-03	1.10E-02			2.0E+03	nc		5.5E-06
2	VOC	Cyclohexane	110-82-7	ID	52	1	7.70E-04	7.70E-04	7.70E-04			3.2E+04	nc		2.4E-08
2	VOC	1,2-Dichlorobenzene	95-50-1	D	111	3	2.20E-03	2.50E-02	7.00E-02		1.8E+05	4.1E+03	nc	3.9E-07	1.7E-05

Table 2-1: On-Facility Soil Screening Results
Vernay Laboratories Inc., Yellow Springs, Ohio

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Site Specific Background (mg/kg)	ENVIRON Industrial Soil Volatilization to Indoor Air Criteria (mg/kg)	Industrial Screen-ing Criteria (mg/kg)		Ratio of Max Conc to ENVIRON Industrial Soil Volatilization to Indoor Air Criteria	Ratio of Max Detect to Industrial Screening Criteria
2	VOC	1,1-Dichloroethane	75-34-3	C	190	4	1.50E-03	1.70E-02	5.00E-02		1.1E+04	1.7E+03	nc	4.8E-06	2.9E-05
2	VOC	1,1-Dichloroethene	75-35-4	C	190	1	6.20E-03	6.20E-03	6.20E-03		2.2E+02	4.1E+02	nc	2.8E-05	1.5E-05
2	VOC	1,2-Dichloroethene (total)	540-59-0		138	34	5.20E-03	8.10E-01	5.60E+00		2.0E+04	1.5E+02	nc	2.9E-04	3.7E-02
2	VOC	cis-1,2-Dichloroethene	156-59-2	D	190	73	9.00E-04	1.50E+00	2.20E+01		3.1E+04	1.5E+02	nc	7.2E-04	1.5E-01
2	VOC	trans-1,2-Dichloroethene	156-60-5		190	17	1.10E-03	3.40E-02	2.10E-01		2.0E+04	2.3E+02	nc	1.1E-05	9.1E-04
2	VOC	1,2-Dichloropropane	78-87-5	B2	190	5	1.70E-03	1.50E-02	3.20E-02		2.3E+04	7.4E+00	c	1.4E-06	4.3E-03
2	VOC	Ethyl Benzene	100-41-4	D	190	2	4.20E-04	1.90E-02	3.80E-02		7.5E+04	2.0E+02	c	5.1E-07	1.9E-04
2	VOC	Methyl Acetate	79-20-9		52	2	8.50E-02	8.90E-02	9.30E-02			9.2E+04	nc		1.0E-06
2	VOC	4-Methyl-2-pentanone	108-10-1	ID	190	5	2.00E-03	1.40E-02	5.60E-02			2.8E+03	nc		2.0E-05
2	VOC	Methylcyclohexane	108-87-2		52	2	1.10E-03	1.80E-03	2.50E-03			8.7E+03	nc		2.9E-07
2	VOC	Methylene Chloride	75-09-2	B2	190	11	2.10E-03	2.40E-01	2.30E+00		2.7E+03	2.1E+02	c	8.7E-04	1.1E-02
2	VOC	Tetrachloroethene	127-18-4	C-B2	190	75	6.50E-04	5.70E+00	8.20E+01		2.3E+04	3.4E+01	c	3.6E-03	**2.4E+00**
2	VOC	Toluene	108-88-3	D	190	16	5.40E-04	1.30E-02	1.60E-01		7.9E+04	2.2E+03	nc	2.0E-06	7.3E-05
2	VOC	Trichloroethene	79-01-6	C-B2	190	59	9.00E-04	2.90E+00	4.00E+01		3.4E+04	1.2E+00	c	1.2E-03	**3.3E+01**
2	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		52	16	1.60E-03	4.70E+00	4.90E+01		9.3E+04	6.9E+04	nc	5.3E-04	7.1E-04
2	VOC	Vinyl Chloride	75-01-4	A	190	25	1.40E-03	1.50E-01	9.50E-01		1.4E+01	7.5E+00	c	6.7E-02	1.3E-01
2	VOC	Xylenes (total)	1330-20-7	ID	190	7	1.40E-03	2.80E-02	1.00E-01		9.2E+04	9.0E+02	nc	1.1E-06	1.1E-04
2	SVOC	Acenaphthene	83-32-9		125	1	9.30E-02	9.30E-02	9.30E-02			2.9E+04	nc		3.2E-06
2	SVOC	Acenaphthylene	208-96-8	D	125	4	3.30E-02	1.30E-01	2.30E-01			2.9E+04	nc		7.9E-06
2	SVOC	Anthracene	120-12-7	D	125	2	2.10E-02	3.30E-02	4.40E-02			2.4E+05	nc		1.8E-07
2	SVOC	Benzo(a)anthracene	56-55-3	B2	125	20	5.60E-03	4.60E-01	5.60E+00			2.1E+01	c		2.7E-01
2	SVOC	Benzo(a)pyrene	50-32-8	B2	125	16	5.40E-03	6.00E-01	5.60E+00			2.1E+00	c		**2.7E+00**
2	SVOC	Benzo(b)fluoranthene	205-99-2	B2	125	22	1.80E-03	4.20E-01	5.40E+00			2.1E+01	c		2.6E-01
2	SVOC	Benzo(g,h,i)perylene	191-24-2	D	125	12	7.80E-03	2.90E-01	1.60E+00			2.9E+04	nc		5.5E-05
2	SVOC	Benzo(k)fluoranthene	207-08-9	B2	125	20	2.00E-03	1.80E-01	2.20E+00			2.1E+02	c		1.0E-02
2	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	39	9	6.90E-02	6.70E-01	3.30E+00		2.7E+12	1.2E+03	c	1.2E-12	2.8E-03
2	SVOC	Chrysene	218-01-9	B2	125	25	7.50E-04	4.10E-01	6.00E+00			2.1E+03	c		2.9E-03
2	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	125	4	9.70E-02	8.70E-01	2.40E+00			2.1E+00	c		**1.1E+00**
2	SVOC	Di-n-butylphthalate	84-74-2	D	39	1	8.20E-02	8.20E-02	8.20E-02		6.4E+11	6.2E+04	nc	1.3E-13	1.3E-06
2	SVOC	Di-n-octylphthalate	117-84-0		39	1	6.60E-02	6.60E-02	6.60E-02			2.5E+04	nc		2.6E-06
2	SVOC	Fluoranthene	206-44-0	D	125	30	1.10E-03	9.40E-01	1.70E+01			2.2E+04	nc		7.7E-04
2	SVOC	Fluorene	86-73-7	D	125	2	8.40E-03	2.20E-02	3.60E-02			2.6E+04	nc		1.4E-06
2	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	125	18	2.50E-03	3.80E-01	3.50E+00			2.1E+01	c		1.7E-01
2	SVOC	2-Methylnaphthalene	91-57-6	ID	119	1	2.30E+01	2.30E+01	2.30E+01			1.9E+02	nc		1.2E-01
2	SVOC	Naphthalene	91-20-3	C	143	4	4.50E-03	4.30E-02	7.40E-02		7.5E+05	1.9E+02	nc	9.8E-08	3.9E-04
2	SVOC	Phenanthrene	85-01-8	D	125	10	7.55E-03	2.20E+00	1.90E+01			2.9E+04	nc		6.6E-04
2	SVOC	Pyrene	129-00-0	D	125	44	5.90E-03	7.50E-01	2.10E+01			2.9E+04	nc		7.2E-04
2	PDIST	Petroleum Hydrocarbons (recoverable)	68334-30-5R		68	35	1.00E+01	2.00E+03	1.30E+04						
2	INORG	Arsenic	7440-38-2	A	117	117	1.10E+00	8.60E+00	2.28E+01	1.5E+01		1.6E+01	c		5.1E-01
2	INORG	Barium	7440-39-3	D	98	97	1.22E+01	6.50E+01	1.66E+02			6.7E+04	nc		2.5E-03
2	INORG	Cadmium	7440-43-9	B1	98	9	3.70E-02	3.10E-01	1.60E+00			4.5E+02	nc		3.6E-03
2	INORG	Chromium (total)	7440-47-3		98	98	4.00E+00	1.20E+01	2.32E+01			2.5E+03	nc		9.3E-03
2	INORG	Copper	7440-50-8	D	22	22	4.10E+00	1.60E+01	2.41E+01	2.5E+01		4.1E+04	nc		
2	INORG	Lead	7439-92-1	B2	98	98	1.20E+00	1.20E+01	1.02E+02			7.5E+02	nc		1.4E-01
2	INORG	Mercury	7439-97-6	D	98	6	3.40E-02	1.50E-01	5.50E-01		2.2E+03	1.4E+01	nc	2.5E-04	4.0E-02
2	INORG	Selenium	7782-49-2	D	98	10	5.00E-01	6.60E-01	9.30E-01			5.1E+03	nc		1.8E-04
2	INORG	Zinc	7440-66-6	D	22	22	8.30E+00	4.90E+01	7.38E+01	7.1E+01		3.1E+05	nc		9.3E-06
2A	VOC	Acetone	67-64-1	ID	165	27	6.40E-03	5.50E-02	4.84E-01		1.4E+06	6.0E+03	nc	3.6E-07	8.1E-05

Table 2-1: On-Facility Soil Screening Results
Vernay Laboratories Inc., Yellow Springs, Ohio

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Site Specific Background (mg/kg)	ENVIRON Industrial Soil Volatilization to Indoor Air Criteria (mg/kg)	Industrial Screen-ing Criteria (mg/kg)		Ratio of Max Conc to ENVIRON Industrial Soil Volatilization to Indoor Air Criteria	Ratio of Max Detect to Industrial Screening Criteria
2A	VOC	Benzene	71-43-2	A	170	2	4.40E-04	7.00E-04	9.60E-04		1.4E+02	1.3E+01	c	6.8E-06	7.4E-05
2A	VOC	2-Butanone	78-93-3	ID	169	7	2.30E-03	5.70E-02	3.76E-01			2.7E+04	nc		1.4E-05
2A	VOC	Carbon Disulfide	75-15-0		170	1	2.40E-03	2.40E-03	2.40E-03		2.6E+02	1.2E+03	nc	9.1E-06	2.0E-06
2A	VOC	Chloroform	67-66-3	B2	170	1	9.30E-03	9.30E-03	9.30E-03		2.3E+03	1.2E+01	nc	4.1E-06	7.8E-04
2A	VOC	Chloromethane	74-87-3	D	170	1	2.90E-02	2.90E-02	2.90E-02		8.0E+02	2.7E+01	c	3.6E-05	1.1E-03
2A	VOC	Cumene	98-82-8	D	63	5	6.50E-04	6.00E-02	1.70E-01			2.0E+03	nc		8.5E-05
2A	VOC	Cyclohexane	110-82-7	ID	63	1	2.00E-03	2.00E-03	2.00E-03			3.2E+04	nc		6.3E-08
2A	VOC	Dichlorodifluoromethane	75-71-8		63	2	3.60E-03	7.70E-02	1.50E-01		1.9E+04	3.1E+02	nc	8.0E-06	4.8E-04
2A	VOC	1,1-Dichloroethane	75-34-3	C	169	6	8.70E-04	2.70E-02	9.85E-02		1.1E+04	1.7E+03	nc	9.4E-06	5.8E-05
2A	VOC	1,1-Dichloroethene	75-35-4	C	170	1	2.00E-03	2.00E-03	2.00E-03		2.2E+02	4.1E+02	nc	9.0E-06	4.9E-06
2A	VOC	1,2-Dichloroethene (total)	540-59-0		107	25	5.60E-03	2.00E+00	8.30E+00		2.0E+04	1.5E+02	nc	4.3E-04	5.5E-02
2A	VOC	cis-1,2-Dichloroethene	156-59-2	D	170	59	7.00E-04	1.50E+00	8.30E+00		3.1E+04	1.5E+02	nc	2.7E-04	5.5E-02
2A	VOC	trans-1,2-Dichloroethene	156-60-5		170	10	3.80E-03	4.40E-02	1.10E-01		2.0E+04	2.3E+02	nc	5.6E-06	4.8E-04
2A	VOC	1,2-Dichloropropane	78-87-5	B2	170	5	1.90E-03	2.20E-02	9.79E-02		2.3E+04	7.4E+00	c	4.3E-06	1.3E-02
2A	VOC	Ethyl Benzene	100-41-4	D	170	3	4.80E-04	9.10E-02	2.70E-01		7.5E+04	2.0E+02	c	3.6E-06	1.4E-03
2A	VOC	2-Hexanone	591-78-6		170	1	1.00E-03	1.00E-03	1.00E-03						
2A	VOC	4-Methyl-2-pentanone	108-10-1	ID	170	5	1.90E-03	3.80E-03	9.30E-03			2.8E+03	nc		3.3E-06
2A	VOC	Methylcyclohexane	108-87-2		63	1	2.70E-03	2.70E-03	2.70E-03			8.7E+03	nc		3.1E-07
2A	VOC	Methylene Chloride	75-09-2	B2	170	7	1.00E-03	2.00E-02	1.07E-01		2.7E+03	2.1E+02	c	4.0E-05	5.1E-04
2A	VOC	Tetrachloroethene	127-18-4	C-B2	169	99	7.30E-04	3.90E+01	1.10E+03		2.3E+04	3.4E+01	c	4.8E-02	**3.2E+01**
2A	VOC	Toluene	108-88-3	D	170	23	4.20E-04	2.00E-02	3.00E-01		7.9E+04	2.2E+03	nc	3.8E-06	1.4E-04
2A	VOC	Trichloroethene	79-01-6	C-B2	170	43	5.60E-04	1.80E+00	3.10E+01		3.4E+04	1.2E+00	c	9.2E-04	**2.6E+01**
2A	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		63	20	2.08E-03	7.30E+01	1.20E+03		9.3E+04	6.9E+04	nc	1.3E-02	1.7E-02
2A	VOC	Vinyl Chloride	75-01-4	A	170	14	1.40E-03	2.30E-01	1.00E+00		1.4E+01	7.5E+00	c	7.0E-02	1.3E-01
2A	VOC	Xylenes (total)	1330-20-7	ID	170	3	3.00E-03	5.40E-01	1.60E+00		9.2E+04	9.0E+02	nc	1.7E-05	1.8E-03
2A	SVOC	Acenaphthylene	208-96-8	D	75	6	3.80E-02	6.30E-01	2.40E+00			2.9E+04	nc		8.3E-05
2A	SVOC	Anthracene	120-12-7	D	75	1	8.10E-03	8.10E-03	8.10E-03			2.4E+05	nc		3.4E-08
2A	SVOC	Benzo(a)anthracene	56-55-3	B2	75	10	7.30E-03	4.60E-02	2.40E-01			2.1E+01	c		1.1E-02
2A	SVOC	Benzo(a)pyrene	50-32-8	B2	75	10	8.20E-03	4.00E-02	1.30E-01			2.1E+00	c		6.2E-02
2A	SVOC	Benzo(b)fluoranthene	205-99-2	B2	75	15	5.80E-03	4.30E-02	2.10E-01			2.1E+01	c		1.0E-02
2A	SVOC	Benzo(g,h,i)perylene	191-24-2	D	75	7	1.10E-02	3.80E-02	6.70E-02			2.9E+04	nc		2.3E-06
2A	SVOC	Benzo(k)fluoranthene	207-08-9	B2	75	17	2.40E-03	2.00E-02	9.50E-02			2.1E+02	c		4.5E-04
2A	SVOC	Chrysene	218-01-9	B2	75	12	2.20E-03	4.10E-02	2.50E-01			2.1E+03	c		1.2E-04
2A	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	75	4	6.20E-03	5.40E-02	1.60E-01			2.1E+00	c		7.6E-02
2A	SVOC	Fluoranthene	206-44-0	D	75	16	8.20E-04	1.20E-01	7.10E-01			2.2E+04	nc		3.2E-05
2A	SVOC	Fluorene	86-73-7	D	75	1	2.30E-02	2.30E-02	2.30E-02			2.6E+04	nc		8.8E-07
2A	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	75	11	5.80E-03	3.80E-02	1.00E-01			2.1E+01	c		4.8E-03
2A	SVOC	Naphthalene	91-20-3	C	92	3	4.20E-02	1.10E+00	3.20E+00		7.5E+05	1.9E+02	nc	4.2E-06	1.7E-02
2A	SVOC	Phenanthrene	85-01-8	D	75	7	2.50E-03	1.00E-01	5.50E-01			2.9E+04	nc		1.9E-05
2A	SVOC	Pyrene	129-00-0	D	75	25	4.50E-03	1.20E-01	1.20E+00			2.9E+04	nc		4.1E-05
2A	PDIST	Petroleum Hydrocarbons (recoverable)	68334-30-5R		48	22	1.20E+01	1.30E+03	9.60E+03						
2A	INORG	Arsenic	7440-38-2	A	89	89	2.80E+00	8.20E+00	2.53E+01	1.5E+01		1.6E+01	c		6.6E-01
2A	INORG	Barium	7440-39-3	D	64	60	1.78E+01	6.60E+01	1.22E+02			6.7E+04	nc		1.8E-03
2A	INORG	Cadmium	7440-43-9	B1	64	3	7.90E-02	1.30E-01	1.70E-01			4.5E+02	nc		3.8E-04
2A	INORG	Chromium (total)	7440-47-3		64	64	4.00E+00	1.20E+01	2.07E+01			2.5E+03	nc		8.3E-03
2A	INORG	Copper	7440-50-8	D	31	31	8.40E+00	1.50E+01	2.87E+01	2.5E+01		4.1E+04	nc		8.8E-05
2A	INORG	Lead	7439-92-1	B2	64	64	3.70E+00	9.60E+00	1.64E+01			7.5E+02	nc		2.2E-02
2A	INORG	Mercury	7439-97-6	D	64	3	2.30E-02	3.10E-02	3.90E-02		2.2E+03	1.4E+01	nc	1.8E-05	2.9E-03

Table 2-1: On-Facility Soil Screening Results Vernay Laboratories Inc., Yellow Springs, Ohio															
Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Site Specific Background (mg/kg)	ENVIRON Industrial Soil Volatilization to Indoor Air Criteria (mg/kg)	Industrial Screen-ing Criteria (mg/kg)		Ratio of Max Conc to ENVIRON Industrial Soil Volatilization to Indoor Air Criteria	Ratio of Max Detect to Industrial Screening Criteria
2A	INORG	Selenium	7782-49-2	D	64	3	6.50E-01	6.90E-01	7.30E-01			5.1E+03	nc		1.4E-04
2A	INORG	Zinc	7440-66-6	D	31	31	2.92E+01	5.10E+01	8.98E+01	7.1E+01		3.1E+05	nc		6.1E-05

Notes:

The Screening Criteria for residential and industrial soil is the lower of the integrated Screening Criteria at:

target cancer risk =	**1E-05**
target hazard quotient =	**1**

For the Ratio of Max Detect to Industrial Screening Criteria the ratios of metal concentrations to the screening criteria include only site-related contributions.

The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.

The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (total).

The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).

The Screening Criteria for Mercury was calculated by ENVIRON to account for the vapor inhalation pathway using:
EPA Region 9 equations, RfC from IRIS, and chemical properties from EPA's Soil Screening Guidance.

c - The Screening Criterion is based on cancer risk.
nc - The Screening Criterion is based on noncancer effects.
Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-2: Off-Facility Soil Screening Results
Vernay Laboratories Inc., Yellow Springs, Ohio

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Residential Screen-ing Criteria (mg/kg)		Ind Screen-ing Criteria (mg/kg)		Ratio of Max Detect to Residential Screening Criteria	Ratio of Max Detect to Ind Criteria
1	VOC	Toluene	108-88-3	D	3	2	3.90E-04	4.10E-04	4.20E-04	6.6E+02	nc	2.2E+03	nc	6.4E-07	1.9E-07
1	SVOC	Acenaphthylene	208-96-8	D	2	1	9.40E-02	9.40E-02	9.40E-02	2.3E+03	nc	2.9E+04	nc	4.1E-05	3.2E-06
1	SVOC	Anthracene	120-12-7	D	2	1	4.90E-02	4.90E-02	4.90E-02	2.2E+04	nc	2.4E+05	nc	2.2E-06	2.0E-07
1	SVOC	Benzo(a)anthracene	56-55-3	B2	2	1	6.40E-01	6.40E-01	6.40E-01	6.2E+00	c	2.1E+01	c	1.0E-01	3.0E-02
1	SVOC	Benzo(a)pyrene	50-32-8	B2	2	1	9.10E-01	9.10E-01	9.10E-01	6.2E-01	c	2.1E+00	c	**1.5E+00**	4.3E-01
1	SVOC	Benzo(b)fluoranthene	205-99-2	B2	2	1	1.10E+00	1.10E+00	1.10E+00	6.2E+00	c	2.1E+01	c	1.8E-01	5.2E-02
1	SVOC	Benzo(g,h,i)perylene	191-24-2	D	2	1	5.90E-01	5.90E-01	5.90E-01	2.3E+03	nc	2.9E+04	nc	2.6E-04	2.0E-05
1	SVOC	Benzo(k)fluoranthene	207-08-9	B2	2	1	4.80E-01	4.80E-01	4.80E-01	6.2E+01	c	2.1E+02	c	7.7E-03	2.3E-03
1	SVOC	Chrysene	218-01-9	B2	2	1	8.30E-01	8.30E-01	8.30E-01	6.2E+02	c	2.1E+03	c	1.3E-03	4.0E-04
1	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	2	1	1.70E-01	1.70E-01	1.70E-01	6.2E-01	c	2.1E+00	c	2.7E-01	8.1E-02
1	SVOC	Fluoranthene	206-44-0	D	2	1	1.30E+00	1.30E+00	1.30E+00	2.3E+03	nc	2.2E+04	nc	5.7E-04	5.9E-05
1	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	2	1	5.20E-01	5.20E-01	5.20E-01	6.2E+00	c	2.1E+01	c	8.4E-02	2.5E-02
1	SVOC	Phenanthrene	85-01-8	D	2	1	2.30E-01	2.30E-01	2.30E-01	2.3E+03	nc	2.9E+04	nc	1.0E-04	7.9E-06
1	SVOC	Pyrene	129-00-0	D	2	1	1.10E+00	1.10E+00	1.10E+00	2.3E+03	nc	2.9E+04	nc	4.8E-04	3.8E-05
1	INORG	Arsenic	7440-38-2	A	2	2	6.00E+00	8.30E+00	1.06E+01	3.9E+00	c	1.6E+01	c	**2.7E+00**	6.6E-01
1	INORG	Copper	7440-50-8	D	2	2	9.80E+00	1.10E+01	1.26E+01	3.1E+03	nc	4.1E+04	nc	4.1E-03	3.1E-04
1	INORG	Zinc	7440-66-6	D	2	2	3.10E+01	3.70E+01	4.35E+01	2.3E+04	nc	3.1E+05	nc	1.9E-03	1.4E-04
3	VOC	2-Butanone	78-93-3	ID	7	1	1.90E-03	1.90E-03	1.90E-03	7.3E+03	nc	2.7E+04	nc	2.6E-07	7.0E-08
3	VOC	Methylene Chloride	75-09-2	B2	7	4	3.90E-03	6.90E-03	1.10E-02	9.1E+01	c	2.1E+02	c	1.2E-04	5.2E-05
3	VOC	Toluene	108-88-3	D	7	1	5.80E-04	5.80E-04	5.80E-04	6.6E+02	nc	2.2E+03	nc	8.8E-07	2.6E-07
3	INORG	Arsenic	7440-38-2	A	1	1	6.80E+00	6.80E+00	6.80E+00	3.9E+00	c	1.6E+01	c	**1.7E+00**	4.3E-01
3	INORG	Barium	7440-39-3	D	1	1	3.25E+01	3.30E+01	3.25E+01	5.4E+03	nc	6.7E+04	nc	6.0E-03	4.9E-04
3	INORG	Chromium (total)	7440-47-3		1	1	9.60E+00	9.60E+00	9.60E+00	2.2E+02	nc	2.5E+03	nc	4.4E-02	3.8E-03
3	INORG	Lead	7439-92-1	B2	1	1	6.90E+00	6.90E+00	6.90E+00	4.0E+02	nc	7.5E+02	nc	1.7E-02	9.2E-03
3A	VOC	1,3-Dichlorobenzene	541-73-1	D	33	1	1.67E-03	1.70E-03	1.67E-03	1.6E+01	nc	6.3E+01	nc	1.0E-04	2.7E-05
3A	VOC	1,4-Dichlorobenzene	106-46-7	C	33	1	1.68E-03	1.70E-03	1.68E-03	3.5E+01	c	7.9E+01	c	4.8E-05	2.1E-05
3A	VOC	1,1-Dichloroethene	75-35-4	C	33	1	2.10E-03	2.10E-03	2.10E-03	1.2E+02	nc	4.1E+02	nc	1.8E-05	5.1E-06
3A	VOC	cis-1,2-Dichloroethene	156-59-2	D	33	2	2.90E-03	5.50E-03	8.10E-03	4.3E+01	nc	1.5E+02	nc	1.9E-04	5.4E-05
3A	VOC	trans-1,2-Dichloroethene	156-60-5		33	1	1.00E-03	1.00E-03	1.00E-03	7.0E+01	nc	2.3E+02	nc	1.4E-05	4.3E-06
3A	VOC	Tetrachloroethene	127-18-4	C-B2	33	8	1.10E-02	5.10E+01	4.00E+02	1.5E+01	c	3.4E+01	c	**2.7E+01**	**1.2E+01**
3A	VOC	Toluene	108-88-3	D	33	12	4.30E-04	7.90E-04	1.50E-03	6.6E+02	nc	2.2E+03	nc	2.3E-06	6.8E-07
3A	VOC	Trichloroethene	79-01-6	C-B2	33	3	4.20E-04	4.00E+00	1.20E+01	5.3E-01	c	1.2E+00	c	**2.3E+01**	**1.0E+01**

Notes:

The Screening Criteria for residential and industrial soil is the lower of the integrated Screening Criteria at:

target cancer risk =	**1E-05**
target hazard quotient =	**1**

The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (total).
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).

c - The Screening Criterion is based on cancer risk.
nc - The Screening Criterion is based on noncancer effects.
Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-3: On-Facility Unconsolidated Unit Monitoring Well Screening Results
Vernay Labortories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Excavation Worker Groundwater Contact Criteria	ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria	Ratio of Max Detected to ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria
2A	sewer backfill	VOC	Acetone	67-64-1	T	ID	16	1	1.70E+00	1.70E+00	1.70E+00	1.1E+05	5.0E+07	1.5E-05	3.4E-08
2A	sewer backfill	VOC	1,2-Dichloroethene (Total)	540-59-0	T		11	2	6.20E-02	6.50E-02	6.70E-02	1.1E+03	7.1E+05	5.8E-05	9.4E-08
2A	sewer backfill	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	17	7	1.70E-02	6.80E-02	2.40E-01	1.3E+03	9.2E+05	1.9E-04	2.6E-07
2A	sewer backfill	VOC	Methylene Chloride	75-09-2	T	B2	17	2	1.40E-03	9.70E-03	1.80E-02	4.9E+01	1.2E+05	3.6E-04	1.6E-07
2A	sewer backfill	VOC	Tetrachloroethene	127-18-4	T	C-B2	17	14	3.00E-04	2.20E+00	9.00E+00	6.1E+00	7.1E+05	**1.5E+00**	1.3E-05
2A	sewer backfill	VOC	Toluene	108-88-3	T	D	17	2	1.20E-03	1.40E-03	1.60E-03	1.6E+02	9.1E+05	9.9E-06	1.8E-09
2A	sewer backfill	VOC	Trichloroethene	79-01-6	T	C-B2	17	10	2.40E-03	2.10E-02	1.20E-01	1.4E+01	5.7E+05	8.8E-03	2.1E-07
2A	sewer backfill	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4	1	8.70E-03	8.70E-03	8.70E-03	2.3E-01	4.3E+07	3.8E-02	2.0E-10
2A	sewer backfill	INORG	Chromium (Total)	7440-47-3	T		6	2	6.80E-03	9.40E-03	1.20E-02	2.3E+02		5.2E-05	
2A	sewer backfill	INORG	Copper	7440-50-8	T	D	2	2	2.60E-03	2.90E-03	3.20E-03	3.1E+03		1.0E-06	

Notes:

The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (Total).

Chem Group - Chemical Group
Meas Basis - Measured Basis; Total = T, Dissolved = D
Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-4: On-Facility Unconsolidated Unit Direct-Push Water Screening Results
Vernay Labortories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Excavation Worker Groundwater Contact Criteria	ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria	Ratio of Max Detected to ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria
1	unconsolidated	VOC	Benzene	71-43-2	T	A	3	1	2.20E-04	2.20E-04	2.20E-04	2.7E+00	3.7E+03	8.3E-05	6.0E-08
1	unconsolidated	VOC	Carbon Tetrachloride	56-23-5	T	B2	3	2	1.30E-03	2.30E-03	3.20E-03	1.5E+00	5.7E+04	2.1E-03	5.6E-08
1	unconsolidated	VOC	Cyclohexane	110-82-7	T	ID	3	1	1.90E-03	1.90E-03	1.90E-03	2.3E+03	6.7E+05	8.2E-07	2.8E-09
1	unconsolidated	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	3	2	2.20E-03	4.20E-03	6.10E-03	1.3E+03	9.2E+05	4.8E-06	6.6E-09
1	unconsolidated	VOC	1,2-Dichloropropane	78-87-5	T	B2	3	2	8.60E-04	4.10E-03	7.30E-03	1.8E+00	5.4E+05	4.0E-03	1.4E-08
1	unconsolidated	VOC	Methylcyclohexane	108-87-2	T		3	1	2.50E-04	2.50E-04	2.50E-04				
1	unconsolidated	VOC	Tetrachloroethene	127-18-4	T	C-B2	3	3	1.60E-04	2.80E-02	8.20E-02	6.1E+00	7.1E+05	1.3E-02	1.1E-07
1	unconsolidated	VOC	Toluene	108-88-3	T	D	3	3	5.70E-04	8.60E-04	1.10E-03	1.6E+02	9.1E+05	6.8E-06	1.2E-09
1	unconsolidated	VOC	Trichloroethene	79-01-6	T	C-B2	3	3	9.40E-04	3.20E-02	7.20E-02	1.4E+01	5.7E+05	5.3E-03	1.3E-07
2	unconsolidated	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	1	1	3.50E-02	3.50E-02	3.50E-02	1.3E+03	9.2E+05	2.7E-05	3.8E-08
2	unconsolidated	VOC	Tetrachloroethene	127-18-4	T	C-B2	1	1	5.70E-03	5.70E-03	5.70E-03	6.1E+00	7.1E+05	9.3E-04	8.0E-09
2	unconsolidated	VOC	Trichloroethene	79-01-6	T	C-B2	1	1	1.20E+00	1.20E+00	1.20E+00	1.4E+01	5.7E+05	8.8E-02	2.1E-06
2A	sewer backfill	VOC	Benzene	71-43-2	T	A	1	1	3.70E-04	3.70E-04	3.70E-04	2.7E+00	3.7E+03	1.4E-04	1.0E-07
2A	sewer backfill	VOC	Cyclohexane	110-82-7	T	ID	1	1	4.30E-04	4.30E-04	4.30E-04	2.3E+03	6.7E+05	1.9E-07	6.4E-10
2A	sewer backfill	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	1	1	4.90E-03	4.90E-03	4.90E-03	1.3E+03	9.2E+05	3.8E-06	5.3E-09
2A	sewer backfill	VOC	Ethyl Benzene	100-41-4	T	D	1	1	2.10E-04	2.10E-04	2.10E-04	4.2E+02	5.6E+05	5.0E-07	3.8E-10
2A	sewer backfill	VOC	Methylcyclohexane	108-87-2	T		1	1	6.10E-04	6.10E-04	6.10E-04				
2A	sewer backfill	VOC	Tetrachloroethene	127-18-4	T	C-B2	1	1	1.20E-02	1.20E-02	1.20E-02	6.1E+00	7.1E+05	2.0E-03	1.7E-08
2A	sewer backfill	VOC	Toluene	108-88-3	T	D	1	1	9.90E-04	9.90E-04	9.90E-04	1.6E+02	9.1E+05	6.1E-06	1.1E-09
2A	sewer backfill	VOC	Trichloroethene	79-01-6	T	C-B2	1	1	3.00E-03	3.00E-03	3.00E-03	1.4E+01	5.7E+05	2.2E-04	5.2E-09
2A	sewer backfill	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		1	1	9.60E-04	9.60E-04	9.60E-04	1.7E+04	5.0E+06	5.6E-08	1.9E-10
2A	sewer backfill	VOC	Xylenes (Total)	1330-20-7	T	ID	1	1	6.20E-04	6.20E-04	6.20E-04	4.4E+01	5.3E+05	1.4E-05	1.2E-09
2A	unconsolidated	VOC	Benzene	71-43-2	T	A	3	1	6.40E-04	6.40E-04	6.40E-04	2.7E+00	3.7E+03	2.4E-04	1.8E-07
2A	unconsolidated	VOC	Ethyl Benzene	100-41-4	T	D	3	1	3.20E-04	3.20E-04	3.20E-04	4.2E+02	5.6E+05	7.6E-07	5.7E-10
2A	unconsolidated	VOC	Methylcyclohexane	108-87-2	T		3	1	5.70E-04	5.70E-04	5.70E-04				
2A	unconsolidated	VOC	Tetrachloroethene	127-18-4	T	C-B2	3	3	1.30E-02	2.70E-01	7.40E-01	6.1E+00	7.1E+05	1.2E-01	1.0E-06
2A	unconsolidated	VOC	Toluene	108-88-3	T	D	3	1	1.50E-03	1.50E-03	1.50E-03	1.6E+02	9.1E+05	9.2E-06	1.6E-09
2A	unconsolidated	VOC	Trichloroethene	79-01-6	T	C-B2	3	1	2.40E-01	2.40E-01	2.40E-01	1.4E+01	5.7E+05	1.8E-02	4.2E-07
2A	unconsolidated	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		3	1	2.80E-04	2.80E-04	2.80E-04	1.7E+04	5.0E+06	1.6E-08	5.6E-11
2A	unconsolidated	VOC	Xylenes (Total)	1330-20-7	T	ID	3	1	8.90E-04	8.90E-04	8.90E-04	4.4E+01	5.3E+05	2.0E-05	1.7E-09

Notes:
The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (Total).
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; Total = T, Dissolved = D
Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-5: On-Facility Cedarville Aquifer Monitoring Well Screening Results
Vernay Labortories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Excavation Worker Groundwater Contact Criteria	ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria	Ratio of Max Detected to ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria
1	bedrock	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	39	4	8.30E-04	4.60E-03	8.20E-03	1.3E+03	9.2E+05	6.4E-06	8.9E-09
1	bedrock	VOC	Acetone	67-64-1	T	ID	37	1	1.20E-02	1.20E-02	1.20E-02	1.1E+05	5.0E+07	1.0E-07	2.4E-10
1	bedrock	VOC	1,2-Dichloropropane	78-87-5	T	B2	39	8	2.80E-02	3.50E-01	6.10E-01	1.8E+00	5.4E+05	3.3E-01	1.1E-06
1	bedrock	VOC	Methylene Chloride	75-09-2	T	B2	39	5	1.10E-03	1.50E-03	1.70E-03	4.9E+01	1.2E+05	3.4E-05	1.5E-08
1	bedrock	VOC	Tetrachloroethene	127-18-4	T	C-B2	39	2	1.60E-03	2.20E-03	2.70E-03	6.1E+00	7.1E+05	4.4E-04	3.8E-09
1	bedrock	VOC	Toluene	108-88-3	T	D	39	8	7.60E-04	7.70E-03	2.50E-02	1.6E+02	9.1E+05	1.5E-04	2.7E-08
1	bedrock	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	17	1	4.10E-04	4.10E-04	4.10E-04	1.3E+01		3.3E-05	
1	bedrock	VOC	Trichloroethene	79-01-6	T	C-B2	39	4	1.70E-03	3.80E-03	6.60E-03	1.4E+01	5.7E+05	4.9E-04	1.2E-08
1	bedrock	SVOC	Acenaphthylene	208-96-8	T	D	24	2	2.30E-03	2.40E-03	2.40E-03	3.8E+03		6.3E-07	
1	bedrock	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	7	2	3.00E-03	3.60E-02	6.80E-02	2.3E-01	4.3E+07	3.0E-01	1.6E-09
1	bedrock	INORG	Arsenic	7440-38-2	T	A	18	2	1.10E-02	1.30E-02	1.40E-02	3.6E+00		3.9E-03	
1	bedrock	INORG	Chromium (Total)	7440-47-3	T		23	5	9.20E-03	3.30E-02	7.30E-02	2.3E+02		3.2E-04	
1	bedrock	INORG	Copper	7440-50-8	T	D	5	3	2.60E-03	4.00E-03	5.70E-03	3.1E+03		1.9E-06	
1	bedrock	INORG	Manganese	7439-96-5	D	D	4	2	2.50E-02	3.80E-02	5.10E-02	1.1E+04		4.7E-06	
1	bedrock	INORG	Nitrate	14797-55-8	T		4	4	2.40E+00	3.70E+00	6.70E+00				
1	bedrock	INORG	Selenium	7782-49-2	T	D	18	2	5.60E-03	6.20E-03	6.70E-03	3.8E+02		1.7E-05	
1	bedrock	GEOCHEM	Methane	74-82-8	T		4	3	3.00E-03	3.50E-01	1.00E+00				
2	bedrock	VOC	Acetone	67-64-1	T	ID	155	12	1.10E-02	3.90E-01	1.30E+00	1.1E+05	5.0E+07	1.1E-05	2.6E-08
2	bedrock	VOC	Benzene	71-43-2	T	A	158	6	2.20E-04	3.20E-03	7.35E-03	2.7E+00	3.7E+03	2.8E-03	2.0E-06
2	bedrock	VOC	Bromomethane	74-83-9	T	D	157	3	2.50E-04	5.70E-03	1.20E-02	2.0E+00	3.8E+03	6.0E-03	3.2E-06
2	bedrock	VOC	2-Butanone	78-93-3	T	ID	157	6	2.60E-02	1.30E-01	2.60E-01	3.6E+03	9.5E+06	7.2E-05	2.7E-08
2	bedrock	VOC	Carbon Disulfide	75-15-0	T		157	1	2.60E-03	2.60E-03	2.60E-03	2.1E+02	2.4E+04	1.2E-05	1.1E-07
2	bedrock	VOC	Chloroform	67-66-3	T	B2	157	1	1.30E-04	1.30E-04	1.30E-04	1.4E+00	6.0E+04	9.1E-05	2.2E-09
2	bedrock	VOC	1,2-Dichloroethene (Total)	540-59-0	T		111	44	6.05E-04	2.00E-02	2.60E-01	1.1E+03	7.1E+05	2.3E-04	3.7E-07
2	bedrock	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	157	74	3.50E-04	1.90E-02	2.50E-01	1.3E+03	9.2E+05	2.0E-04	2.7E-07
2	bedrock	VOC	trans-1,2-Dichloroethene	156-60-5	T		157	3	2.80E-04	2.20E-03	5.80E-03	2.6E+03	7.1E+05	2.3E-06	8.1E-09
2	bedrock	VOC	1,2-Dichloropropane	78-87-5	T	B2	157	24	2.10E-04	4.90E-03	2.50E-02	1.8E+00	5.4E+05	1.4E-02	4.6E-08
2	bedrock	VOC	Methylene Chloride	75-09-2	T	B2	157	14	5.50E-04	3.20E-02	2.40E-01	4.9E+01	1.2E+05	4.9E-03	2.1E-06
2	bedrock	VOC	Tetrachloroethene	127-18-4	T	C-B2	157	110	3.60E-04	4.20E+00	4.40E+01	6.1E+00	7.1E+05	**7.2E+00**	6.2E-05
2	bedrock	VOC	Toluene	108-88-3	T	D	158	16	1.20E-03	8.40E-03	4.90E-02	1.6E+02	9.1E+05	3.0E-04	5.4E-08
2	bedrock	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	52	3	2.70E-04	3.00E-03	7.45E-03	1.3E+01		5.9E-04	
2	bedrock	VOC	Trichloroethene	79-01-6	T	C-B2	157	97	4.50E-04	1.20E-01	2.20E+00	1.4E+01	5.7E+05	1.6E-01	3.8E-06
2	bedrock	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		70	23	3.60E-02	6.70E-01	3.70E+00	1.7E+04	5.0E+06	2.1E-04	7.4E-07
2	bedrock	VOC	Vinyl Chloride	75-01-4	T	A	157	3	9.10E-03	1.60E-02	2.00E-02	7.1E-01	1.7E+03	2.8E-02	1.2E-05
2	bedrock	SVOC	Acenaphthylene	208-96-8	T	D	57	4	7.55E-03	5.20E-02	1.65E-01	3.8E+03		4.3E-05	
2	bedrock	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	22	4	3.30E-03	2.60E-02	4.80E-02	2.3E-01	4.3E+07	2.1E-01	1.1E-09
2	bedrock	SVOC	Diethylphthalate	84-66-2	T	D	22	1	1.00E-03	1.00E-03	1.00E-03	1.3E+04	1.1E+07	7.9E-08	8.8E-11
2	bedrock	SVOC	Di-n-butylphthalate	84-74-2	T	D	22	2	1.50E-03	1.50E-03	1.50E-03	1.2E+02	3.2E+09	1.3E-05	4.7E-13
2	bedrock	SVOC	Pyrene	129-00-0	T	D	57	1	1.70E-04	1.70E-04	1.70E-04	3.8E+03		4.4E-08	
2	bedrock	INORG	Barium	7440-39-3	T	D	40	7	2.00E-01	2.30E-01	2.80E-01	5.4E+03		5.2E-05	
2	bedrock	INORG	Chromium (Total)	7440-47-3	T		60	8	1.80E-03	3.10E-02	1.50E-01	2.3E+02		6.5E-04	
2	bedrock	INORG	Chromium III	16065-83-1	T	D	38	21	1.00E-03	7.80E-02	5.60E-01	1.2E+05		4.9E-06	
2	bedrock	INORG	Chromium III	16065-83-1	D	D	33	8	3.20E-02	1.60E-01	5.00E-01	1.2E+05		4.3E-06	
2	bedrock	INORG	Chromium VI	18540-29-9	T	A	38	11	2.00E-02	2.00E-02	2.00E-02	1.7E+02		1.2E-04	
2	bedrock	INORG	Chromium VI	18540-29-9	D	A	37	2	3.00E-02	4.00E-02	5.00E-02	1.7E+02		3.0E-04	
2	bedrock	INORG	Copper	7440-50-8	T	D	12	6	1.80E-03	4.30E-03	1.18E-02	3.1E+03		3.8E-06	
2	bedrock	INORG	Iron	7439-89-6	T	D	46	42	1.20E-01	4.40E+00	2.09E+01	2.3E+04		9.1E-04	
2	bedrock	INORG	Iron	7439-89-6	D	D	48	3	1.10E-01	3.30E-01	7.40E-01	2.3E+04		3.2E-05	

Table 2-5: On-Facility Cedarville Aquifer Monitoring Well Screening Results
Vernay Labortories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Excavation Worker Groundwater Contact Criteria	ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria	Ratio of Max Detected to ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria
2	bedrock	INORG	Manganese	7439-96-5	T	D	46	44	3.00E-02	8.10E+01	2.24E+03	1.1E+04		2.1E-01	
2	bedrock	INORG	Manganese	7439-96-5	D	D	48	40	1.80E-02	8.00E+01	1.81E+03	1.1E+04		1.7E-01	
2	bedrock	INORG	Nitrate	14797-55-8	T		14	13	1.40E-01	3.90E+00	1.82E+01				
2	bedrock	INORG	Potassium	7440-09-7	T		46	45	5.80E+00	4.10E+02	5.57E+03				
2	bedrock	INORG	Potassium	7440-09-7	D		34	34	6.10E+00	5.30E+02	5.66E+03				
2	bedrock	INORG	Selenium	7782-49-2	T	D	40	3	6.00E-03	9.40E-03	1.50E-02	3.8E+02		3.9E-05	

Notes:

The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (Total).

The Screening Criteria for Chromium VI was used as a surrogate for Chromium (Total).

Chem Group - Chemical Group

Meas Basis - Measured Basis; Total = T, Dissolved = D

Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-6: On-Facility Cedarville Aquifer Direct-Push Water Screening Results
Vernay Labortories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Excavation Worker Groundwater Contact Criteria	ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria	Ratio of Max Detected to ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria
1	bedrock	VOC	Benzene	71-43-2	T	A	2	1	3.40E-04	3.40E-04	3.40E-04	2.7E+00	3.7E+03	1.3E-04	9.3E-08
1	bedrock	VOC	Cumene	98-82-8	T	D	1	1	4.10E-04	4.10E-04	4.10E-04	1.8E+02		2.3E-06	
1	bedrock	VOC	Cyclohexane	110-82-7	T	ID	1	1	1.30E-03	1.30E-03	1.30E-03	2.3E+03	6.7E+05	5.6E-07	1.9E-09
1	bedrock	VOC	Ethyl Benzene	100-41-4	T	D	2	1	4.90E-04	4.90E-04	4.90E-04	4.2E+02	5.6E+05	1.2E-06	8.8E-10
1	bedrock	VOC	Methylcyclohexane	108-87-2	T		1	1	1.40E-03	1.40E-03	1.40E-03				
1	bedrock	VOC	Tetrachloroethene	127-18-4	T	C-B2	2	1	1.50E-03	1.50E-03	1.50E-03	6.1E+00	7.1E+05	2.4E-04	2.1E-09
1	bedrock	VOC	Toluene	108-88-3	T	D	2	1	1.30E-03	1.30E-03	1.30E-03	1.6E+02	9.1E+05	8.0E-06	1.4E-09
1	bedrock	VOC	Trichloroethene	79-01-6	T	C-B2	2	1	5.30E-04	5.30E-04	5.30E-04	1.4E+01	5.7E+05	3.9E-05	9.2E-10
1	bedrock	VOC	Xylenes (Total)	1330-20-7	T	ID	2	1	7.30E-04	7.30E-04	7.30E-04	4.4E+01	5.3E+05	1.7E-05	1.4E-09
2	bedrock	VOC	Acetone	67-64-1	T	ID	24	2	9.90E-03	1.20E-02	1.50E-02	1.1E+05	5.0E+07	1.3E-07	3.0E-10
2	bedrock	VOC	Benzene	71-43-2	T	A	24	4	2.30E-04	7.50E-04	1.10E-03	2.7E+00	3.7E+03	4.1E-04	3.0E-07
2	bedrock	VOC	1,1-Dichloroethane	75-34-3	T	C	24	1	1.20E-03	1.20E-03	1.20E-03	1.9E+02	4.5E+05	6.3E-06	2.7E-09
2	bedrock	VOC	1,1-Dichloroethene	75-35-4	T	C	24	1	3.40E-04	3.40E-04	3.40E-04	7.3E+01	1.6E+04	4.7E-06	2.2E-08
2	bedrock	VOC	1,2-Dichloroethene (Total)	540-59-0	T		24	16	5.80E-04	3.50E-02	1.80E-01	1.1E+03	7.1E+05	1.6E-04	2.5E-07
2	bedrock	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	24	19	5.80E-04	2.90E-02	1.80E-01	1.3E+03	9.2E+05	1.4E-04	2.0E-07
2	bedrock	VOC	trans-1,2-Dichloroethene	156-60-5	T		24	6	1.00E-04	1.30E-03	3.30E-03	2.6E+03	7.1E+05	1.3E-06	4.6E-09
2	bedrock	VOC	1,2-Dichloropropane	78-87-5	T	B2	24	13	2.10E-04	2.20E-02	2.10E-01	1.8E+00	5.4E+05	1.1E-01	3.9E-07
2	bedrock	VOC	n-Hexane	110-54-3	T		24	1	3.10E-04	3.10E-04	3.10E-04				
2	bedrock	VOC	Methylene Chloride	75-09-2	T	B2	24	12	7.50E-04	3.60E-03	1.10E-02	4.9E+01	1.2E+05	2.2E-04	9.5E-08
2	bedrock	VOC	Tetrachloroethene	127-18-4	T	C-B2	24	13	5.20E-04	1.00E-01	6.30E-01	6.1E+00	7.1E+05	1.0E-01	8.8E-07
2	bedrock	VOC	Toluene	108-88-3	T	D	24	7	2.40E-04	7.20E-04	9.00E-04	1.6E+02	9.1E+05	5.5E-06	9.9E-10
2	bedrock	VOC	Trichloroethene	79-01-6	T	C-B2	24	21	4.70E-04	5.30E-02	4.30E-01	1.4E+01	5.7E+05	3.2E-02	7.5E-07
2	bedrock	VOC	Vinyl Chloride	75-01-4	T	A	24	3	2.60E-04	6.20E-04	1.30E-03	7.1E-01	1.7E+03	1.8E-03	7.6E-07
2	bedrock	VOC	Xylenes (Total)	1330-20-7	T	ID	24	2	6.50E-04	3.10E-03	5.50E-03	4.4E+01	5.3E+05	1.3E-04	1.0E-08
2	bedrock	INORG	Iron	7439-89-6	T	D	3	1	1.70E-01	1.70E-01	1.70E-01	2.3E+04		7.4E-06	
2	bedrock	INORG	Magnesium	7439-95-4	T		3	3	3.99E+01	4.30E+01	4.57E+01	7.5E+05		6.1E-05	
2	bedrock	INORG	Manganese	7439-96-5	T	D	3	1	3.30E-02	3.30E-02	3.30E-02	1.1E+04		3.1E-06	
2A	bedrock	VOC	Acetone	67-64-1	T	ID	17	1	3.60E-01	3.60E-01	3.60E-01	1.1E+05	5.0E+07	3.1E-06	7.2E-09
2A	bedrock	VOC	Benzene	71-43-2	T	A	17	3	3.65E-04	5.30E-04	7.70E-04	2.7E+00	3.7E+03	2.9E-04	2.1E-07
2A	bedrock	VOC	Carbon Disulfide	75-15-0	T		17	2	1.90E-04	3.10E-04	4.20E-04	2.1E+02	2.4E+04	2.0E-06	1.7E-08
2A	bedrock	VOC	Cyclohexane	110-82-7	T	ID	2	2	4.60E-04	5.50E-04	6.30E-04	2.3E+03	6.7E+05	2.7E-07	9.3E-10
2A	bedrock	VOC	1,1-Dichloroethane	75-34-3	T	C	17	4	2.90E-04	4.80E-01	1.90E+00	1.9E+02	4.5E+05	1.0E-02	4.3E-06
2A	bedrock	VOC	1,2-Dichloroethene (Total)	540-59-0	T		15	12	1.10E-03	2.10E+00	1.70E+01	1.1E+03	7.1E+05	1.5E-02	2.4E-05
2A	bedrock	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	17	12	9.50E-04	2.10E+00	1.70E+01	1.3E+03	9.2E+05	1.3E-02	1.8E-05
2A	bedrock	VOC	trans-1,2-Dichloroethene	156-60-5	T		17	3	1.30E-04	1.40E-03	2.80E-03	2.6E+03	7.1E+05	1.1E-06	3.9E-09
2A	bedrock	VOC	1,2-Dichloropropane	78-87-5	T	B2	17	6	2.50E-04	1.00E-02	5.00E-02	1.8E+00	5.4E+05	2.7E-02	9.3E-08
2A	bedrock	VOC	Ethyl Benzene	100-41-4	T	D	17	2	1.90E-04	2.90E-04	3.90E-04	4.2E+02	5.6E+05	9.2E-07	7.0E-10
2A	bedrock	VOC	Methylcyclohexane	108-87-2	T		2	2	4.40E-04	6.20E-04	7.90E-04				
2A	bedrock	VOC	Methylene Chloride	75-09-2	T	B2	17	8	1.60E-03	3.30E-01	2.60E+00	4.9E+01	1.2E+05	5.3E-02	2.3E-05
2A	bedrock	VOC	Tetrachloroethene	127-18-4	T	C-B2	17	12	7.40E-04	1.60E+01	1.60E+02	6.1E+00	7.1E+05	**2.6E+01**	2.2E-04
2A	bedrock	VOC	Toluene	108-88-3	T	D	17	3	6.05E-04	9.70E-04	1.30E-03	1.6E+02	9.1E+05	8.0E-06	1.4E-09
2A	bedrock	VOC	1,1,1-Trichloroethane	71-55-6	T	D	17	1	1.00E+00	1.00E+00	1.00E+00	7.6E+02	1.9E+06	1.3E-03	5.3E-07
2A	bedrock	VOC	Trichloroethene	79-01-6	T	C-B2	17	11	3.00E-04	4.90E-01	4.70E+00	1.4E+01	5.7E+05	3.5E-01	8.2E-06
2A	bedrock	VOC	Vinyl Chloride	75-01-4	T	A	17	2	2.60E-04	3.80E-01	7.60E-01	7.1E-01	1.7E+03	**1.1E+00**	4.5E-04
2A	bedrock	VOC	Xylenes (Total)	1330-20-7	T	ID	17	2	6.90E-04	8.50E-04	1.00E-03	4.4E+01	5.3E+05	2.3E-05	1.9E-09

Table 2-6: On-Facility Cedarville Aquifer Direct-Push Water Screening Results
Vernay Labortories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Excavation Worker Groundwater Contact Criteria	ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria		Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria	Ratio of Max Detected to ENVIRON Industrial Groundwater Volatilization to Indoor Air Criteria
	Notes:															
		The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (Total).														
		The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.														
		Chem Group - Chemical Group														
		Meas Basis - Measured Basis; Total = T, Dissolved = D														
		Carc Class - EPA Weight-of-Evidence Cancer Classification														

Table 2-7: Off-Facility Unconsolidated Unit Monitoring Well Screening Results
Vernay Labortories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria (mg/L)	ENVIRON Excavation Worker Direct Contact Criteria (mg/L)	Ratio of Max Detected to ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria
3A	sewer backfill	VOC	Acetone	67-64-1	T	ID	1						1.1E+05		
3A	sewer backfill	VOC	Benzene	71-43-2	T	A	2					2.1E+00	2.7E+00		
3A	sewer backfill	VOC	Bromodichloromethane	75-27-4	T	B2	2						2.1E+01		
3A	sewer backfill	VOC	Bromoform	75-25-2	T	B2	2					5.6E+01	3.8E+01		
3A	sewer backfill	VOC	Bromomethane	74-83-9	T	D	2					3.0E+00	2.0E+00		
3A	sewer backfill	VOC	2-Butanone	78-93-3	T	ID	1					5.7E+04	3.6E+03		
3A	sewer backfill	VOC	Carbon Disulfide	75-15-0	T		2					3.4E+02	2.1E+02		
3A	sewer backfill	VOC	Carbon Tetrachloride	56-23-5	T	B2	2					8.7E-01	1.5E+00		
3A	sewer backfill	VOC	Chlorobenzene	108-90-7	T	D	2					5.4E+01	2.1E+01		
3A	sewer backfill	VOC	Chloroethane	75-00-3	T		2						3.1E+03		
3A	sewer backfill	VOC	Chloroform	67-66-3	T	B2	2					7.9E-01	1.4E+00		
3A	sewer backfill	VOC	Chloromethane	74-87-3	T	D	2					7.6E+01	2.7E+01		
3A	sewer backfill	VOC	Cumene	98-82-8	T	D	2						1.8E+02		
3A	sewer backfill	VOC	Cyclohexane	110-82-7	T	ID	2					2.4E+03	2.3E+03		
3A	sewer backfill	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2					1.0E+00	1.7E-01		
3A	sewer backfill	VOC	Dibromochloromethane	124-48-1	T	C	2						1.9E+01		
3A	sewer backfill	VOC	1,2-Dibromoethane	106-93-4	T	B2	2					1.9E-01	2.4E-02		
3A	sewer backfill	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2					2.4E+02	7.3E+01		
3A	sewer backfill	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2						1.1E+04		
3A	sewer backfill	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2					8.8E+02	7.8E+00		
3A	sewer backfill	VOC	Dichlorodifluoromethane	75-71-8	T		2					8.9E+01	9.0E+01		
3A	sewer backfill	VOC	1,1-Dichloroethane	75-34-3	T	C	2					3.5E+02	1.9E+02		
3A	sewer backfill	VOC	1,2-Dichloroethane	107-06-2	T	B2	2					1.2E+00	1.1E+00		
3A	sewer backfill	VOC	1,1-Dichloroethene	75-35-4	T	C	2					9.8E+01	7.3E+01		
3A	sewer backfill	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	2	2	3.50E-04	3.90E-04	4.20E-04		1.3E+03		3.3E-07
3A	sewer backfill	VOC	trans-1,2-Dichloroethene	156-60-5	T		2						2.6E+03		
3A	sewer backfill	VOC	1,2-Dichloropropane	78-87-5	T	B2	2					3.9E+00	1.8E+00		
3A	sewer backfill	VOC	1,3-Dichloropropene (Total)	542-75-6	T	B2	2					3.3E+00	4.5E+00		
3A	sewer backfill	VOC	Ethyl Benzene	100-41-4	T	D	2					8.0E+02	4.2E+02		
3A	sewer backfill	VOC	2-Hexanone	591-78-6	T		2					1.5E+00	2.2E+00		
3A	sewer backfill	VOC	Methyl Acetate	79-20-9	T		2						1.3E+05		
3A	sewer backfill	VOC	Methyl tert-butyl ether	1634-04-4	T		2					3.4E+03	1.2E+03		
3A	sewer backfill	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	2					1.7E+04	1.8E+03		
3A	sewer backfill	VOC	Methylcyclohexane	108-87-2	T		2								
3A	sewer backfill	VOC	Methylene Chloride	75-09-2	T	B2	2					4.2E+01	4.9E+01		
3A	sewer backfill	VOC	Styrene	100-42-5	T		2					1.0E+03	2.8E+02		
3A	sewer backfill	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2					1.2E+00	6.6E-01		
3A	sewer backfill	VOC	Tetrachloroethene	127-18-4	T	C-B2	2	2	1.20E-03	1.60E-03	2.00E-03	5.0E+00	6.1E+00	4.0E-04	3.3E-04
3A	sewer backfill	VOC	Toluene	108-88-3	T	D	2					3.0E+02	1.6E+02		
3A	sewer backfill	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2					3.0E+02	1.3E+01		
3A	sewer backfill	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2					1.4E+03	7.6E+02		
3A	sewer backfill	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2					2.2E+00	2.0E+00		
3A	sewer backfill	VOC	Trichloroethene	79-01-6	T	C-B2	2	2	6.30E-04	8.00E-04	9.70E-04	9.1E+00	1.4E+01	1.1E-04	7.1E-05
3A	sewer backfill	VOC	Trichlorofluoromethane	75-69-4	T		2					3.0E+02	3.1E+02		
3A	sewer backfill	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2					1.3E+04	1.7E+04		
3A	sewer backfill	VOC	Vinyl Chloride	75-01-4	T	A	2					1.1E+00	7.1E-01		
3A	sewer backfill	VOC	Xylenes (Total)	1330-20-7	T	ID	2	1	6.20E-04	6.20E-04	6.20E-04	7.5E+01	4.4E+01	8.2E-06	1.4E-05

Table 2-7: Off-Facility Unconsolidated Unit Monitoring Well Screening Results
Vernay Labortories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria (mg/L)	ENVIRON Excavation Worker Direct Contact Criteria (mg/L)	Ratio of Max Detected to ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria
	Notes:														
		The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (Total).													
		The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.													
		Chem Group - Chemical Group													
		Meas Basis - Measured Basis; Total = T, Dissolved = D													
		Carc Class - EPA Weight-of-Evidence Cancer Classification													

Table 2-8: Off-Facility Unconsolidated Unit Direct-Push Water Screening Results
Vernay Laboratories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria	ENVIRON Excavation Worker Direct Contact Criteria	Ratio of Max Detected to ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria
1	unconsolidated	VOC	Benzene	71-43-2	T	A	1	1	5.10E-04	5.10E-04	5.10E-04	2.1E+00	2.7E+00	2.4E-04	1.9E-04
1	unconsolidated	VOC	Cyclohexane	110-82-7	T	ID	1	1	5.90E-04	5.90E-04	5.90E-04	2.4E+03	2.3E+03	2.4E-07	2.5E-07
1	unconsolidated	VOC	Ethyl Benzene	100-41-4	T	D	1	1	4.50E-04	4.50E-04	4.50E-04	8.0E+02	4.2E+02	5.6E-07	1.1E-06
1	unconsolidated	VOC	Methylcyclohexane	108-87-2	T		1	1	7.70E-04	7.70E-04	7.70E-04				
1	unconsolidated	VOC	Toluene	108-88-3	T	D	1	1	1.50E-03	1.50E-03	1.50E-03	3.0E+02	1.6E+02	5.0E-06	9.2E-06
1	unconsolidated	VOC	Xylenes (Total)	1330-20-7	T	ID	1	1	8.30E-04	8.30E-04	8.30E-04	7.5E+01	4.4E+01	1.1E-05	1.9E-05
3	unconsolidated	VOC	Benzene	71-43-2	T	A	15	14	2.00E-04	4.10E-04	9.20E-04	2.1E+00	2.7E+00	4.3E-04	3.5E-04
3	unconsolidated	VOC	2-Butanone	78-93-3	T	ID	10	3	5.20E-04	6.60E-04	8.70E-04	5.7E+04	3.6E+03	1.5E-08	2.4E-07
3	unconsolidated	VOC	Carbon Disulfide	75-15-0	T		15	2	2.20E-04	2.80E-04	3.30E-04	3.4E+02	2.1E+02	9.7E-07	1.6E-06
3	unconsolidated	VOC	Cyclohexane	110-82-7	T	ID	15	11	3.50E-04	4.60E-04	7.30E-04	2.4E+03	2.3E+03	3.0E-07	3.1E-07
3	unconsolidated	VOC	Ethyl Benzene	100-41-4	T	D	15	10	1.90E-04	2.60E-04	4.20E-04	8.0E+02	4.2E+02	5.3E-07	9.9E-07
3	unconsolidated	VOC	Methylcyclohexane	108-87-2	T		15	13	2.90E-04	4.80E-04	1.00E-03				
3	unconsolidated	VOC	Tetrachloroethene	127-18-4	T	C-B2	15	2	3.40E-04	3.60E-04	3.80E-04	5.0E+00	6.1E+00	7.6E-05	6.2E-05
3	unconsolidated	VOC	Toluene	108-88-3	T	D	15	15	3.60E-04	9.20E-04	1.50E-03	3.0E+02	1.6E+02	5.0E-06	9.2E-06
3	unconsolidated	VOC	Trichloroethene	79-01-6	T	C-B2	15	2	3.20E-04	3.40E-04	3.60E-04	9.1E+00	1.4E+01	4.0E-05	2.6E-05
3	unconsolidated	VOC	Xylenes (Total)	1330-20-7	T	ID	15	6	5.20E-04	7.10E-04	9.40E-04	7.5E+01	4.4E+01	1.2E-05	2.1E-05
3A	sewer backfill	VOC	Acetone	67-64-1	T	ID	5	2	7.90E-03	1.30E-02	1.80E-02		1.1E+05		1.6E-07
3A	sewer backfill	VOC	Benzene	71-43-2	T	A	13	6	2.10E-04	2.50E-04	3.10E-04	2.1E+00	2.7E+00	1.5E-04	1.2E-04
3A	sewer backfill	VOC	Cyclohexane	110-82-7	T	ID	9	4	3.50E-04	4.60E-04	6.20E-04	2.4E+03	2.3E+03	2.5E-07	2.7E-07
3A	sewer backfill	VOC	Ethyl Benzene	100-41-4	T	D	13	3	2.40E-04	3.00E-04	4.00E-04	8.0E+02	4.2E+02	5.0E-07	9.5E-07
3A	sewer backfill	VOC	Methylcyclohexane	108-87-2	T		9	6	2.70E-04	4.50E-04	7.10E-04				
3A	sewer backfill	VOC	Tetrachloroethene	127-18-4	T	C-B2	13	9	2.80E-04	1.90E-01	1.60E+00	5.0E+00	6.1E+00	3.2E-01	2.6E-01
3A	sewer backfill	VOC	Toluene	108-88-3	T	D	13	8	5.25E-04	7.60E-04	1.00E-03	3.0E+02	1.6E+02	3.3E-06	6.2E-06
3A	sewer backfill	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	12	1	1.80E-04	1.80E-04	1.80E-04	3.0E+02	1.3E+01	5.9E-07	1.4E-05
3A	sewer backfill	VOC	Trichloroethene	79-01-6	T	C-B2	13	6	5.80E-04	1.20E-02	6.40E-02	9.1E+00	1.4E+01	7.0E-03	4.7E-03
3A	sewer backfill	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		9	3	7.50E-04	1.80E-03	2.80E-03	1.3E+04	1.7E+04	2.2E-07	1.6E-07
3A	sewer backfill	VOC	Xylenes (Total)	1330-20-7	T	ID	13	1	7.40E-04	7.40E-04	7.40E-04	7.5E+01	4.4E+01	9.8E-06	1.7E-05
3A	unconsolidated	VOC	Benzene	71-43-2	T	A	7	6	2.00E-04	3.80E-04	6.50E-04	2.1E+00	2.7E+00	3.0E-04	2.4E-04
3A	unconsolidated	VOC	Cyclohexane	110-82-7	T	ID	7	4	3.60E-04	4.30E-04	5.10E-04	2.4E+03	2.3E+03	2.1E-07	2.2E-07
3A	unconsolidated	VOC	1,2-Dichloropropane	78-87-5	T	B2	7	1	3.00E-03	3.00E-03	3.00E-03	3.9E+00	1.8E+00	7.8E-04	1.6E-03
3A	unconsolidated	VOC	Ethyl Benzene	100-41-4	T	D	7	4	1.90E-04	2.50E-04	2.90E-04	8.0E+02	4.2E+02	3.6E-07	6.9E-07
3A	unconsolidated	VOC	Methylcyclohexane	108-87-2	T		7	5	2.40E-04	4.00E-04	5.70E-04				
3A	unconsolidated	VOC	Tetrachloroethene	127-18-4	T	C-B2	7	3	1.00E-03	1.40E-02	3.90E-02	5.0E+00	6.1E+00	7.8E-03	6.4E-03
3A	unconsolidated	VOC	Toluene	108-88-3	T	D	7	7	4.90E-04	8.70E-04	1.50E-03	3.0E+02	1.6E+02	5.0E-06	9.2E-06
3A	unconsolidated	VOC	Trichloroethene	79-01-6	T	C-B2	7	2	1.00E-03	1.10E-03	1.20E-03	9.1E+00	1.4E+01	1.3E-04	8.8E-05
3A	unconsolidated	VOC	Xylenes (Total)	1330-20-7	T	ID	7	2	5.70E-04	6.70E-04	7.60E-04	7.5E+01	4.4E+01	1.0E-05	1.7E-05

Notes:

The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (Total).

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group

Meas Basis - Measured Basis; Total = T, Dissolved = D

Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-9: Off-Facility Cedarville Aquifer Monitoring Well Screening Results
Vernay Laboratories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	MCL FED (mg/L)	MCL State (mg/L)	ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria (mg/L)	ENVIRON Excavation Worker Direct Contact Criteria (mg/L)	Drinking Water Screening Criteria (mg/L)		Ratio of Max Detected to ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria	Ratio of Max Detect to Drinking Water Screening Criteria
3	bedrock	VOC	Acetone	67-64-1	T	ID	86	1	1.00E-03	1.00E-03	1.00E-03				1.1E+05	3.7E+00	nc		8.7E-09	2.7E-04
3	bedrock	VOC	Benzene	71-43-2	T	A	92	1	3.40E-04	3.40E-04	3.40E-04	5.0E-03	5.0E-03	2.1E+00	2.7E+00	5.0E-03	sm	1.6E-04	1.3E-04	6.8E-02
3	bedrock	VOC	Bromodichloromethane	75-27-4	T	B2	92	1	7.30E-04	7.30E-04	7.30E-04	8.0E-02			2.1E+01	8.0E-02	fm		3.4E-05	9.1E-03
3	bedrock	VOC	2-Butanone	78-93-3	T	ID	92	1	5.00E-04	5.00E-04	5.00E-04			5.7E+04	3.6E+03	2.2E+01	nc	8.8E-09	1.4E-07	2.3E-05
3	bedrock	VOC	Chloroform	67-66-3	T	B2	92	2	3.70E-04	4.90E-04	6.00E-04	8.0E-02		7.9E-01	1.4E+00	8.0E-02	fm	7.6E-04	4.2E-04	7.5E-03
3	bedrock	VOC	Dibromochloromethane	124-48-1	T	C	92	1	8.10E-04	8.10E-04	8.10E-04	8.0E-02			1.9E+01	8.0E-02	fm		4.4E-05	1.0E-02
3	bedrock	VOC	1,1-Dichloroethane	75-34-3	T	C	92	12	4.00E-04	1.30E-03	3.20E-03			3.5E+02	1.9E+02	3.7E+00	nc	9.2E-06	1.7E-05	8.6E-04
3	bedrock	VOC	1,2-Dichloroethene (Total)	540-59-0	T		49	17	1.00E-03	3.70E-03	9.20E-03				1.1E+03	3.7E-01	nc		8.0E-06	2.5E-02
3	bedrock	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	92	30	6.20E-04	3.30E-03	9.10E-03	7.0E-02	7.0E-02		1.3E+03	7.0E-02	sm		7.1E-06	1.3E-01
3	bedrock	VOC	1,2-Dichloropropane	78-87-5	T	B2	92	1	9.50E-04	9.50E-04	9.50E-04	5.0E-03	5.0E-03	3.9E+00	1.8E+00	5.0E-03	sm	2.5E-04	5.2E-04	1.9E-01
3	bedrock	VOC	Methylcyclohexane	108-87-2	T		43	2	7.30E-04	7.70E-04	8.00E-04					3.1E+01	nc			2.6E-05
3	bedrock	VOC	Methylene Chloride	75-09-2	T	B2	92	3	7.70E-04	9.80E-04	1.40E-03	5.0E-03	5.0E-03	4.2E+01	4.9E+01	5.0E-03	sm	3.3E-05	2.8E-05	2.8E-01
3	bedrock	VOC	Tetrachloroethene	127-18-4	T	C-B2	92	43	1.80E-04	1.10E-02	7.30E-02	5.0E-03	5.0E-03	5.0E+00	6.1E+00	5.0E-03	sm	1.5E-02	1.2E-02	**1.5E+01**
3	bedrock	VOC	Toluene	108-88-3	T	D	92	5	2.20E-04	5.30E-04	1.00E-03	1.0E+00	1.0E+00	3.0E+02	1.6E+02	1.0E+00	sm	3.3E-06	6.2E-06	1.0E-03
3	bedrock	VOC	1,1,1-Trichloroethane	71-55-6	T	D	92	10	1.90E-04	6.30E-04	2.00E-03	2.0E-01	2.0E-01	1.4E+03	7.6E+02	2.0E-01	sm	1.5E-06	2.6E-06	1.0E-02
3	bedrock	VOC	Trichloroethene	79-01-6	T	C-B2	92	38	3.20E-04	6.00E-03	3.50E-02	5.0E-03	5.0E-03	9.1E+00	1.4E+01	5.0E-03	sm	3.9E-03	2.6E-03	**7.0E+00**
3	bedrock	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		64	28	5.90E-04	3.30E-02	1.40E-01			1.3E+04	1.7E+04	1.1E+03	nc	1.1E-05	8.1E-06	1.3E-04
3	bedrock	SVOC	Anthracene	120-12-7	T	D	17	1	1.00E-04	1.00E-04	1.00E-04				3.8E+04	1.1E+01	nc		2.6E-09	9.1E-06
3	bedrock	SVOC	Fluoranthene	206-44-0	T	D	17	1	2.20E-04	2.20E-04	2.20E-04				1.2E+01	1.5E+00	nc		1.8E-05	1.5E-04
3	bedrock	SVOC	Fluorene	86-73-7	T	D	17	1	1.60E-04	1.60E-04	1.60E-04				5.1E+03	1.5E+00	nc		3.1E-08	1.1E-04
3	bedrock	SVOC	Phenanthrene	85-01-8	T	D	17	1	4.10E-04	4.10E-04	4.10E-04				3.8E+03	1.1E+00	nc		1.1E-07	3.7E-04
3	bedrock	SVOC	Pyrene	129-00-0	T	D	17	1	1.70E-04	1.70E-04	1.70E-04				3.8E+03	1.1E+00	nc		4.4E-08	1.5E-04
3	bedrock	INORG	Barium	7440-39-3	D	D	1	1	3.40E-01	3.40E-01	3.40E-01	2.0E+00	2.0E+00		5.4E+03	2.0E+00	sm		6.3E-05	1.7E-01
3	bedrock	INORG	Chromium (Total)	7440-47-3	T		16	1	1.90E-03	1.90E-03	1.90E-03	1.0E-01	1.0E-01		2.3E+02	1.0E-01	sm		8.2E-06	1.9E-02
3	bedrock	INORG	Lead	7439-92-1	D	B2	1	1	7.90E-03	7.90E-03	7.90E-03	1.5E-02	1.5E-02			1.5E-02	sm			5.3E-01
3	bedrock	INORG	Nitrate	14797-55-8	T		3	3	1.20E-01	2.10E+00	3.90E+00	1.0E+01	1.0E+01			1.0E+01	sm			3.9E-01
3	bedrock	INORG	Selenium	7782-49-2	T	D	9	3	5.00E-03	5.50E-03	5.90E-03	5.0E-02	5.0E-02		3.8E+02	5.0E-02	sm		1.5E-05	1.2E-01

Notes:

The Screening Criteria hierarchy is State MCL, Fed MCL, the lower of the integrated Screening Criteria at:

target cancer risk =	**1.00E-05**
target hazard quotient =	**1**

The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (Total).
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (Total).

sm - The Screening Criterion is the State MCL.
fm - The Screening Criterion is the Federal MCL.
c - The Screening Criterion is based on cancer risk.
nc - The Screening Criterion is based on noncancer effects.
Chem Group - Chemical Group
Meas Basis - Measured Basis; Total = T, Dissolved = D
Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-10: Off-Facility Cedarville Aquifer Direct-Push Water Screening Results
Vernay Laboratories Inc., Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	MCL FED (mg/L)	MCL State (mg/L)	ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria	ENVIRON Excavation Worker Direct Contact Criteria	Drinking Water Screening Criteria (mg/L)		Ratio of Max Detected to ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria	Ratio of Max Detect to Drinking Water Screening Criteria
3	bedrock	VOC	Acetone	67-64-1	T	ID	64	1	8.00E-03	8.00E-03	8.00E-03				1.1E+05	3.7E+00	nc		7.0E-08	2.2E-03
3	bedrock	VOC	Benzene	71-43-2	T	A	90	48	1.20E-04	4.70E-04	3.40E-03	5.0E-03	5.0E-03	2.1E+00	2.7E+00	5.0E-03	sm	1.6E-03	1.3E-03	6.8E-01
3	bedrock	VOC	Bromodichloromethane	75-27-4	T	B2	90	4	5.60E-04	6.70E-04	8.00E-04	8.0E-02			2.1E+01	8.0E-02	fm		3.7E-05	1.0E-02
3	bedrock	VOC	2-Butanone	78-93-3	T	ID	75	4	5.10E-04	1.30E-03	2.82E-03			5.7E+04	3.6E+03	2.2E+01	nc	5.0E-08	7.8E-07	1.3E-04
3	bedrock	VOC	Carbon Disulfide	75-15-0	T		90	1	1.10E-04	1.10E-04	1.10E-04			3.4E+02	2.1E+02	3.7E+00	nc	3.2E-07	5.2E-07	3.0E-05
3	bedrock	VOC	Carbon Tetrachloride	56-23-5	T	B2	90	1	2.10E-04	2.10E-04	2.10E-04	5.0E-03	5.0E-03	8.7E-01	1.5E+00	5.0E-03	sm	2.4E-04	1.4E-04	4.2E-02
3	bedrock	VOC	Chloroform	67-66-3	T	B2	88	4	6.10E-04	1.40E-03	3.00E-03	8.0E-02		7.9E-01	1.4E+00	8.0E-02	fm	3.8E-03	2.1E-03	3.8E-02
3	bedrock	VOC	Chloromethane	74-87-3	T	D	90	3	3.10E-04	3.80E-04	4.60E-04			7.6E+01	2.7E+01	5.2E-02	c	6.1E-06	1.7E-05	8.8E-03
3	bedrock	VOC	Cumene	98-82-8	T	D	61	6	1.70E-04	3.20E-04	5.30E-04				1.8E+02	3.7E+00	nc		2.9E-06	1.4E-04
3	bedrock	VOC	Cyclohexane	110-82-7	T	ID	61	18	3.40E-04	4.80E-04	1.20E-03			2.4E+03	2.3E+03	2.1E+02	nc	4.9E-07	5.2E-07	5.7E-06
3	bedrock	VOC	1,1-Dichloroethane	75-34-3	T	C	90	9	1.50E-04	9.50E-04	3.30E-03			3.5E+02	1.9E+02	3.7E+00	nc	9.5E-06	1.7E-05	8.9E-04
3	bedrock	VOC	1,2-Dichloroethene (Total)	540-59-0	T		29	3	2.90E-04	2.50E-03	4.60E-03				1.1E+03	3.7E-01	nc		4.0E-06	1.2E-02
3	bedrock	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	90	22	1.60E-04	1.50E-03	5.80E-03	7.0E-02	7.0E-02		1.3E+03	7.0E-02	sm		4.5E-06	8.3E-02
3	bedrock	VOC	1,2-Dichloropropane	78-87-5	T	B2	90	2	4.60E-04	1.40E-03	2.30E-03	5.0E-03	5.0E-03	3.9E+00	1.8E+00	5.0E-03	sm	6.0E-04	1.3E-03	4.6E-01
3	bedrock	VOC	Ethyl Benzene	100-41-4	T	D	90	15	1.90E-04	3.10E-04	9.40E-04	7.0E-01	7.0E-01	8.0E+02	4.2E+02	7.0E-01	sm	1.2E-06	2.2E-06	1.3E-03
3	bedrock	VOC	n-Hexane	110-54-3	T		29	7	1.50E-04	2.50E-04	4.35E-04					2.2E+00	nc			2.0E-04
3	bedrock	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	90	1	3.85E-04	3.90E-04	3.85E-04			1.7E+04	1.8E+03	2.9E+00	nc	2.3E-08	2.1E-07	1.3E-04
3	bedrock	VOC	Methylcyclohexane	108-87-2	T		61	33	2.60E-04	5.00E-04	1.40E-03					3.1E+01	nc			4.5E-05
3	bedrock	VOC	Methylene Chloride	75-09-2	T	B2	90	15	5.00E-04	1.80E-03	4.20E-03	5.0E-03	5.0E-03	4.2E+01	4.9E+01	5.0E-03	sm	1.0E-04	8.5E-05	8.4E-01
3	bedrock	VOC	Tetrachloroethene	127-18-4	T	C-B2	90	18	2.60E-04	2.40E-02	2.00E-01	5.0E-03	5.0E-03	5.0E+00	6.1E+00	5.0E-03	sm	4.0E-02	3.3E-02	**4.0E+01**
3	bedrock	VOC	Toluene	108-88-3	T	D	90	65	1.80E-04	9.20E-04	7.70E-03	1.0E+00	1.0E+00	3.0E+02	1.6E+02	1.0E+00	sm	2.6E-05	4.7E-05	7.7E-03
3	bedrock	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	61	1	4.20E-04	4.20E-04	4.20E-04	7.0E-02	7.0E-02	3.0E+02	1.3E+01	7.0E-02	sm	1.4E-06	3.3E-05	6.0E-03
3	bedrock	VOC	1,1,1-Trichloroethane	71-55-6	T	D	90	8	1.60E-04	9.40E-04	4.80E-03	2.0E-01	2.0E-01	1.4E+03	7.6E+02	2.0E-01	sm	3.5E-06	6.3E-06	2.4E-02
3	bedrock	VOC	Trichloroethene	79-01-6	T	C-B2	90	26	1.10E-04	5.40E-03	2.60E-02	5.0E-03	5.0E-03	9.1E+00	1.4E+01	5.0E-03	sm	2.9E-03	1.9E-03	**5.2E+00**
3	bedrock	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		65	18	1.00E-03	4.70E-02	2.30E-01			1.3E+04	1.7E+04	1.1E+03	nc	1.8E-05	1.3E-05	2.1E-04
3	bedrock	VOC	Xylenes (Total)	1330-20-7	T	ID	90	13	4.80E-04	1.00E-03	3.50E-03	1.0E+01	1.0E+01	7.5E+01	4.4E+01	1.0E+01	sm	4.7E-05	8.0E-05	3.5E-04
3	bedrock	INORG	Copper	7440-50-8	T	D	3	3	5.20E-03	5.70E-03	6.40E-03	1.3E+00	1.3E+00		3.1E+03	1.3E+00	sm		2.1E-06	4.9E-03
3	bedrock	INORG	Zinc	7440-66-6	T	D	3	1	1.70E-02	1.70E-02	1.70E-02				2.7E+04	1.1E+01	nc		6.2E-07	1.5E-03
3A	bedrock	VOC	Acetone	67-64-1	T	ID	5	1	1.30E-02	1.30E-02	1.30E-02				1.1E+05	3.7E+00	nc		1.1E-07	3.5E-03
3A	bedrock	VOC	Carbon Disulfide	75-15-0	T		5	1	3.30E-03	3.30E-03	3.30E-03			3.4E+02	2.1E+02	3.7E+00	nc	9.7E-06	1.6E-05	8.9E-04

Notes:

The Screening Criteria hierarchy is State MCL, Fed MCL, the lower of the integrated Screening Criteria at:

target cancer risk = **1.00E-05**

target hazard quotient = **1**

The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (Total).

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

sm - The Screening Criterion is the State MCL.

fm - The Screening Criterion is the Federal MCL.

c - The Screening Criterion is based on cancer risk.

nc - The Screening Criterion is based on noncancer effects.

Chem Group - Chemical Group

Meas Basis - Measured Basis; Total = T, Dissolved = D

Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-10a: Off-Facility Well Water Screening Results
Vernay Labortories Inc. Yellow Springs, Ohio

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	TCL/ TAL	APP IX	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	MCL FED (mg/L)	MCL State (mg/L)	ENVIRON Residential Groundwater Volatilization to Indoor Air Criteria (mg/L)	ENVIRON Excavation Worker Direct Contact Criteria (mg/L)	ENVIRON Kiddie Pool Criteria (mg/L)	Drinking Water Screen-ing Criteria (mg/L)			Ratio of Max Detect to ENVIRON Kiddie Pool Criteria	Ratio of Max Detect to Drinking Water Screening Criteria
3	NA	VOC	Tetrachloroethene	127-18-4	T	C-B2	Y	Y	33	4	1.10E-03	4.60E-03	1.20E-02	5.0E-03	5.0E-03	5.0E+00	6.1E+00	9.0E-01	5.0E-03	sm		1.3E-02	**2.4E+00**

Notes:

The Screening Criteria hierarchy is State MCL, Fed MCL, the lower of the integrated Screening Criteria at:

target cancer risk = **1.00E-05**

target hazard quotient = **1**

The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Phenol were used as surrogates for Phenols (total).

The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.

The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (total).

The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).

The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

sm - The Screening Criterion is the State MCL.

fm - The Screening Criterion is the Federal MCL.

c - The Screening Criterion is based on cancer risk.

nc - The Screening Criterion is based on noncancer effects.

Chem Group - Chemical Group

Meas Basis - Measured Basis; T = Total, D = Dissolved

Carc Class - EPA Weight-of-Evidence Cancer Classification

Min QL - Minimum Quantitation Limit

Max QL - Maximum Quantitation Limit

Table 2-11: On-Facility Indoor Air Screening Results
Vernay Labortories Inc., Yellow Springs, Ohio

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/m3)	Mean Detected (mg/m3)	Max Detected (mg/m3)	Site Specific Background (mg/m3)	PEL (mg/m3)	Ratio of Max Detect to PEL
2	VOC	Acetone	67-64-1	ID	8	8	4.75E-02	2.00E-01	3.33E-01		2.4E+03	1.4E-04
2	VOC	Acrolein	107-02-8	ID	8	2	1.47E-03	2.30E-03	3.21E-03			
2	VOC	Benzene	71-43-2	A	14	8	1.09E-03	2.00E-03	3.00E-03		3.2E+00	9.4E-04
2	VOC	Bromomethane	74-83-9	D	14	2	3.11E-03	3.20E-03	3.26E-03			
2	VOC	1-Butanol	71-36-3	D	8	3	2.73E-03	2.80E-03	2.88E-03			
2	VOC	2-Butanone	78-93-3	ID	8	7	2.06E-03	5.40E-03	9.44E-03		5.9E+02	1.6E-05
2	VOC	Carbon Disulfide	75-15-0		8	3	7.16E-04	1.20E-03	1.81E-03			
2	VOC	Acetone	67-64-1	ID	8	8	4.75E-02	2.00E-01	3.33E-01		2.4E+03	1.4E-04
2	VOC	Acrolein	107-02-8	ID	8	2	1.47E-03	2.30E-03	3.21E-03			
2	VOC	Benzene	71-43-2	A	14	8	1.09E-03	2.00E-03	3.00E-03		3.2E+00	9.4E-04
2	VOC	Bromomethane	74-83-9	D	14	2	3.11E-03	3.20E-03	3.26E-03			
2	VOC	1-Butanol	71-36-3	D	8	3	2.73E-03	2.80E-03	2.88E-03			
2	VOC	2-Butanone	78-93-3	ID	8	7	2.06E-03	5.40E-03	9.44E-03		5.9E+02	1.6E-05
2	VOC	Carbon Disulfide	75-15-0		8	3	7.16E-04	1.20E-03	1.81E-03			
2	VOC	Chlorodifluoromethane	75-45-6		8	8	3.30E-03	2.70E-02	4.26E-02			
2	VOC	Chloromethane	74-87-3	D	14	7	1.40E-03	1.50E-03	1.65E-03			
2	VOC	Cyclohexane	110-82-7	ID	8	2	9.29E-04	1.00E-03	1.07E-03		1.1E+03	1.0E-06
2	VOC	1,4-Dichlorobenzene	106-46-7	C	14	6	1.56E-03	2.90E-03	3.67E-03		4.5E+02	8.1E-06
2	VOC	Dichlorodifluoromethane	75-71-8		14	14	3.31E-03	1.40E-02	6.43E-02		5.0E+03	1.3E-05
2	VOC	1,1-Dichloroethene	75-35-4	C	14	2	3.96E-03	4.20E-03	4.36E-03			
2	VOC	cis-1,2-Dichloroethene	156-59-2	D	14	5	7.14E-04	2.00E-03	2.85E-03			
2	VOC	Ethyl Benzene	100-41-4	D	14	1	8.25E-04	8.30E-04	8.25E-04		4.4E+02	1.9E-06
2	VOC	n-Heptane	142-82-5		8	7	1.19E-03	1.40E-03	1.60E-03			
2	VOC	n-Hexane	110-54-3		8	7	4.93E-04	2.20E-03	2.82E-03			
2	VOC	Methanol	67-56-1		8	8	1.44E-02	3.80E-02	9.44E-02			
2	VOC	4-Methyl-2-pentanone	108-10-1	ID	8	2	3.89E-02	4.00E-02	4.10E-02		4.1E+02	1.0E-04
2	VOC	Methylene Chloride	75-09-2	B2	14	2	1.67E-03	2.20E-03	2.74E-03		8.7E+01	3.2E-05
2	VOC	Tetrachloroethene	127-18-4	C-B2	14	13	1.63E-03	1.20E-02	3.87E-02		6.8E+02	5.7E-05
2	VOC	Toluene	108-88-3	D	14	14	4.15E-03	9.10E-03	2.52E-02		7.5E+02	3.4E-05
2	VOC	Trichloroethene	79-01-6	C-B2	14	5	1.29E-03	2.10E-03	3.65E-03		5.4E+02	6.8E-06
2	VOC	Vinyl Acetate	108-05-4		8	1	4.23E-03	4.20E-03	4.23E-03			
2	VOC	Xylenes (total)	1330-20-7	ID	14	10	1.58E-03	3.40E-03	5.60E-03		4.4E+02	1.3E-05

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-12: Off-Facility Sediment Screening Results
Vernay Laboratories Inc., Yellow Springs, Ohio

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Site Specific Background (mg/kg)	ENVIRON Excavation Worker Direct Contact Criteria (mg/kg)	Residential Screen-ing Criteria (mg/kg)		Ratio of Max Detect to ENVIRON Excavation Worker Direct Contact Criteria	Ratio of Max Detect to Residential Screening Criteria
4	VOC	Acetone	67-64-1	ID	34	2	3.30E-02	4.80E-02	6.30E-02		2.6E+07	1.6E+03	nc	2.5E-09	3.9E-05
4	VOC	1,2-Dichloroethene (total)	540-59-0		33	10	5.90E-03	6.20E-02	2.70E-01		2.3E+05	4.3E+01	nc	1.2E-06	6.3E-03
4	VOC	cis-1,2-Dichloroethene	156-59-2	D	34	12	5.00E-03	5.30E-02	2.70E-01		2.6E+06	4.3E+01	nc	1.1E-07	6.3E-03
4	VOC	Tetrachloroethene	127-18-4	C-B2	34	15	3.00E-03	2.00E-02	6.60E-02		2.9E+02	1.5E+01	c	2.2E-04	4.4E-03
4	VOC	Toluene	108-88-3	D	34	2	1.30E-02	3.90E-02	6.50E-02		2.1E+04	6.6E+02	nc	3.1E-06	9.8E-05
4	VOC	Trichloroethene	79-01-6	C-B2	34	3	6.80E-03	1.40E-02	2.30E-02		6.9E+02	5.3E-01	c	3.3E-05	4.3E-02
4	VOC	Vinyl Chloride	75-01-4	A	34	1	3.20E-02	3.20E-02	3.20E-02		3.8E+01	7.9E-01	c	8.5E-04	4.1E-02

Notes:

The Screening Criteria for residential and industrial soil is the lower of the integrated Screening Criteria at:

target cancer risk = **1E-05**

target hazard quotient = **1**

The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (total).

c - The Screening Criterion is based on cancer risk.

nc - The Screening Criterion is based on noncancer effects.

Chem Group - Chemical Group

Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-13: Off-Facility Surface Water Screening Results
Vernay Labortories Inc., Yellow Springs, Ohio

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Nonpotable Kiddie Pool Criteria	Drinking Water Screen-ing Criteria (mg/L)		Ratio of Max Detected to ENVIRON Nonpotable Kiddie Pool Criteria	Ratio of Max Detect to Drinking Water Screening Criteria
4	VOC	Acetone	67-64-1	T	ID	31	5	1.60E-03	1.30E-02	3.70E-02	9.4E+03	1.0E+07	nc	3.9E-06	3.7E-09
4	VOC	Carbon Disulfide	75-15-0	T		31	1	2.20E-04	2.20E-04	2.20E-04	1.2E+03		nc	1.9E-07	
4	VOC	1,2-Dichloroethene (Total)	540-59-0	T		28	3	3.60E-04	7.10E-04	1.20E-03	1.2E+02		nc	1.0E-05	
4	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	31	8	3.60E-04	7.60E-04	1.20E-03	1.3E+02	7.0E-02	sm	9.3E-06	1.7E-02
4	VOC	Methylene Chloride	75-09-2	T	B2	31	1	5.20E-04	5.20E-04	5.20E-04	1.9E+01	5.0E-03	sm	2.7E-05	1.0E-01
4	VOC	Tetrachloroethene	127-18-4	T	C-B2	31	26	1.00E-03	2.30E-02	7.50E-02	9.0E-01	5.0E-03	sm	8.3E-02	**1.5E+01**
4	VOC	Trichloroethene	79-01-6	T	C-B2	31	6	4.10E-04	7.70E-04	1.40E-03	3.3E+00	5.0E-03	sm	4.2E-04	2.8E-01

Notes:

The Screening Criteria hierarchy is State MCL, Fed MCL, the lower of the integrated Screening Criteria at:

target cancer risk = **1.00E-05**

target hazard quotient = **1**

The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (Total).

sm - The Screening Criterion is the State MCL.
fm - The Screening Criterion is the Federal MCL.
c - The Screening Criterion is based on cancer risk.
nc - The Screening Criterion is based on noncancer effects.
Chem Group - Chemical Group
Meas Basis - Measured Basis; Total = T, Dissolved = D
Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-14: On-Facility Storm Sewer Water Screening Results
Vernay Laboratories Inc., Yellow Springs, Ohio

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Excavation Worker Groundwater Contact Criteria	Ratio of Max Detect to ENVIRON Excavation Worker Groundwater Contact Criteria
2A	VOC	1,2-Dichloroethene (total)	540-59-0	T		12	12	4.80E-03	4.60E-02	2.20E-01	1.1E+03	1.9E-04
2A	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	12	12	4.80E-03	4.50E-02	2.20E-01	1.3E+03	1.7E-04
2A	VOC	Tetrachloroethene	127-18-4	T	C-B2	12	12	8.20E-03	4.60E-02	9.30E-02	6.1E+00	1.5E-02
2A	VOC	Trichloroethene	79-01-6	T	C-B2	12	12	2.80E-03	1.40E-02	4.90E-02	1.4E+01	3.6E-03
2A	VOC	Vinyl Chloride	75-01-4	T	A	12	1	4.10E-03	4.10E-03	4.10E-03	7.1E-01	5.8E-03

Notes:
The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (Total).

Chem Group - Chemical Group
Meas Basis - Measured Basis; Total = T, Dissolved = D
Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 2-15: Off-Facility Storm Sewer Water Screening Results
Vernay Labortories Inc. Yellow Springs, Ohio

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	TCL/ TAL	APP IX	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	ENVIRON Excavation Worker Groundwater Contact Criteria	Ratio of Max Detected to ENVIRON Excavation Worker Groundwater Contact Criteria
3A	VOC	Acetone	67-64-1	T	ID	Y	Y	10	1	2.00E-02	2.00E-02	2.00E-02	1.1E+05	1.7E-07
3A	VOC	1,2-Dichloroethene (Total)	540-59-0	T		Y	N	10	3	1.50E-03	1.10E-02	2.30E-02	1.1E+03	2.0E-05
3A	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	Y	N	10	4	1.50E-03	1.20E-02	2.30E-02	1.3E+03	1.8E-05
3A	VOC	Tetrachloroethene	127-18-4	T	C-B2	Y	Y	11	7	3.10E-02	2.40E-01	5.60E-01	6.1E+00	9.1E-02
3A	VOC	Trichloroethene	79-01-6	T	C-B2	Y	Y	11	4	1.10E-03	3.90E-03	6.90E-03	1.4E+01	5.1E-04
3A	SVOC	Acenaphthylene	208-96-8	T	D	Y	Y	2	1	1.50E-02	1.50E-02	1.50E-02	3.8E+03	3.9E-06
3A	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	Y	Y	2	1	1.70E-04	1.70E-04	1.70E-04	7.6E-03	2.3E-02
3A	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	Y	Y	2	1	1.60E-04	1.60E-04	1.60E-04	3.8E+03	4.2E-08
3A	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	Y	Y	2	1	7.20E-05	7.20E-05	7.20E-05	1.2E+02	5.9E-07
3A	SVOC	Chrysene	218-01-9	T	B2	Y	Y	2	1	1.30E-04	1.30E-04	1.30E-04	1.4E+00	9.3E-05
3A	SVOC	Fluoranthene	206-44-0	T	D	Y	Y	2	1	3.80E-04	3.80E-04	3.80E-04	1.2E+01	3.2E-05
3A	SVOC	Pyrene	129-00-0	T	D	Y	Y	2	1	3.70E-04	3.70E-04	3.70E-04	3.8E+03	9.7E-08

Notes:

The Screening Criteria for cis-1,2-Dichloroethene were used as surrogates for 1,2-Dichloroethene (T).

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = T, D = D
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

Table 2-16a Cumulative Cancer Risks and HIs Based on Maximum Detected Concentrations
Vernay Laboratories Inc., Yellow Springs, Ohio

AOI	Matrix	Industrial Cumulative Risk	Industrial HI	Residential Cumulative Risk	Residential HI
1	Soil	**3E-04**	**8E+00**		
2	Soil	**4E-04**	8E-01		
2A	Soil	**6E-04**	**1E+00**		
3	Soil			2E-05	4E-01
3A	Soil	**2E-04**	3E-01	**5E-04**	**2E+00**
4	Sediment			9E-07	2E-02

Table 2-16b Cumulative Cancer Risks and HIs Based on 95% Upper Confidence Limits (UCLs)
Vernay Laboratories Inc., Yellow Springs, Ohio

AOI	Matrix	Industrial Cumulative Risk	Industrial HI	Residential Cumulative Risk	Residential HI
1 [1]	Soil	3E-05	3E-02		
2 [1]	Soil	3E-05	4E-01		
2A [1]	Soil	3E-05	2E-01		
3 [2]	Soil			2E-05	4E-01
3A [1]	Soil	2E-06	3E-03	4E-06	1E-02
4 [2]	Sediment			9E-07	2E-02
Notes:					
1	Cummulative Risk calculated using higher of UCL's for 0-2 or 0-10 ft bgs				
2	Cummulative Risk calculated using Max Detect				