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Ford Road Industrial Landfill

Elyria, Ohio
Lorain County

Record of Decision

United States
Environmental Protection Agency

Region 5

September 2006

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	administrative order on consent
ARAR	applicable or relevant and appropriate requirement
ATSDR	Agency for Toxic Substances and Disease Registry
amsl	average mean sea level
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
COPC	chemical of potential concern
CSM	conceptual site model
Eco-SSL	Ecological Soil Screening Levels
EOLP	Erie/Ontario Lake Plain
EPA	Environmental Protection Agency
ESL	Ecological Screening Level
FS	feasibility study
HAS	Health Administration Service
HHE	human health evaluation
IMZM	Inside Mixing Zone Maximum
IRIS	Integrated Risk Information System
LNAPL	Light Non-Aqueous Phase Liquid
MCL	maximum contaminant level
MetroParks	Lorrain Metropolitan Park District
MW	Monitoring Well
mg/kg	milligrams per kilogram
NCP	National Contingency Plan
NPL	National Priorities List
ODH	Ohio Department of Health
OMZA	Outside Mixing Zone Average
OU	Operable Unit
O&M	Operation and Maintenance
PAH	poly aromatic hydrocarbon
ppm	part per million
PCB	polychlorinated biphenyl
PEC	probable effects concentration
PRP	Potentially Responsible Party
PRG	Preliminary Remediation Goal
RAGS	Risk Assessment Guidance for Superfund
RAO	remedial action objective
RBC	risk based concentration
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
RME	reasonable maximum exposure

ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SF	slope factor
SVOCs	semi-volatile organic compounds
TBC	to be considered
TEC	threshold effects concentration
ug/kg	microgram per kilogram
U.S. EPA	United States Environmental Protection Agency
VOCs	volatile organic compounds

This Record of Decision (ROD) documents the remedy selected for the Ford Road Industrial Landfill Site in Lorain County, Ohio. The ROD is organized in two sections: Part I contains the *Declaration* for the ROD and Part II contains the *Decision Summary*. The *Responsiveness Summary* is included as Appendix A.

PART I: DECLARATION

This section summarizes the information presented in the ROD and includes the authorizing signature of the United States Environmental Protection Agency (U.S. EPA) Region 5 Superfund Division Director.

Site Name and Location

The Ford Road Industrial Landfill Site (CERCLIS # OHD980510002) is located in Elyria, Lorain County Ohio, about 1.5 miles from Interchange 8 of the Ohio Turnpike Interstate 90. The Ford Road Industrial Landfill Site is a 15-acre inactive facility situated in the northern end of Elyria on Ford Road.

Statement of Basis and Purpose

This decision document presents the selected remedy for the Ford Road Industrial Landfill Site (Ford Road Landfill). The remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and, to the extent practicable, the National Contingency Plan (NCP). Information used to select the remedy is contained in the Administrative Record file for the Site. The Administrative Record file is available for review at the U.S. EPA Region 5 Records Center, 77 West Jackson Boulevard, Chicago, Illinois, and at the Elyria Public Library – West River Branch, 1194 West River Road, Elyria, Ohio.

Assessment of the Site

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Description of Selected Remedy

The Ford Road Industrial Landfill Site is being addressed as one Operable Unit (OU) under the framework set forth in CERCLA. The selected remedy specified in this ROD will serve as the final action for the Site. The selected remedy specifies response actions through surface cover enhancement, hot spot removal, and imposition of institutional controls and future monitoring that will address contaminated soils/sediments, a source area, and groundwater at the Site. U.S. EPA believes the response actions outlined in this ROD, if properly implemented, will protect human health and the environment.

The selected remedy consists of a focused removal of wastes on the side slopes and re-grading to improve surface water control over the extent of the landfill and the placement of additional low-permeability material over those areas of the landfill that do not currently meet the minimum 2-foot landfill cap system cover requirement of Ohio EPA [Ohio EPA – DSIWM Guidance #0123 OAC 3745-27-09(F)]. The focused waste removal activities would concentrate on the areas within the landfill footprint on the north and south slopes where waste material (including large waste objects such as white goods, drum carcasses, etc) are exposed at the surface. The areas requiring enhancement of the existing cover are primarily on the northern and southern slopes of the landfill. The possibility of slope modifications will be addressed during the design phase of the remedy implementation. Landfill waste that has, over time, cascaded over the sides of the landfill and remains exposed will be consolidated within the existing or extended limits of the landfill or be disposed of at a licensed facility, if necessary.

Upon completion of cover enhancements and removal of exposed wastes and, if necessary, side slope modifications, a continuous 2-foot cover or an equally protective cover approved by the U.S. EPA will be placed over the entire landfill. This enhanced cover over the entire landfill will reliably contain the landfill wastes and will also serve to mitigate any of the waste material from contaminating water that infiltrates through the landfill itself, passing through soil and sediment, and then flowing into the Black River.

In addition, the remedy will include the removal of a select soil and sediment hotspot located just outside of the landfill limits in the northeastern corner of the Site. While installing a monitoring well during the investigation, a Light Non-Aqueous Phase Liquid (LNAPL) was found to contain high levels of polychlorinated biphenyl (PCB) contaminated motor oil. This LNAPL was found to be migrating into the Black River from a small source area. The selected remedy will include removing the impacted sediment at the edge of the river, extending back toward the toe of the landfill slope. This will remove all impacted soil in the preferential migration pathway along which the LNAPL has likely migrated toward the edge of the river from surface water infiltrating through the landfill.

The LNAPL found at the northeastern corner of the Site could be termed a principal threat if it were to remain in place. Parts of the remedy (surface cover enhancement and hot spot removal) will, however, alleviate the principal threat by ensuring adequate cover to prevent the infiltration of water through the landfill which could aid in the migration of the LNPAL. More importantly by removing the source area, the selected remedy will remove the principal threat.

The major components of the selected remedy include:

- The focused removal of waste on the side slopes, the enhancement of the existing landfill cover and the placement of additional low-permeability material over those areas of the landfill that do not currently meet the 2-foot minimum landfill cap system cover requirement (primarily the areas on the northern and southern side slopes of the landfill). To the extent practicable, existing cover materials will be reused. This may involve moving materials from the top of the landfill where the cover is in excess of two feet thick to the side slopes.

- Vegetation will need to be removed to accomplish the cover enhancements along the landfill slopes. This will involve removing any vegetation within the landfill footprint itself and ensuring that trees and shrubs remaining close to the landfill footprint will not compromise the new landfill cover. Actions to maintain stable slopes will also be performed (e.g., appropriate replacement vegetation and/or slope stabilizing controls). The landfill will then be revegetated with native vegetation in a manner that healthy grasses or other vegetation will form a complete and dense vegetative cover within one year of placement.

- Cascaded waste found over an approximately 5,000 square foot area on the northern slope of the landfill and an approximately 15,000 square foot area on the southern slope of the landfill (both areas are located outside the actual boundary of the landfill) will be addressed by consolidating the waste within the existing or extended limits of the landfill. If determined to be necessary, the waste will be disposed of at a licensed facility. It is assumed that a limited amount of the material will require offsite disposal and most of the material will be consolidated within the limits of the landfill. Material consolidated within the limits of waste will be placed in lifts and compacted in areas on the top of the landfill after the existing cover has been stripped for reuse. Surficial wastes will be removed to native material, unless the underlying material exceeds regulatory limits. Backfill will only be expected to be placed in these areas, as required, to result in appropriate stable slopes beyond the limits of the landfill, depending on the final grade.

- Modifications to the existing cap may affect the stability of the side slopes of the landfill. It is assumed that the North End Slope, Southern End Slope, the northern portion of the Eastern Side Slope, and approximately half of the southern portion of the Eastern Side Slope (approximately 73,000 square feet, total) may require stabilization. However, the exact extent will be based on evaluations made as part of the Remedial Design phase.

- A detailed analysis of the slope stability will be conducted during the Remedial Design phase and will include slope stability analysis outlined in: Geotechnical and Stability Analyses for Ohio Waste Containment Facilities (GeoRG) Manual 660 at http://www.epa.state.oh.us/dsiwm/pages/alpha_e-h.html.. Should this analysis show that further modifications are required to maintain slope stability during and after cap modifications, possible response actions could include laying back the side slopes from the existing toe, extending the existing toe with appropriate adjustment of the side slopes, or adding a structural enhancement at the existing toe then adjusting the side slopes from the top of the structure. Laying back the slopes from the existing toe to a 3:1 slope would require the removal of approximately 250,000 cubic yards of existing cap and fill material, while a 4:1 slope would require the removal of approximately 515,000 cubic yards of existing cap and fill material. Installing a structural enhancement at the existing toe would be expected to significantly decrease this volume. Further evaluation of these options, if necessary, will be part of the Remedial Design phase. It is assumed that excavated materials would be placed under the enhanced cap. However, it is possible that part of this material may need to be disposed of at an appropriately licensed offsite facility.

- Upon completion of this portion of the remedy, the Ford Road Landfill will have a continuous 2-foot cover of approved material encompassing the entire landfill limits with all of the currently exposed wastes either contained within the existing landfill or shipped off-site for disposal.

- Removing selected soil/sediment observed to contain elevated levels of PCBs and motor oil outside of the landfill limits in the northeast corner of the Site. The removal depth is assumed to be approximately fifteen feet. Additional sampling data will be collected during the Remedial Design stage to determine the actual extent of contamination before this alternative is implemented.

- The excavation will remove the impacted sediment at the edge of the river and then extend back towards the toe of the landfill slope. It is estimated that up to 6,400 cubic yards of soil and sediment will need to be removed, although the actual removal limits and depth will be determined during the Remedial Design stage. To the degree practicable, non-impacted surface soil will be removed, stockpiled, and characterized, which could significantly reduce the volume of soil requiring disposal. Excavated materials that are demonstrated to not contain chemicals of potential concern (COPCs) will be used either in construction of landfill cover improvements or placed under the cap within the landfill with U.S. EPA's and Ohio EPA's approval. Soils and sediments containing COPCs with levels exceeding regulatory limits, including PCBs and motor oil, will be sent offsite for disposal. The excavated areas will be backfilled, as required to establish surface contours, with clean, compacted, low permeability fill and revegetated. A reducing media that can fully degrade any residual levels of COPCs may be used or added to the backfill if necessary.

- Regular monitoring including inspections, groundwater sampling and other monitoring activities will occur at the Site. Institutional controls will also be implemented at the Site generally consisting of nonintrusive legal and/or administrative controls that reduce potential exposure to impacted materials and/or to mitigate the potential for jeopardizing the integrity of the remedy. Typical institutional controls involve the placement of deed restrictions on the property to prevent intrusive actions and future development of buildings for routine human occupancy on the landfill cover or drinking-water wells. It is anticipated that all institutional controls will be implemented by the Responsible Parties or Respondents.

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to this remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment technologies (or resource recovery) to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. Because this remedy will result in hazardous substances, pollutants or contaminants remaining on-site at levels greater than those that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is, or will be protective of human health and the environment.

Data Certification Checklist

The following information is included in the Decision Summary section (Part II) of this ROD. Additional information can be found in the Administrative Record file for this Site.

- Contaminants of concern and their respective concentrations (Section 5);
- Baseline risk represented by the contaminants of concern (Section 7);
- Cleanup levels established for contaminants of concern and the basis for these levels (Section 8);
- How source materials are not considered a principal threat (Section 11);
- Current and reasonably anticipated future land use assumptions used in the baseline risk assessment and ROD (Sections 6 and 7);
- Potential land use that will be available at the Site as a result of the selected remedy (Section 12);
- Estimated total present worth costs and the number of years over which the remedy cost estimates are projected (Sections 9 and 12); and
- Key factors that led to selecting the remedy (Sections 10 and 12).

Support Agency Acceptance

Although the State of Ohio has not yet provided a concurrence letter for this ROD, the State has indicated that it intends to concur with the selection of Alternative 3 and Alternative A for the Ford Road Industrial Landfill Site. The State of Ohio's concurrence letter will be added to the Administrative Record upon receipt.

Authorizing Signature

Richard C Karl

Richard C. Karl, Director
Superfund Division
United States Environmental Protection Agency, Region 5

9-27-06

Date

PART II: DECISION SUMMARY

1.0 Site Name, Location and Brief Description

The Ford Road Landfill is a 15-acre inactive facility located in Elyria, Lorain County, Ohio. The Site is located on the northern edge of Elyria on Ford Road, about 1.5 miles from Interchange 8 of the Ohio Turnpike, Interstate 90 (Figure 1). The Site is not fenced and is accessible from all sides. Several residences are located within one mile of the site with the nearest being about 200 feet northwest of the site. The Site is bordered by an intermittent stream and a sewer main that is covered with riprap to the north, a ravine and rural land to the south, the Black River to the east, and Ford Road and the Black River Preserve to the west. Site topography is characterized by the gently sloping top surface of the landfill which descends from an elevation of approximately 690 feet above mean sea level (amsl) at the western boundary of the Site along Ford Road to an elevation of approximately 680 feet amsl at the top of the slope around the northern, eastern, and southern edge of the landfill surface. The northern, eastern, and southern flanks of the landfill slope steeply down to the 100-year flood plain of the Black River at an elevation of approximately 610.9 feet amsl. A swale, oriented approximately north-south, was constructed along the western edge of the landfill. The swale directs runoff into a stormwater drain that discharges into the intermittent stream which is a crushed stone-filled drainage feature that extends from Ford Road to the Black River immediately north of the Site.

Figure 2 illustrates the layout of the landfill. The top of the landfill appears to have an adequate cover of low-permeability soil. Landfill wastes are covered on the top of the landfill. However, uncovered wastes, miscellaneous debris, and white goods that are located along the southern and northern landfill side slopes. The landfill top is well graded and gently slopes west to east with an eastern side slope grade approaching 2.5:1 Height: Vertical ratio, while the north and south side slopes of the landfill are steep with grades of approximately 1.2:1 Height: Vertical ratio. The cap and slope coverings of the landfill are generally intact and support healthy vegetation (grass and tree/shrub growth). There is, however, some evidence of waste and soil erosion occurring on the steep northern and southern side slopes. No landfill gas has been observed migrating through the existing cap at the Ford Road Site and a gas monitoring system is in place at the Site.

The Ford Road Landfill is being addressed as a Superfund Alternative Site. The Potentially Responsible Parties (PRPs) are therefore allowed to lead in the investigation of the Ford Road Site, with U.S. EPA oversight. Because this is a voluntary action by the PRPs the Site is not listed on the National Priorities List (NPL). The PRP Group for the Ford Road Site signed an Administrative Order of Consent (AOC) in 2001 to complete a Remedial Investigation/Feasibility Study (RI/FS) at Ford Road Landfill. The Ford Road PRP Group began the RI/FS at the Ford Road Site in 2003 and both U.S. EPA and Ohio EPA provided oversight of the Ford Road PRP Group's work under the AOC. The Ford Road Group completed the *Remedial Investigation/Feasibility Study Report, Ford Road Landfill, Elyria, Ohio* in 2006. U.S. EPA anticipates that the design and implementation of the remedy selected in this ROD will be carried out by the Ford Road PRP Group under a federal consent decree.

2.0 Site History and Enforcement Activities

2.1 Source of Contamination

Landfilling activities are believed to have begun with the placing of local municipal waste into the ravine extending east from Ford Road in the early 1900s. Available records indicate that Brotherton Disposal Company, Brotherton Disposal, Inc., and Browning-Ferris Industries of Ohio, Inc. operated a landfill at the Ford Road Site for various periods in the 1960s and early 1970s. In 1972, Brotherton Disposal, Inc., merged with Browning-Ferris Industries of Ohio. According to Lorain County Records, George C. Brotherton and Phyllis J. Brotherton, doing business as Brotherton Disposal and later as Brotherton Disposal, Inc., leased the landfill from Jack Joseph from 1964 to 1973. In 1973, Brotherton Disposal Inc. leased the landfill from the Lorain County Metropolitan Park District. During operation of the landfill in the 60s and 70s, municipal and various industrial wastes in drums and in bulk were accepted, including, but not limited to: 700 tons of hazardous material; 3.3 million pounds of chemical wastes; and 32,000 gallons of sludge per day from 1963 to 1970, and many of these wastes were burned onsite. Foundry sand, slag, and dried sludges were often used for cover material. Landfill operations ended in 1974, but the landfill was not closed under U.S. EPA guidelines. The current owner of the Site is the Lorain County Metropolitan Parks District (MetroParks).

2.2 Previous Investigations

2.2.1 Field Investigations

Past investigations at the Ford Road Landfill appear to have begun in the early 1970s. An Ohio EPA sanitary landfill inspection form reported conditions observed at the landfill on December 21, 1972, including the presence of leachate near the northeastern corner of the Site. It was further observed that insufficient cover material was present for the landfill. An inspection of the landfill in June 1976 documented improved conditions, although it indicated continued concerns regarding adequacy of cover and an observation of the leachate in the northeastern corner of the Site. On September 30, 1980, a site inspection was performed by the U.S. EPA. During the inspection, leachate was reportedly observed to be entering the Black River at the northeastern corner of the Site. The analytical results (dated October 20, 1980) for both one leachate sample and one sediment sample collected from observed seepage points located between the northeastern toe of the landfill and the Black River showed detectable concentrations of ammonia, lead, boron, cadmium, zinc, barium, chromium, titanium, tetrahydrofuran, dimethylbenzene, ethylbenzene, 3,3,5-trimethylcyclohexanone, trimethylcyclohexanol, 1,1 oxybisbenzene, methylenebisbenzene, and bis(2-ethylhexyl)phthalate. The sediment sampled contained bis(2-ethylhexyl)phthalate, phenol, methylphenol, 1H-Indole, tetradecanediols, and PCBs.

An Evaluation of the Potential for Groundwater Contamination at the Ford Road Site was prepared by a U.S. EPA contractor, E&E, on behalf of the U.S. EPA, dated October 16, 1981. This evaluation concluded that impacts to the deeper bedrock aquifer were unlikely due to the relatively impermeable shale cap rock. In addition, the evaluation determined that potential impacts to groundwater in the overburden could impact the Black River and should be evaluated by installing and sampling four to five wells. On August 23 and 24, 1982, three shallow overburden monitoring wells (MW-1, MW-2, and MW-3) were drilled and installed by ATEC Environmental Consultants. One borehole was also advanced upgradient of the site; however, no groundwater was encountered above the shale bedrock and no monitoring well was installed at this location.

A preliminary assessment of the Ford Road Landfill was prepared by E&E on behalf of the U.S. EPA, dated January 5, 1983. Based on an evaluation of available information from the field investigation team files, Ohio EPA files, and U.S. EPA Region 5 files, additional information was considered necessary to assess potential impacts to groundwater, surface water, and/or soil. On July 20, 1983, during a site inspection, E&E collected groundwater samples from each of the three existing monitoring wells at the Site on behalf of the U.S. EPA. Two of the samples were found to contain low concentrations of acetone and alphabenzene hexachloride. A third sample contained methylene chloride.

On January 10, 1994, a U.S. EPA contractor, PRC Environmental Management, Inc. submitted the *Expanded Site Inspection Report*. The activities completed by PRC included an inspection of the site on March 8, 1993, during which a leachate seep was observed flowing toward the Black River near the northeastern corner of the Site. On May 18, 1993, PRC sampled soil, surface water, sediment, and groundwater at the Site. PCB (Aroclor-1254), delta-BHC, alpha chlordane, calcium, lead, and zinc were detected in one or more sediment samples. No hazardous substances were identified at levels above background in surface water samples. Also, 1,1-dichloroethene, potassium, and sodium were detected in one or more of the groundwater samples. Arsenic, barium, manganese, and nickel were also detected at elevated concentrations in both sediment and groundwater.

Browning-Ferris Industries of Ohio conducted monthly methane gas monitoring from February 8, 1989 through January 31, 1994. This monitoring program involved monitoring for methane gas at 10 locations across the landfill during each monitoring event. The monitoring results showed 0% of the lower explosive limit and 0% by volume from all locations during each monitoring event implemented. A landfill gas monitoring system was formally approved by Ohio EPA in early 2006 and sampling results have shown that no landfill gas is migrating through the existing cap.

In 1980, with the approval of the U.S. EPA and the MetroParks, Browning-Ferris of Ohio implemented a voluntary response action involving the addition and grading of cover soil (including placing up to 7.5 feet of low-permeability cover materials) to intercept and contain reported observations of leachate emanating from the Site. In addition, some refuse observed near the river was removed and transported to the Lorain County Landfill.

Ohio EPA has collected fish tissue data in the Black River as part of its state program. Currently, the Black River has a fish advisory for Common Carp for PCBs and a PCB and mercury advisory for Freshwater Drum. Aroclor 1242 and Aroclor 1254 are present at elevated concentrations in the LNAPL. However, Aroclor 1242 was not detected and only low levels of Aroclor 1254 were detected in fish tissue samples collected from areas near the landfill. However, through sediment sampling and the observation of black stained soil along the bank of the river adjacent to the Site conducted during the RI at Ford Road Landfill, it is apparent that a small amount of PCB contamination is entering into the Black River and could pose a risk to the ecological community residing in the river.

2.2.2 ODH Health Assessment

In 2001, the Health Assessment Section (HAS) of the Ohio Department of Health (ODH) was asked by the U.S. EPA to evaluate site conditions and available sampling results at the Ford Road Landfill to determine if any contaminants present at the Site could pose a health threat to humans in the vicinity of the landfill. The Ford Road Landfill Health Consultation was prepared by the ODH under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). The Division of Health Assessment and Consultation, ATSDR, reviewed this public health consultation and concurred with the findings.

Based upon ODH's review, it was determined that the main pathway of concern was contact or ingestion of surface water or sediments near the northeastern corner of the Site by the Black River and the Black River itself. It was stated that the Black River near the Site supports a viable fish population and may be regularly fished by area residents. It was also indicated that eating contaminated fish from the Black River could be a pathway of concern depending on the current level of contamination in the river and the kinds of chemicals present. Prior to this consultation, environmental data for the site was extremely limited with the most recent sampling occurring in 1993. ODH stated that to adequately assess the threat to human health, it would be necessary to conduct a more thorough investigation of the site to characterize the potential for site contaminants that would migrate to the Black River.

Other potential hazards at the site that were identified during this assessment included the physical hazards present along the steep side slopes of the landfill. The Site was and still remains unfenced providing easy access to the Site. Crushed drums and exposed waste found along the northern and southern edges of the landfill posed a physical threat anyone venturing on the sides of the landfill. There were also several areas of exposed ash found during the assessment that were of unknown origin and could have possibly contained hazardous constituents, posing a health threat to those who came into contact with this area.

After ODH assessed the Site, they made the following recommendations:

1. A thorough environmental investigation of the Site, including surface soil, groundwater, sediment, and landfill gas should be completed at the Site to better characterize the levels of hazardous waste in the landfill and the extent of impact on the surrounding environment.

2. Access to the Site should be restricted so as to reduce the possibility that children or others could injure themselves on the exposed drums and waste that are present at the landfill.

3. Since contamination is present in the sediments or surface water of the river, Ohio EPA may need to sample fish tissue in the Black River adjacent to the Site for site related contaminants, including PCBs.

2.3 Previous Response Actions

In 1980, with the approval of the U.S. EPA and the MetroParks, Browning Ferris Industries of Ohio implemented a voluntary response action involving the addition and grading of cover soil (including placing up to 7.5 feet of low-permeability cover materials) on the top of the landfill. This was done in order to help intercept and contain the reported observations of leachate emanating from the northeastern corner of the Site. In addition to the placement of cover material, some refuse that was observed along the edge of the landfill near the river was removed and transported to the Lorain County Landfill.

2.4 Enforcement Activities

In July 2002, an AOC was signed by Browning-Ferris Industries of Ohio, PolyOne Corporation, Goodrich Corporation, Ford Motor Company, General Motors Corporation, Chevron Environmental Management Company & Kewanee Industries Incorporated (a.k.a. Ford Road Group) and U.S. EPA, which required the Ford Road Group to conduct a RI/FS. The RI/FS work described in this ROD was conducted by the Ford Road Group under the terms of the 2002 AOC, with oversight by U.S. EPA and Ohio EPA.

3.0 Community Participation

The Proposed Plan for the Ford Road Landfill was made available to the public for comment near the end of June 2006. Copies of the Proposed Plan and the final RI and FS (as well as other supporting documents) were placed in the local Information Repositories located at the Elyria Public Library – West Branch. Documents are also available at the U.S. EPA Records Center in Chicago, Illinois. Copies of the Proposed Plan were mailed to approximately 100 interested persons on U.S. EPA's community involvement mailing list for the Site. Copies of all documents supporting the remedy outlined in the Proposed Plan are located in the Administrative Record file for the Site, located at the U.S. EPA Records Center, 77 West Jackson Boulevard, Chicago, Illinois and the Elyria Public Library – West Branch in Elyria, Ohio.

The public comment period ran from July 10 through August 9, 2006. U.S. EPA held a public meeting at the French Creek Nature Center in Sheffield Village, Ohio on July 26, 2006, to present the Proposed Plan and approximately 25 people attended. The notice announcing the public meeting and the availability of the Proposed Plan was published in the Elyria Chronicle-Telegram newspaper on July 6, 2006. A press release was issued on July 13, 2006, to alert media and the public about issuance of the Proposed Plan and the start of the public comment period. Representatives of U.S. EPA and Ohio EPA were present at the public meeting, as were representatives of the Ford Road Group, to answer questions regarding the proposed remedy. Responses to comments received during the public comment period (including comments received at the public meeting) are included in the Responsiveness Summary which is Appendix A of this ROD. These comments were considered prior to selection of the final remedy for the Ford Road Landfill.

U.S. EPA also developed a Community Involvement Plan (CIP) when RI/FS activities began at the Site in July 2004. The CIP, AOC, Proposed Plan, and any news releases were also posted to the U.S. EPA Region 5 website at http://www.epa.gov/region5/sites/fordroad

4.0 Scope and Role of Response Action and Operable Units

The U.S. EPA has designated all of the work to be performed at Ford Road Landfill under one Operable Unit, which includes a remedy that will address both the existing soil and groundwater contamination and removing an on-going source of sediment, soil and groundwater/surface water contamination.

4.1 Operable Unit – Sitewide OU

Soils, Source Area and Groundwater/Surface Water: The Ford Road Landfill is being addressed as one sitewide OU, and the remedy implemented at the Site will focus on contaminated soils, source area, and groundwater/surface water contamination. The source of the contamination is discussed more fully in Section 2.1 of this ROD. The contaminants at the Ford Road Landfill originated from the collection and disposal of various waste products at the facility during its operational period. When operations ceased at the landfill, any contaminated waste materials remained within the landfill. As part of a voluntary action, cover material was placed upon the top of the landfill to help in preventing surface water from infiltrating directly into the landfill wastes. The Site is being addressed under the framework set forth in CERCLA. The remedial action for the Site addresses contaminated soil and exposed waste material on the side slopes of the landfill, soil and sediment contaminated with PCBs and motor oil in the northeastern corner of the Site and eliminates the infiltration of water through the landfill preventing any further groundwater/surface water contamination. The remedial action will also eliminate current risks to human health and ecological receptors by eliminating potential exposure to PCB-contaminated soil and sediment and will also eliminate potential migration of PCBs from the hot spot area of contamination (via surface water infiltration) into the Black River thereby eliminating potential risks to aquatic receptors.

5.0 Site Characteristics

5.1 Conceptual Site Model for Ford Road Landfill

The conceptual site model (CSM) provides an understanding of the Site based on the sources of the contaminants of concern, potential transport pathways and environmental receptors. Figure 3 pictorially depicts a simplified CSM for the Ford Road Landfill Site. Based on the nature and extent of the contamination and the fate and transport mechanisms described in the RI/FS Report, the CSM includes the following components:

- Landfill waste material presents a risk from surface soils, particularly on the northern and southern side slopes of the landfill. Elevated levels of metals, particularly lead, and polyaromatic hydrocarbons (PAHs) were found in these areas and pose risks to the "trespasser", "worker" or "recreational" users and to ecological receptors by either dermal, ingestion or inhalation of the surface soil.

- In the northeastern corner of the Site, surface water has infiltrated into the landfill, thereby becoming contaminated with elevated levels of PCBs associated with the LNAPL found in that area as it flows out into the Black River. The surface water poses a risk for "trespassers" and "recreational" users and to ecological receptors for exposure through ingestion and dermal contact.

- Since PCB contaminated groundwater is entering into Black River surface waters, there is a risk to the "recreational" user who eats fish from certain areas of the Black River. Of special concern is bioaccumulation, since aquatic organisms can accumulate chemicals (including PCBs) in their bodies when they are exposed to these chemicals through water, their diet, and other sources.

- Again, since PCB contaminated groundwater is entering into Black River surface waters, there is a risk of dermal exposure and ingestion for both "trespassers" and "recreational" users and ecological receptors at the Site who come into contact with contaminated sediment along the northeastern corner of the Site.

5.2 Site Overview

The Ford Road Landfill Site is a 15-acre inactive facility located in Elyria, Lorain County, Ohio. The Site is located on the northern edge of Elyria on Ford Road, about 1.5 miles from Interchange 8 of the Ohio Turnpike, Interstate 90. The Site is bordered by an intermittent stream and a sewer main that is covered with riprap to the north, a ravine and rural land to the south, the Black River to the east, and Ford Road and the Black River Preserve to the west. The approximate geographic coordinates of the Site are 41° 22' 26.0" N latitude and 082° 07' 30.0" W longitude. The U.S. EPA spill identification number is 0574, and the U.S. EPA facility identification number is OHD 980510002. There are no buildings remaining on the Site. A surface water drainage system was constructed during the voluntary cover placement to assist in directing surface water off of the landfill.

The top of the landfill has an adequate cover of low-permeability soil. Landfill wastes are largely covered, with the exception of some wastes, miscellaneous debris, and white goods that are located along the southern and northern sides of the landfill. The landfill top is well graded and gently slopes west to east with an eastern side slope grade approaching 2.5:1 Height: Volume ratio while the northern and southern side slopes of the landfill are steep with grades of approximately 1.2:1 Height: Volume ratio. The cap and slope coverings of the landfill are generally intact and support healthy vegetation (grass and tree/shrub growth). There is, however, some evidence of waste and soil erosion occurring on the steep northern and southern slopes. A gas monitoring system was put in place by the MetroParks in 2005 and 2006 and recent sampling has shown that no landfill gas has been migrating through the existing cap at the Site.

The Site is located within the Berea Headlands section of the Huron-Erie Lake Plains physiographic region of Ohio. The near-surface geology in the Site vicinity is generally characterized by the presence of glacially derived, wave-planed, ground moraine deposits from the Wisconsian epoch and more recent lake deposits. The overburden materials encountered in the subsurface at this Site consist primarily of gray to brown silty clay and clayey silt, with trace to some sand and gravel. The overburden materials encountered upgradient of the Site are of glacial till deposits consisting predominantly of low permeability silt and clay. These glacial till deposits are likely to mantle the top of bedrock and extend down the slope toward the river under the majority of the Site. The native overburden materials encountered above the bedrock within the flood plain of the Black River are composed of a series of alluvial deposits consisting of lenses of sand, clay and silt. Groundwater flow within the overburden downgradient of the Site would be expected to preferentially follow the higher permeability sand lenses. Overlying the native overburden deposits immediately beyond the northeastern toe of the landfill is a wedge of fill materials composed primarily of clay and silt with some sand, broken glass, wood, and traces of slag. This wedge of fill material is approximately 10 feet thick immediately beyond the toe of the landfill slope and tapers in thickness toward the bank of the river. This fill material appears to have been placed beyond the toe of the landfill slope in conjunction with the documented response action implemented in 1980. At the base of this wedge of fill material is a discontinuous layer of sand which appears to extend toward the edge of the river.

Bedrock was encountered at depths ranging from 12.5 to 28.5 feet below grade and is composed of red to black fissile shale. The shale bedrock formation encountered below the Site is likely the Ohio Shale formation of Devonian age, and the red Bedford Shale formation of Mississippian age. Boring logs of wells in the general Site vicinity also observed red and black shale bedrock to depths of up 100 feet below grade. Bedrock does not appear at the ground surface or along the bank of the Black River on-Site, whereas an outcrop of red shale is evident along the access road to the south and black shale is visible in the bank of the Black River opposite the Site. According to an Ohio DNR survey of the groundwater resources in Lorain County, wells located in the Site vicinity indicate that the shale bedrock has low hydraulic conductivity, with developed capacities reportedly ranging from 0 gallons per minute to 3 gallons per minute.

Groundwater was encountered within the shallow overburden materials above the bedrock at seven monitoring wells located along the eastern toe of the former landfill. Groundwater present above the bedrock in the Site vicinity flows in an easterly direction and discharges into the Black River, which forms the east Site boundary. The groundwater flow from the Site discharges to the Black River at the downgradient edge of the Site. Groundwater in the bedrock aquifer is anticipated to be protected from significant impacts by the landfill due to the relatively impermeable nature of both the mantle of glacial till materials which likely overlie the bedrock under most of the Site and the relatively impermeable nature of the shale bedrock underlying the Site. Groundwater flow within the overburden deposits underlying the Site also discharges to the Black River (Figure 4). By employing Darcy's Law, an estimate of the groundwater flow discharging to the Black River from along the downgradient Site boundary was calculated. The estimated groundwater flux to the Black River was estimated to be approximately 14,053 cubic feet per day (105,100 gallons per day).

5.3 Sampling Strategy

A work plan that presented the scope of work for the RI was approved by the agencies and work was initiated in 2003. All RI investigation activities were conducted by the Ford Road Group under the supervision of U.S. EPA and Ohio EPA. Field investigation activities conducted as part of the RI included:

- ✓ Evaluation of existing landfill cover;
- ✓ Geophysical investigations (electromagnetic conductivity surveys, seismic survey, soil gas survey);
- ✓ Landfill slope evaluation;
- ✓ Surface water management evaluation;
- ✓ Monitoring well drilling and installation;
- ✓ Soil borings and samples;
- ✓ Test pit soil sampling;
- ✓ Sediment and surface water sampling;
- ✓ Leachate seep sampling;
- ✓ Groundwater sampling;
- ✓ LNAPL investigation;
- ✓ Aquifer testing;
- ✓ Soil hydraulic conductivity testing;
- ✓ Residential well survey; and
- ✓ Topographic mapping and surveying.

5.4 Source of Contamination

As discussed in Section 2.1 of this ROD, the contaminants from the Ford Road Landfill originated from the collection and disposal of various industrial and municipal wastes. Municipal wastes were accepted at the landfill from the early 1900s until around 1960 when other industrial and some hazardous wastes were accepted and often burned at the landfill. Upon closure of the landfill, wastes remained on-site within the landfill. The landfill was partially covered during a voluntary response action in 1980, but some wastes were left exposed on the steep side slopes of the landfill. As previously noted, during the RI a hot spot area of PCB-contaminated soil and sediment was found along the northeastern edge of the Site, along the Black River. It is believed that surface water infiltrating through the landfill, especially near a surface water drain, and then passing through the waste material in the landfill contaminated this corner of the Site. An LNAPL was also found in this corner of the Site during the installation of MW-1 which led to further delineating the contaminated area.

5.5 Types of Contaminants and Affected Media

At the Site, surface water, groundwater, sediment, and soil were analyzed for a variety of contaminants. The results were carefully evaluated in the Risk Assessment to determine the contaminants of potential concern (COPCs) and revealed which of these chemicals and affected media were most important in driving potential risk at the Site. These findings are summarized in Section 7 of this ROD, but extensive evaluation is found in the RI/FS Report.

5.6 Extent of Contamination

5.6.1 Soil Investigation and Results

(Semi Volatile Organic Carbon) SVOCs

The most prevalent SVOC found in the soil at the Site is benzo(a)pyrene, which was reported at concentrations above the U.S. EPA Region 9 Residential Preliminary Remediation Goals (PRGs) in 27 soil samples ranging from 0.13 mg/ to 6.7 mg/kg. Benzo(a)anthracene was reported at concentrations above the PRGs in eight soil samples ranging from 0.86 mg/kg to 4.8 mg/kg. Benzo(b)fluoranthene was reported at concentrations above the PRGs in 14 soil samples ranging from 0.75 mg/ to 390 mg/kg. Benzo(k)fluoranthene was reported at concentrations above the PRGs in two subsurface soil samples at 340 mg/kg and at 9.6 mg/kg. Dibenzo(a,h)anthracene was reported at concentrations above the PRGs in 13 soil ranging from 0.12 mg/kg to 1.1 mg/kg. All of the above contaminants were found in both surface and subsurface soils. Ideno(1,2,3-cd)pyrene was reported at concentrations above the PRGs in four subsurface soil samples ranging from 0.77 mg/kg to 2.3 mg/kg. Fifteen SVOCs were detected above the soil screening values found in the U.S.EPA (2003) Soil Ecological Screening Levels (ESLs), previously known as the ecological data-quality levels (EDQLs).

All of the surface soil samples which were observed to contain SVOCs at concentrations exceeding their PRGs were located along either the northern or southern slopes of the landfill within those areas identified as having waste observed in the near surface cover materials.

PCBs

PCBs were detected above the residential PRG in 15 of the 43 soil samples analyzed. PCB aroclors with reported concentrations greater than the PRGs include Aroclor 1242 and Aroclor 1254. These two Aroclors were also detected above the ESLs. Aroclor 1242 was reported at concentrations above the PRGs in three soil samples; FR-HB10-S1 (0 to 2 ft below ground surface [bgs]) at 0.28 mg/kg, FR-HB11-S2 (2 to 4 ft bgs) at 4.5 mg/kg, and FR-SB-30-S3 (11 to 12 ft bgs) at 160 mg/kg. Aroclor 1254 was reported at concentrations above the PRGs in 15 soil samples (four surface and nine subsurface soils samples) ranging from 0.24 mg/kg (FR-HB5-S2 [2 to 4 ft bgs]) to 5.7 mg/kg (9 to 11 ft bgs). These two Aroclors were also detected above the soil ESLs.

As noted with regard to the SVOC exceedances, all of the surface soil samples which were observed to contain PCBs at concentrations exceeding their PRGs were located along either the northern or southern slopes of the landfill, with the highest along the northeastern corner of the Site, within those areas identified as having either waste observed in the near surface cover materials.

Metals

Table 1 below shows a comparison of the metals data for Ford Road Landfill compared to background data.

Metals (mg/Kg)	Background Soil Concentrations		Site Soil Data		Maximum Site Soil Concentration Exceeds Background Concentration	Maximum Background Soil Concentration Exceeds PRGs	Maximum Site Soil Concentration Exceeds PRGs
	Range of Detections	Frequency of Detection	Range of Detections	Frequency of Detection			
Aluminum	8740 - 14400	8/8	1230 – 17000	39/39	X		
Antimony	0.74 - 1.9	8/8	0.6 – 114	33/39	X		X
Arsenic	2.4 - 11.5	8/8	2.8 - 85.5	39/39	X	X	X
Barium	19 - 71.4	8/8	21.8 - 2780	39/39	X		
Beryllium	0.48 - 1.0	8/8	0.12 – 2	39/39	X		
Cadmium	ND (0.02 - 0.03)	0/8	0.03 - 79.5	24/39	X		X
Calcium	688 - 3810	8/8	739 - 77300	39/39	X		
Chromium	12.1 - 20.9	8/8	15.4 - 7870	39/39	X		X
Cobalt	7.9 - 21.1	8/8	6.6 - 78.1	39/39	X		
Copper	8.1 - 38.6	8/8	20.9 - 9080	39/39	X		X
Iron	16000 – 36900	8/8	4350 - 480000	39/39	X	X	X
Lead	3.3 - 15.1	8/8	8 - 5510	39/39	X		X
Magnesium	1910 – 4970	8/8	1250 - 14000	39/39	X		
Manganese	220 – 579	8/8	35.4 - 2180	39/39	X		X
Mercury	0.025 - 0.033	2/8	0.015 - 10.3	37/39	X		
Nickel	13.6 - 38.4	8/8	25 - 3490	39/39	X		X
Potassium	652 – 2550	8/8	148 - 2620	39/39	X		
Selenium	1.2 - 2.2	8/8	0.91 - 15.9	39/39	X		
Silver	ND (0.07 - 0.08)	0/8	0.07 - 4.1	33/39	X		
Sodium	ND (25.2 - 45.6)	0/8	67.1 - 718	37/39	X		
Thallium	ND (0.45 - 0.52)	0/8	1.1 - 17.7	37/39	X		X
Vanadium	20.1 - 37.7	8/8	5.8 - 54.6	39/39	X		
Zinc	28.8 - 85.7	8/8	38.5 - 7610	39/39	X		

__Notes:__
ND = Not detected, analyte quantitation limit provided within parentheses

Table 1 - Soil Comparison of Metals Data to Background Metals Data

Based on this comparison, all metals were detected in the background and Site soil samples with the following exceptions: cadmium, silver, sodium and thallium, and maximum concentrations in the Site soil samples exceeded maximum concentrations in the background soil samples for all 23 metals analyzed. However, only antimony, cadmium, chromium, copper, lead, manganese, nickel, and thallium were detected at concentrations above the residential PRGs in Site soils alone, while arsenic and iron were detected at concentrations above the PRGs in both background and Site soil samples. Sixteen metals were detected above the soil ESLs, with significant lead exceedances.

5.6.2 Groundwater Results

Volatile Organic Carbon (VOCs)

The only VOCs with reported concentrations greater than the Maximum Contaminant Levels (MCLs) include benzene and vinyl chloride. Benzene was reported at concentrations above the MCLs in the groundwater samples collected from monitoring well FR-MW-1 at concentrations of 24 μg/L, 19 μg/L, and 18 μg/L during the October 2003, and April and December 2004 sampling events, respectively. Vinyl chloride was reported at a concentration of 5 μg/L in the December 2004 groundwater samples collected from monitoring wells FR-MW-7 and FR-MW-9.

Pesticides

A low concentration of dieldrin (0.043 μg/L) detected in the April 2004 groundwater sample collected from monitoring well FR-MW-1 was the only pesticide detected in any of the groundwater samples. This compound was not detected when this well was sampled again in December 2004. There is no MCL established for dieldrin and no other pesticides were detected above the compound quantitation limits in the groundwater samples collected from the remaining nine monitoring wells.

PCBs

PCBs were detected at concentrations greater than the MCLs in groundwater samples collected from monitoring well FR-MW-1 during all three sampling events. PCBs were not detected above the compound quantitation limits in the groundwater samples collected from the remaining nine monitoring wells. Aroclor 1242 was reported at concentrations above the MCLs in groundwater samples collected from monitoring well FR-MW-1 (3 μg/L in October 2003, 1.2 μg/L in April 2004, and 81 μg/L in December 2004). One LNAPL sample collected from monitoring well FR-MW-1 during the RI resulted in a total PCB concentration of 1,920 mg/kg and likely accounts for the PCB detections reported for groundwater samples collected from this well.

Metals

Groundwater samples collected from all 10 monitoring wells had detectable concentrations of total metals. Metals with reported concentrations greater than Primary MCLs include: antimony, barium, cadmium, lead, nickel, selenium, and thallium. Metals with reported concentrations greater than Secondary MCLs include: aluminum, iron, and manganese. These exceedances occurred for at least one round of sampling. Table 2 below compares background exceedances of MCLs to Site exceedances of MCLs.

Metals	Background Groundwater Concentrations		Site Groundwater Data		Maximum Site Groundwater Concentration Exceeds Background Concentration	Maximum Background Groundwater Concentration Exceeds MCLs	Maximum Site Groundwater Concentration Exceeds MCLs
	Range of Detections	Frequency of Detection	Range of Detections	Frequency of Detection			
Total (ug/L)							
Aluminum	386 - 22500	4/5	37 - 13900	5/16		X	X
Antimony	3.7 - 5.3	2/5	3.7 - 9.2	5/16	X		X
Arsenic	3.5 - 14.5	4/5	10.1 - 36.1	13/16	X	X	X
Barium	15.2 - 112	5/5	22.2 - 4160	15/16	X		X
Beryllium	0.29 - 2.3	2/5	0.43 - 0.91	7/16			
Cadmium	0.53 - 1.7	2/5	0.33 - 12	5/16	X		X
Calcium	45800 - 339000	5/5	62200 - 240000	16/16			
Chromium	[illegible] - 39.1	3/5	1.9 - 14.5	11/16			
Cobalt	6.9 - 27.6	3/5	2.9 - 8.6	9/16			
Copper	5.9 - 41.1	3/5	1.6 - 56.6	5/16	X		
Iron	840 - 48900	4/5	166 - 56400	14/16	X	X	X
Lead	2.5 - 9.7	2/5	4.4 - 19	3/16	X		X
Magnesium	25600 - 651000	5/5	33900 - 224000	16/16			
Manganese	33.2 - 795	5/5	134 - 6070	15/16	X	X	X
Mercury	ND (0.037 - 0.055)	0/5	ND (0.037 - 0.055)	0/16			
Nickel	10.6 - 60.7	3/5	7 - 294	11/16	X		X
Potassium	1900 - 64400	5/5	7270 - 134000	16/16	X		
Selenium	4.5 - 15.1	2/5	4.2 - 126	7/16	X		X
Silver	ND (0.40 - 1.0)	0/5	0.75	1/16	X		
Sodium	346000 - 1400000	5/5	57600 - 504000	15/16			
Thallium	ND (2.8 - 4.0)	0/5	4.4 - 11.7	4/16	X		X
Vanadium	0.92 - 60.2	4/5	0.77 - 15	9/16			
Zinc	2.1 - 54.1	4/5	3.5 - 341	11/16	X		
Dissolved (ug/L)							
Aluminum	299 - 679	2/5	57.2 - 593	4/16		X	X
Antimony	6.2	1/5	4 - 10	4/16	X	X	X
Arsenic	4.7 - 6.7	2/5	5.2 - 40	9/16	X		X
Barium	15.6 - 39.9	5/5	21.7 - 3840	16/16	X		X
Beryllium	0.42	1/5	0.13 - 0.86	7/16	X		
Cadmium	ND (0.10 - 0.40)	0/5	0.37 - 11.3	5/16	X		X
Calcium	45500 - 481000	5/5	60300 - 245000	16/16			
Chromium	0.63 - 0.65	3/5	0.31 - 7.7	12/16	X		
Cobalt	1.9 - 8.2	3/5	0.8 - 8.4	12/16	X		
Copper	0.93 - 4.2	2/5	1.3 - 43.6	4/16	X		
Iron	102 - 902	3/5	169 - 55500	14/16	X	X	X
Lead	2.0	1/5	1.7 - 4.2	3/16	X		
Magnesium	24500 - 600000	5/5	32500 - 217000	15/16			
Manganese	35.3 - 469	5/5	129 - 6030	16/16	X	X	X
Mercury	ND (0.037 - 0.055)	0/5	ND (0.037 - 0.087)	0/16			
Nickel	4.3 - 11.2	3/5	6.6 - 270	12/16	X		X
Potassium	11700 - 53800	5/5	5700 - 135000	16/16	X		
Selenium	10.9	1/5	4.8 - 120	4/16	X		X
Silver	ND (0.40 - 10)	0/5	ND (0.4 - 1)	0/16			
Sodium	336000 - 1180000	5/5	55200 - 511000	15/16			
Thallium	ND (2.8 - 4.0)	0/5	3.4 - 12.4	2/16	X		X
Vanadium	0.75 - 1.7	3/5	0.6 - 4.6	11/16	X		
Zinc	2.3 - 27.2	3/5	2 - 319	11/16	X		

Table 2 - Groundwater Comparison of Metals Data to Background Metals Data

5.6.3 Leachate Results

Six potential seep locations were identified at the Site (USACE-A through USACE-F). Leachate samples were collected from five potential seep locations including USACE-A, USACE-B, USACE-C, USACE-D, and USACE-F. USACE-E could not be collected due to minimal seepage, and close proximity of the seep to the Black River. All leachate samples collected from the five seep locations had detectable concentrations of total metals. Metals with reported concentrations greater than the MCLs or secondary MCLs include: aluminum, antimony, cadmium, iron, lead, manganese, nickel, and thallium. Metals which were also detected above MCLs or secondary MCLs in the background groundwater samples from monitoring wells FR-MW-5 and FR-MW-6 include aluminum, iron, and manganese.

5.6.4 LNAPL Investigation and Results

Black stained sand with an oil sheen and evidence of waste was encountered at a depth of 8 feet below grade while advancing the original soil boring planned for monitoring well FR-MW-1 and the boring was abandoned. Monitoring well FR-MW-1 was installed approximately 40 feet to the northeast. Indications of a measurable thickness of LNAPL were observed on the top of the water column in monitoring well FR-MW-1 during preparations to sample this well on June 17, 2004. A sample of the LNAPL was collected from this monitoring well which is located near the northeastern corner of the Site. The thickness of LNAPL in the monitoring well was 0.04 feet at the time of sampling. Approximately 0.20 milliliters of LNAPL was recovered in the process of sampling, leaving a trace sheen in the well. When the well was gauged again the following week 0.01 feet of LNAPL was observed. A measurable thickness of LNAPL has not been observed in any of the other nine monitoring wells, nor did LNAPL reoccur in FR-MW-1 during the investigation. This would suggest that the observed LNAPL was localized and limited to a relatively small area around monitoring well FR-MW-1. The laboratory analytical results indicated that the LNAPL was composed primarily of motor oil (1,100,000 mg/kg) with a specific gravity of 0.96 grams per milliliter. Several VOCs were detected in the sample, including; 1,3- dichlorobenzene, ethylbenzene, isopropylbenzene, tetrachloroethene, and total xylenes. PCBs were also detected in the LNAPL sample, with concentrations of 1,600 mg/kg of Aroclor 1242 and 320 mg/kg for Aroclor 1252.

The area was further investigated and it was found that the soil staining was observed within a discontinuous sand layer at the base of a wedge of fill materials encountered immediately downgradient of the toe of the landfill slope. This wedge of fill material measured approximately 10 feet thick at the toe of the landfill slope and pinched out toward the edge of the river. Based on these observations, it was determined the area of impact associated with the LNAPL observed in FR-MW-1 was limited to a relatively confined area around and downgradient of this well. It also was determined that the discontinuous sand layer observed at the base of the fill has been acting as a preferential pathway for the migration of these contaminants. The supplemental site characterization activities also included an inspection of the river bank downgradient of the existing monitoring well FR-MW-1 to identify and document any indications of LNAPL discharge to the river (e.g., sheen, staining, and odor). This inspection included approximately a 500-foot section of the river bank extending from a point north of stream sampling location FR-SW-3 to a point south of stream sampling location FR-SW-5. The only evidence of LNAPL discharge to the river was the observation of a trace sheen emanating from a thin sandy layer of soil along a short section of the river bank downgradient of the

LNAPL investigation area. This sandy soil layer observed along the river bank is likely directly connected to the sand layer in which the soil staining discussed above was observed to be preferentially migrating. A supplemental sediment sample (FR-SD-111004) was collected at this location. Based on the observations made during the supplemental soil boring, migration pathways of LNAPL may extend further south of sediment sample location FR-SD-111004 and near seep location USACE-E, where sheens were observed at the edge of the river. Further assessment of the LNAPL migration pathway will be performed during the design phase of this project to completely delineate the area of contamination.

5.6.5 Sediment Investigation and Results

Eleven sediment samples (FR-SD-1 through FR-SD-10 and FR-SD-111004) were collected from the locations illustrated on Figure 2. One of these sampling points (FR-SD-10) is located up stream of the Site and two of these sampling points (FR-SD-1 and FR-SD-2) are located down stream of the Site. The remaining sampling points are distributed along the Site boundary. The sediment sample FR-SD-111004 was collected in connection with the supplemental site characterization to assess conditions along the river bank at a location identified as exhibiting a trace amount of sheen during the river bank inspection for the LNAPL investigation. The contaminants with concentrations reported above the U.S. EPA Region 5 RCRA Sediment Ecological Screening Levels (ESLs) and metals with concentrations above the Ohio Erie/Ontario Lake Plain (EOLP) Reference Values are reported below.

SVOCs

One or more SVOCs were detected at concentrations in excess of ESLs in four sediment sampling locations (FR-SD-6, FR-SD-8, FR-SD-9, and FR-SD-111004). SVOCs with reported concentrations greater than the ESLs include: 4-methylphenol, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene), benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, dibenzo(a,h)anthracene, fluoranthene, fluorene, ideno(1,2,3-cd)pyrene, phenanthrene, and pyrene. This list of SVOCs is primarily composed of PAHs. Acenaphthene was reported at concentrations above the ESLs in sediment samples FR-SD-9 at 0.02 mg/kg and FR-SD-111004 at 0.13 mg/kg. Acenaphthylene was reported at a concentration above the ESLs in sediment sample FR-SD-9 at 0.011 mg/kg. Anthracene was reported at concentrations above the ESLs in sediment samples FR-SD-9 at 0.12 mg/kg and FR-SD-111004 at 0.48 mg/kg. Benzo(a)anthracene was reported at concentrations above the ESLs in sediment samples FR-SD-8 at 0.16 mg/kg, FR-SD-9 at 0.46 mg/kg, and FR-SD-111004 at 2.3 mg/kg. Benzo(a)pyrene was reported at concentrations above the ESLs in sediment samples FR-SD-8 at 0.2 mg/kg, FR-SD-9 at 0.44 mg/kg, and FR-SD-111004 at 2.7 mg/kg. Benzo(b)fluoranthene was reported at a concentration above the ESLs in sediment sample FR-SD-111004 at 4.5 mg/kg. Benzo(g,h,i)perylene was reported at concentrations above the ESLs in sediment samples FR-SD-8 at 0.2 mg/kg and FR-SD-9 at 0.3 mg/kg. Benzo(k)fluoranthene was reported at concentrations above the ESLs in sediment samples FR-SD-9 at 0.32 mg/kg and FR-SD-111004 at 2.9 mg/kg. Bis(2-ethylhexyl)phthalate was reported at a concentration above the ESLs in sediment sample FR-SD-111004 at 16 mg/kg.

Dibenzo(a,h)anthracene was reported at concentrations above the ESLs in sediment samples FR-SD-8 at 0.062 mg/kg, FR-SD-9 at 0.11 mg/kg, and FR-SD-111004 at 0.7 mg/kg. Fluoranthene was reported at concentrations above the ESLs in sediment samples FR-SD-9 at 1.1 mg/kg and FR-SD-111004 at 3.5 mg/kg. Fluorene was reported at a concentration above the ESLs in sediment sample FR-SD-111004 at 0.27 mg/kg. Ideno(1,2,3-cd)pyrene was reported at concentrations above the ESLs in sediment samples FR-SD-9 at 0.28 mg/kg and FR-SD-111004 at 1.2 mg/kg. Phenanthrene was reported at concentrations above the ESLs in sediment samples FR-SD-9 at 0.58 mg/kg and FR-SD-111004 at 2.1 mg/kg. Pyrene was reported at concentrations above the ESLs in sediment samples FR-SD- 8 at 0.36 mg/kg, FR-SD-9 at 0.95 mg/kg, and FR-SD-111004 at 2.3 mg/kg.

The highest concentration of SVOCs exceeding ESLs were detected in sediment sample FR-SD-111004, collected immediately downgradient of the LNAPL investigation area. The presence of these PAH compounds are likely related to the motor oil based LNAPL observed to be preferentially migrating within a sand layer from the vicinity of FR-MW-1 upgradient of this location. All but one of the 13 SVOCs (4-methylphenol) detected at concentrations exceeding ESLs in sediment samples FR-SD-6, FR-SD-8, and FR-SD-9 have been detected in soil samples collected from nearby soil borings. However, only four of the 13 SVOCS detected above the ESLs in sediment (i.e.: benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, and dibenzo(a,h)anthracene) were reported at concentrations in soil above the PRGs.

PCBs

PCBs were detected in five of the 11 sediment samples analyzed. However, a concentration of 3.3 mg/kg of Aroclor 1254 in sediment sample FR-SD-111004 was the only detection above the ESLs. The presence of this PCB detection is also likely related to the PCB-contaminated motor oil LNAPL observed to be preferentially migrating within a sand layer from the vicinity of FR-MW-1 upgradient of this location.

Metals

Ten of the 11 sediment samples had one or more metals with reported concentrations greater than the ESLs and/or the ELOPs. The metals observed to exceed relevant criteria include: antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, vanadium, and zinc. However, six of these metals (arsenic, chromium, copper, lead, nickel, and zinc) were also observed to exceed criteria in the background sediment sample collected up stream of the Site. Antimony was reported at concentrations above the ELOPs in nine samples ranging from 1.6 mg/kg (FR-SD-5) to 12.5 mg/kg (FR-SD-111004). Arsenic was reported at concentrations above the ESLs and/or the ELOPs in nine sediment samples ranging from 9.8 mg/kg (FR-SD-4) to 36.1 mg/kg (FR-SD-111004). Barium was reported at a concentration above the ELOPs in sediment sample FR-SD-111004 at 295 mg/kg. Cadmium was reported at concentrations above the ESLs and/or the ELOPs in seven sediment samples ranging from 0.84 mg/kg (FR-SD-6) to 94.5 mg/kg (FR-SD-111004). Chromium was reported at concentrations above the ESLs and ELOPs in sediment samples FR-SD-3 at 49.3 mg/kg, FR-SD-

10 at 54.2 mg/kg, and FR-SD-111004 at 424 mg/kg. Cobalt was reported at concentrations above the ELOPs in five sediment samples ranging from 12.2 mg/kg (FR-SD-8) to 23.6 mg/kg (FR-SD-111004). Copper was reported at concentrations above the ESLs and/or ELOPS in five sediment samples ranging from 31.9 mg/kg (FR-SD-9) to 445 mg/kg (FR-SD-111004). Lead was reported at concentrations above the ESLs and/or the ELOPS in sediment samples FR-SD-3 at 60.4 mg/kg, FR-SD-10 at 39 mg/kg, and FR-SD-111004 at 198 mg/kg. Mercury was reported at concentrations above the ELOPS in sediment sample FR-SD-3 at 0.147 mg/kg, and ESLs and ELOPS in sample FR-SD-111004 at 1 mg/kg. Nickel was reported at concentrations above the ESLs and/or ELOPs in nine sediment samples ranging from 23.6 mg/kg (FR-SD-6) to 374 mg/kg (FR-SD-111004). Selenium was reported at concentrations above the ELOPs in nine sediment samples ranging from 1.8 mg/kg (FR-SD-9) to 46.3 mg/kg (FR-SD-111004). Silver was reported at concentrations above the ESLs and ELOPS in sediment samples FR-SD-8 at 0.51 mg/kg and FR-SD-111004 at 3.2 mg/kg. Thallium was reported at concentrations above the ELOPs in sediment sample FRSD- 111004 at 9 mg/kg. Vanadium was reported at concentrations above the ELOPs in sediment sample FR-SD- 111004 at 56.9 mg/kg. Zinc was reported at concentrations above the ESLs and/or ELOPs in six sediment samples ranging from 123 mg/kg (FR-SD-6) to 715 mg/kg (FR-SD-111004).

5.6.6 Surface Water Investigation and Results

Two rounds of surface-water samples were collected to assess the potential for Site-related COPCs discharging into the Black River. The first round of surface-water samples was collected during December 2003 and the second round of surface-water samples was collected during May 2004. The results of these sampling events are summarized below. The following text summarizes analytes with concentrations reported above the U.S. EPA Region 5 RCRA ESLs for surface water, and the Ohio Outside Mixing Zone Average (OMZA) surface-water standards.

Metals

All 20 surface-water samples had concentrations of one or more total metals exceeding ESLs. Metals with reported concentrations greater than the ESLs include: cadmium, copper, lead, nickel, vanadium, and zinc. However, both copper and lead were also detected in the background surface water sample at concentrations exceeding ESLs. Cadmium was reported at concentrations above the ESLs in five surface-water samples ranging from 0.2 μg/L (FR-MW-4 and FR-SW-6 collected in December 2003) to 5.6 μg/L (FR-SW-7 collected in May 2004). Copper was reported at concentrations above the ESLs in all 20 surface-water samples ranging from 2.4 μg/L (FR-SW- 10 collected in December 2003) to 52.3 μg/L (FR-SW-7 collected in May 2004). Lead was reported at concentrations above the ESLs in eight surface-water samples ranging from 1.7 μg/L (FR-SW-10 collected May 2004) to 33.3 μg/L (FR-SW-7 collected May 2004). Nickel was reported at concentrations above the ESLs in surface-water samples FR-SW-7 (collected May 2004) at 38.1 μg/L and FR-SW-8 (collected May 2004) at 33.5 μg/L. Vanadium was reported at concentrations above the ESLs in surface-water samples FR-SW-7 (collected May 2004) at 27 μg/L and FR-SW-8 (collected May 2004) at 26.6 μg/L. Zinc was reported at concentrations above the ESLs in four surface-water samples ranging from 80.6 µg/L (FR-SW-5 collected May 2004) to 184 µg/L (FR-SW-4 collected May 2004).

6.0 Current and Potential Future Land and Resource Uses

For purposes of the human and ecological risk assessments for this Site, current and reasonably anticipated future land uses and current and potential beneficial groundwater uses were identified.

The Ford Road Landfill has no existing structures on the Site and has been inactive since the mid-1970s. A new residential development is located on the other side of the landfill, across Ford Road. This development began construction sometime around the late 1990s. The landfill itself is a vegetated cap and could be characterized as a greenway running along the Black River. The landfill is currently owned by the MetroParks and it is anticipated that the Site will be left as natural as possible after the remedy is implemented as requested by the owner. Institutional controls will be used, such as the placement of deed restrictions on the property to prevent intrusive actions and the development of structures for routine human occupancy on the landfill or drinking-water wells. It as anticipated that the Site will remain an undeveloped greenspace, owned by the Metroparks, to be used by recreational users and wildlife.

To determine the current groundwater use at the Site, a search of water well logs at the Ohio DNR identified 10 potable water wells at properties located within a one mile radius of the Site, all installed between the mid-1950s and mid-1960s. Based on depth of installation, several of these wells appear to have been installed in the overburden with the rest of the wells completed in the underlying shale bedrock. The City of Elyria Water Department was contacted to determine if these wells were currently in use. The City's water records confirmed that the 10 residences associated with the potable wells are connected to the public water supply. In addition, the City of Elyria's Public Utilities and Water Departments reported that current City regulations allow for the use of groundwater as a potable water supply only when a well exists on a property at the time of purchase, and that a property owner may not install a potable water well within the City of Elyria. According to regulations, all new developments located within the City must connect to the City's water supply. This regulation, coupled with the fact that the properties associated with the 10 water wells identified within a one mile radius of the Site are already connected to the City water supply, ensure that groundwater is not and will not be used as a potable water source in the Site vicinity.

7.0 Summary of Site Risks

The Ford Road Group, with oversight by U.S. EPA and Ohio EPA, prepared a screening-level human health evaluation (HHE) and screening-level ecological risk assessment (ERA) for the Ford Road Landfill, in order to evaluate potential risks to human health and the environment if no action is taken. This process characterizes current and future threats or risks to human health and the environment posed by contaminants at the Site. The risk assessment provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the baseline human health risk assessment and the ecological risk assessment for the Site.

In accordance with U.S. EPA guidance on preparing RODs, the information presented here focuses on the information that is driving the need for the response action at the Ford Road Landfill and does not necessarily summarize the entire baseline human health or ecological risk assessment. Further information is contained in the risk assessment within the RI, included in the Administrative Record for the Site.

7.1 Summary of Human Health Evaluation

The approach used in the HHE relies on Tier I screening-level evaluations to identify media and exposure pathways that may pose unacceptable risks and more detailed (Tier II) baseline risk assessments may be considered if the Tier I screening-level evaluations identify potentially significant risks. The HHE evaluated the potential risks that could result to people from exposure to the contaminants at the Site. The HHE conducted at this Site used Risk Assessment Guidance for Superfund (RAGS) and other supplemental guidances to evaluate human health risks. The human health exposure assessment identified possible receptors and potentially completed pathways of exposure. The information is used in the HHE helped define Site-specific risk-based concentrations (RBCs).

7.1.1 Identification of Contaminants of Concern

A variety of contaminants including pesticides, PCBs, inorganics, VOCs and SVOCs, and media (soil, sediment, surface water, groundwater, and leachate) were sampled at the Site. To identify COPCs in these media, maximum chemical concentrations were compared to human health-based screening values. For soils, the COPC screening used the results from forty soil samples that were collected from the Site in 2003 and 2004. As a conservative assumption, both surface and subsurface soil samples were included in the analysis. Sediment data for preliminary COPC screening used the eleven samples that were collected from the Black River in 2003, and the results from a single sediment sample collected in 2004. Soil and sediment data were compared to PRGs for residential soil, while surface water and leachate data were compared to PRG for tap water and Ohio EPA Surface Water Quality Standards for human health (non-drinking-water standards for the Lake Erie drainage basin). Groundwater data was also compared to PRGs for tap water. Constituents with maximum detected concentrations that exceeded their associated screening values were retained as COPC. However, consistent with U.S. EPA RAGs, those constituents that were detected at a frequency of 5% or less (regardless of whether they exceeded their associated screening values) were eliminated as COPCs. Table 3 shows a list of each COPC related to each specific media for the Site.

7.1.2 Exposure Assessment

The risk assessment evaluated several exposure pathways for humans to be exposed to COPCs within the Ford Road Landfill. An exposure pathway is a means by which a person may come in contact with site contaminants. The exposure assessment estimates the magnitude, frequency, duration, and routes of exposure to the COPCs at the site, and describes all assumptions, data and methods used to evaluate the potential for human exposure to the site contaminants. The exposure pathways evaluated were:

Current Use Scenarios

Current Use Scenario

Currently, the landfill and adjacent areas are accessible to humans. Although the area does not serve as a formal public recreational area, people may access the Site for hiking and nature walks. However, there are no constructed or maintained trails, formal access points, or parking areas. Hunting in the area may also occur, although the proximity of homes and other public use areas limits the potential for hunters. However, for the development of the HHE for the Site, it is assumed that current and potential receptors are recreational users engaged in outdoor activities such as hiking, biking, or bird watching, and occasional maintenance workers (e.g., workers that maintain the landfill cover by periodic mowing). It is also assumed that recreational users of the Site may include children and adults. The follow include the exposure pathways identified in the current use scenario:

- One primary exposure pathway for human receptors is incidental ingestion of and dermal contact with soil at the Site. The exposure to COPCs in soil via the inhalation pathway is not expected to be significant, though, since soil COPCs consist primarily of inorganics, PCBs, and PAHs and the majority of Site soils are covered with vegetation, which mitigates the potential for generation of fugitive dust.

- Potential exposure to COPCs in groundwater is not expected to be significant since no active potable water wells are in use within a one-mile radius of the Site. This was confirmed by City of Elyria Water Department records which document that the 10 residences identified in a search of Ohio DNR water well logs had installed wells between the mid-1950s and mid-1960s but they are all currently connected to the public water supply. In addition, the depth to groundwater (2004 data range from 4.5 to 26 feet below ground surface) prevents exposure to COPCs in groundwater via direct contact. Also, several potential seep locations were identified onsite, but exposure to leachate is not expected to be significant due to the limited nature of these seeps coupled with the dense vegetation along the slopes of the landfill.

- The portion of the Black River adjacent to the Site may be used for recreational activities such as fishing, wading, and swimming. Therefore, recreational receptors (i.e., children and adults) may be exposed to sediment and surface water within the Black River via the incidental ingestion and dermal contact exposure pathways. However, the intermittent stream adjacent to the Site is relatively small and is only inundated during significant rainfall events, which precludes its use for recreational activities such as fishing, swimming, or wading. Therefore, surface water from the ditch adjacent to the Site is not intermittent stream, recreational receptors may be exposed to substrate (i.e., soil/sediment) within the stream channel.

- Consumption of contaminated fish from the Black River is a potentially complete exposure pathway. The observations of Site-related PCB concentrations in the sediment at the edge of the river indicate that the fish ingestion exposure pathway is potentially complete. PCBs are known to bioaccumulate in fish, and have been identified as a COPC for sediment.

Future Use Scenarios

Future Use Scenario

In terms of future land use, the property may be included as part of an environmental greenspace, and will likely be left in a natural or semi-natural condition. Future residential use of the Site and groundwater withdrawal will be restricted by institutional controls. For the purposes of the HHE, future land use at the Site is anticipated to be recreational. Potential future recreational development of the Site may include walking or biking trails. However, no recreational facilities such as playgrounds or campgrounds are planned for construction at the Site, as they may compromise the landfill cap. Under these land-use scenarios, current and potential receptors are recreational users engaged in outdoor activities such as hiking, biking, or bird watching, and occasional maintenance workers (e.g., workers that maintain the landfill cover by periodic mowing). Again, it is assumed that recreational users of the Site may include children and adults.

7.1.3 Toxicity Assessment

The exposure parameters used to develop the Site-specific RBCs include standard U.S. EPA reasonable maximum exposure (RME) default (e.g., exposure duration, soil ingestion) and Site-specific values (e.g., exposure frequency). Target risk levels used to calculate RBCs include a hazard quotient of 0.1 for non-carcinogens, and an incremental cancer risk of one-in-one-million (1 x 10-6) for carcinogens. The RBCs were calculated using slope factors (SFs) and reference doses from the U.S. EPA Integrated Risk Information System (IRIS) on-line database and other sources, as appropriate. Arsenic, Aroclor 1242, and Aroclor 1254 have both cancer and non-cancer toxicity values, therefore, the most conservative RBC values for soil and sediment were selected for these COPCs. Tables 4, 5, 6 and 7 illustrate the development of the RBCs for both soil and sediment.

After the screening process, it was determined that the primary risk-driving chemicals of concern at the site include lead, PAHs and PCBs. The main target for lead toxicity is the central nervous system. Higher levels of lead exposure can also damage the brain and kidneys. Lower levels of lead exposure in children can adversely affect mental and physical growth. Several PAHs, including benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene,and dibenz(a,h)anthracene are considered by U.S. EPA to be Group B2, probable chrysene,and dibenz(a,h)anthracene are considered by U.S. EPA to be Group B2, probable human carcinogens. Noncancer adverse health effects include damage to the reproductive system, skin, and immune system. PCBs are considered to be Group B2, probable human carcinogens. Noncancer adverse health effects from exposure to PCBs include reduced birth weight, problems with motor skills, reduced short-term memory, acne-like skin conditions, and damage to the immune system, liver, stomach and thyroid gland.

7.1.4 Risk Characterization

U.S. EPA's risk guidance identifies a target cancer risk range of 10^{-4} to 10^{-6} (1 in 10,000 to 1 in a million) excess cancer risk for Superfund sites. If site contamination poses a risk of less than 10^{-6}, there is generally no need for action. Cancer risks greater than 10^{-4} generally require action to reduce and/or abate the risk, and cancer risks between 10^{-4} and 10^{-6} present a potential cause for remedial action. U.S. EPA's guidance also indicates that a non-cancer hazard index exceeding 1.0 generally is a cause for action to reduce and/or abate the potential non-cancer risks associated with site contamination, while a hazard index less than 1.0 generally does not require action.

Outdoor workers (i.e., maintenance workers) may be exposed to shallow subsurface soil, which is defined as 0 to 2 feet below ground surface. Maintenance workers and recreational users of the Site are not expected to be involved in any intrusive activities (e.g., soil excavation) that would expose them to subsurface soils at the Site. Therefore, although COPCs were identified using surface and subsurface soil data, only surface soil data (<2 feet bgs) are compared to Site-specific soil RBCs.

Benzo(a)pyrene exceeds the Site- soil RBC in seven of the 19 surface soil samples (FR-HB2-S1, FR-HB3-S1, FR-HB5-S1, FR-HB6-S1, FR HB9-S1, FR-HB12-S1, and FR-SB-34-S1), and dibenzo(a,h)anthracene exceeds the Site-specific soil RBC in two samples (FR-HB2-S1, FR-HB9-S1). For PCBs, only three of the 19 surface soil samples (FR-HB4-S1, FRHB9- S1, and FR-HB10-S1) exceed the Site-specific soil RBC. Sample FR-HB4-S1 is located along the south slope of the landfill, and samples FR-HB9-S1 and FR-HB10-S1 are located along the north slope of the landfill. Antimony, chromium, and thallium concentrations exceed the Site-specific RBC in several of the surface soil samples located along the north and south slopes of the landfill. Cadmium exceeds the RBC in only one sample (FR-HB4-S1). Nickel exceeds the RBC in one sample (FR-HB6-S1) along the south slope of the landfill, and in two samples (FR-HB9-S1 and FR-HB11-S1) along the north slope of the landfill. Lead exceeds the PRG (400 mg/kg) in six of the 19 surface soil samples. Arsenic and iron concentrations in each of the 19 surface soil samples collected along the north and south slopes of the landfill exceed the Site-specific soil RBC. It should be noted that Site-specific background concentrations of arsenic and iron also exceed the Site specific RBC and/or PRGs for residential soil (arsenic exceeds the PRG and Site-specific RBC in all 10 background samples; iron exceeds the PRG in eight of the 10 background samples and exceeds the RBC in all 10 background samples). The presence of these metals at elevated concentrations in the background soil samples indicates that concentrations of certain

Benzo(a)pyrene exceeds the Site-specific sediment RBC in only two of the 11 sediment samples (FR-SD-9 and FR-SD-111004). Likewise, benzo(b)fluoranthene, dibenz(a,h)anthracene, PCBs (Aroclor 1254), cadmium, chromium, and thallium concentrations only exceed the Site-specific sediment RBC in one of the 11 sediment samples (FR-SD-111004). Iron concentrations exceed the Site-specific sediment RBC in three of the 11 sediment samples. Arsenic concentrations in each of the 11 sediment samples exceed the sediment RBC. However, elevated concentration of arsenic in the sediment sample collected upstream of the Site (FR-SD-10) indicates that arsenic may not be Site-related.

Although there are a number of uncertainties inherent in risk assessments, a conservative approach was taken to evaluate the potential risks associated with the Site. The screening level HHE approach applied conservative screening levels to determine COPCs for the Site. Site-specific risk –based concentrations for recreational users, including both adults and children, were derived for recreational exposures to the site soils. Maximum concentrations were used to compare to the risk-based soil levels. Sampling locations were biased to areas of likeliest highest concentrations based on the observations of waste materials and landfill impacts. The soils with the highest concentrations are located on the steep northern and southern side slopes that are difficult to access due to the steep terrain and dense vegetation.

It was determined that exposure to any leachate is not expected to be significant, due to the limited nature of the seeps and the dense vegetation in these areas of the Site.

In summary, regarding the COPCs at the Site:

- For soil and sediment, the COPCs are PAHs, PCBs, and metals.

- For surface water the COPCs are one SVOC (bis[2-ethylhexyl]phthalate) and five metals (aluminum, antimony, arsenic, iron, and thallium).

- For groundwater, the COPCs are two VOCs (benzene and vinyl chloride), one SVOC (bis[2-ethylhexyl]phthalate), PCBs, and several metals.

- For leachate, the COPCs are two VOCs (benzene and chloroform), one SVOC (bis[2-ethylhexyl]phthalate), three pesticides (beta-BHC, dieldrin, and heptachlor), and several metals.

The conservatism of the Tier I screening-level approach is indicated by the fact that background soil concentrations of arsenic and iron (and the upstream sediment concentration of arsenic) also exceeds the risk-based values.

- Most of the COPC that have been identified are inorganics, PAHs and PCBs.

- Most COPC were identified in onsite soil and/or groundwater, with relatively fewer COPC identified for sediment, surface water, and leachate.

- Potential human exposure pathways associated with the Site include direct contact and incidental ingestion of soil, inhalation of fugitive dust, and dermal contact and incidental ingestion of sediment and surface water in the Black River. Human consumption of contaminated fish from the Black River is also a potentially complete exposure pathway.

- PCBs were also identified as a COPC for sediment, but only one sample (FR-SD-111004 = 3.3 mg/kg) had PCB concentrations above 1 mg/kg. However, a sandy soil layer containing an oily sheen was observed along the river bank at this sampling location. In addition, sample FR-SD-111004 is located downgradient from monitoring well FR-MW-1, which had a measurable thickness of an oil LNAPL with elevated concentrations of Aroclors 1242 and 1254. The sheen area does not appear to have led to widespread PCB contamination in the Black River, as indicated by the fact that PCBs were not detected in sediment samples collected downstream at FR-SD-1 and FR-SD-2. This area will be further delineated during the Remedial Design.

- COPC concentrations of two PAHs (benzo[a]pyrene and dibenz[a,h]anthracene) and several metals (and PCBs for two samples) exceed the Site-specific soil RBCs. However, the presence of metals (i.e., arsenic and iron) in background soil samples at concentrations exceeding the Site-specific soil RBCs and/or the PRGs for residential soil indicates that these constituents may not be Site-related.

- Lead concentrations in six of the 19 surface soil samples exceed the PRG (400 mg/kg).

- COPC concentrations of benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and PCBs (Aroclor 1254) exceed the Site specific sediment RBC in one sediment sample (FR-SD-111004); benzo(a)pyrene also exceeds the Site-specific RBC in sediment sample FR-SD-9. Metal concentrations (i.e., arsenic, cadmium, chromium, iron, and thallium) in sample FR-SD-111004 also exceeded their associated Site-specific sediment RBCs. Arsenic concentrations in each of the 11 sediment samples (including the sediment sample collected upstream of the Site) exceed the Site-specific sediment RBC. The presence of arsenic in the upstream sediment sample may indicate that arsenic is not Site-related.

7.2 Summary of Ecological Risk Assessment

The ecological risk assessment considers those chemicals that were detected in surface water, sediment, and/or surface soils. The assessment incorporates both measured and modeled estimates of exposure, the available guidance and published information on the environmental fate and toxicities of the chemicals evaluated, and the expected/known habitats and likely species in the area. More detailed information can be found in the RI/FS.

7.2.1. Site Characterization

The Site is bordered by an intermittent stream and sewer main to the north, a ravine and rural land to the south, the Black River to the east, and Ford Road to the west. Cover type for the Site and surrounding area was identified by the dominant vegetative species and classification of similar areas into ecological communities. The landfill and immediate surrounding area is a mixture of field, scrub shrub, floodplain forest, and upland forest habitat cover types as described below.

Field – Most of the existing landfill cover is classified as field cover type. Field cover type consists of low herbaceous vegetation including forbs and grasses. This cover type is typically inhabited by passerine birds and small mammals (e.g. mice, shrew). Larger mammals (e.g. deer, red fox) and reptiles (e.g. snakes) may also use the area for foraging.

Scrub-Shrub – Scrub-shrub habitat is located along the slope of the landfill and on the west side of Ford Road. The scrub-shrub plant community includes deciduous shrubs, herbaceous vegetation (e.g., grasses), and saplings. This cover type is typically used for foraging, nesting, and cover by various terrestrial species.

Upland Forest – Upland forest habitat is located along the northern and southern boundary of the landfill. The upland forest cover type includes mature trees, which are predominantly hardwoods (e.g., black cherry, white ash, white oak, red oak), and understory vegetation such as grasses, shrubs, and other species. The upland forest covert type provides habitat to arboreal mammals (e.g., raccoon, squirrel), and passerine birds may use the forest borders as edge habitat for nesting, breeding, shelter, and feeding. Wildlife may also forage on mastproducing trees (e.g., oaks).

Floodplain Forest – Floodplain forest is a lowland hardwood forest community found along rivers. The floodplain forest cover type is located east of the landfill between the upland forest and the Black River Floodplain forests provide suitable habitat for both semi-aquatic and terrestrial fauna due to fluctuating water levels and nutrient-rich soils. Terrestrial species (e.g., raccoon, squirrel) may use this cover type for nesting, breeding, shelter, and feeding. Several types of bird species (e.g. songbirds, waterfowl, and occasional raptors), amphibians (e.g. frogs), reptiles (e.g. turtles), and large mammals (e.g. deer) may also use this cover type.

Black River – Fish and wildlife resources may also be associated with the Black River east of the Site. The river provides suitable habitat for reptiles/amphibians, benthic invertebrates, and fish. Birds and mammals from surrounding habitat may use the river as a drinking-water source and/or a source of food. Evidence of beaver use was observed near sample locations FR-MW-2 and FR-MW-3.

The Site is located within the Black River Reservation which is part of the Lorain County Metro Park District, and follows the Black River as it meanders from Elyria to Lorain. This natural area includes unique habitat types (e.g., shale cliffs, wetlands, a remnant prairie), and a 3.5-mile all-purpose trail located approximately a mile downstream of the Site. The Cascade-Elywood Park is located along the Black River, approximately 2 miles upstream of the landfill. Three potentially threatened plant species have been recorded along the Black River downstream of the Site. These species are butternut, round-leaved dogwood, and Canada buffalo-berry.

Information from the U.S. Fish and Wildlife Service indicates that the Site is within the range of four federally listed threatened or endangered species, including one mammal, the Indiana bat, two species of birds, the bald eagle and piping plover, and a snake species, (eastern massasauga). USFWS records, however, indicate that the nearest eagle nest is 2.5 miles northeast of the Site, that no piping plover habitat occurs onsite, and it is unlikely that the massasauga habitat is present. The habitat of the Indiana bat generally consists of caves during the winter months, and man-made structures and possibly hollow trees during the summer months (Burt and Grossenheider, 1980). The Indiana bat may utilize wooded habitats in the vicinity of the Site, but is not expected to utilize Site resources because the landfill has very few mature trees.

7.2.2 Ecological Toxicity Assessment

The purpose of the ecological toxicity assessment is to identify ecological screening criteria for each COPC. These screening criteria are similar to those values that were used for the COPC identification, except that they represent estimates of concentrations above which ecological effects may occur, and may be less conservative than the COPC screening values. Regardless, these screening criteria are still conservative and do not necessarily provide a quantitative estimate of risk.

The soil screening values that were used to evaluate COPC concentrations are the U.S. EPA ecological soil screening levels (Eco-SSLs). Eco-SSLs are concentrations that are protective of ecological receptors that commonly come into contact with soil or ingest biota that live in or on soil, and should be used during the screening-level risk calculation. Similar soil-screening values from Oak Ridge National Laboratory are also used to screen soils, and are used for instances where U.S. EPA Eco-SSLs are not available. For sediment, the screening values that are used to evaluate COPC concentrations were the consensus-based sediment quality guidelines developed by MacDonald et al. These values include threshold effect concentrations (TECs) and probable effect concentrations (PECs). TECs are intended to identify concentrations below which harmful effects on sediment-dwelling organisms are not expected, and PECs identify concentrations above which harmful effects on sediment-dwelling organisms are expected to occur frequently (MacDonald et al., 2000). For surface water and leachate, screening values are the Ohio EPA Water Quality Standards for Aquatic Life (OAC 3745-1-07). These values were also used in the COPC screening step.

7.2.3 Ecological Risk Characterization

The ecological risk characterization is similar to the COPC screening in that it is based on a comparison of detected concentrations to screening criteria. In general, ecological risk-based screening values are not available for organics. However, the single detected concentration of dieldrin (FR-HB2-SI = 0.0025 mg/kg) exceeds the Eco-SSLs. For inorganics, soil COPC concentrations frequently exceed the screening values. Despite the fact that background concentrations frequently exceed the screening values, onsite soil concentrations for several COPC are higher than background. Given the frequency of the screening value exceedances in onsite samples, potential ecological risks associated with soil exposure cannot be discounted.

For organics, two of the sediment samples (FR-SD-8 and FR-SD-9) exhibit concentrations that are between the TEC and PEC values. For one sample (FR-SD-111004), SVOC concentrations often exceed both the TEC and the PEC. Metals concentrations for most sediment samples rarely exceed the PEC values. An exception is sample FR-SD-111004, which exceeds the PEC for several metals. Based on this evaluation, potential ecological risks for sediment are largely associated with sediment in the vicinity of FR-SD-111004.

Surface-water data were compared to the Ohio EPA Water Quality Standards for Aquatic Life (Outside Mixing Zone Average [OMZA] and Inside Mixing Zone Maximum [IMZM]). All of the 2003 surface-water data (both total and dissolved) are below the OEPA standards. For 2004, several samples exceed OMZA water-quality standards for one or more COPC. However, the magnitude of exceedance is less than one order of magnitude, and these concentrations are less than IMZM water quality standards. Given the lack of widespread significant exceedance of surface-water standards, the relative risks associated with potential surface-water exposure is expected to be low.

Leachate data were compared to the Ohio EPA Water Quality Standards for Aquatic Life (OMZA and IMZM). Several of the leachate samples have COPC concentrations (both total and dissolved) greater than the Ohio EPA OMZA standards. However, the majority of these concentrations are less than the IMZM standards (copper was the only constituent to exceed IMZM standards; these exceedances are for total recoverable copper in two leachate samples from location USACE-F), and the relative risks associated with potential leachate exposure are expected to be low. First, exceedances of the OMZA standards are less than one order of magnitude. Second, the seeps are ephemeral in nature and do not represent suitable habitat for most aquatic receptors.

Although there are a number of uncertainties inherent in risk assessments, a conservative approach was taken to evaluate the potential risks associated with the Site. The screening level ERA approach applied conservative screening levels to determine ECOPCs for the Site. Sampling locations were biased to areas of likeliest highest concentrations based on the observations of waste materials and landfill impacts. The higher concentrations were located within the uncovered waste areas that will be remediated.

7.2.4 Ecological Risk Conclusions

For the screening-level ERA, the COPCs identified for the Site include PAHs, PCBs/pesticides, and inorganics for soil, sediment, surface water, and leachate. The highest potential ecological risks associated with the Site are likely to be in association with elevated metals in the soils around the slope of the landfill. Potential risks associated with leachate, surface water, and sediment are expected to be relatively low, with the exception of sediment in the vicinity of sample FR-SD-111004 and this will be addressed under the planned remedy.

8.0 Remedial Action Objectives and ARARs

8.1 Remedial Action Objectives (RAOs)

RAOs are developed as medium-specific goals or objectives for the protection of human health and the environment. RAOs for the Site are based on the results of the screening-level risk assessments, applicable rules and regulations, discussions with and input from the U.S. EPA, Ohio EPA and the Ford Road Group, and other Site-specific goals. Site RAOs are as follows:

- Minimize the potential for direct contact exposures of human and ecological receptors to COPCs in Site soils;
- Reduce potential risks to human health and the environment associated with Site soils, sediment, groundwater, and surface water; and
- Reduce the possibility for COPC transport and/or migration.

To achieve these remedial objectives a remedial alternative should accomplish the following goals:

- Mitigate the potential for direct contact, incidental ingestion and fugitive dust exposures of recreational receptors (i.e., adults and children) to surface soils along the landfill slope with constituent concentrations exceeding Site-specific soil RBCs by reducing all concentrations to below the RBCs;
- Mitigate risk to humans related to the fish ingestion exposure pathway by eliminating potential future contributions of PCBs to the Black River from the Site;
- Mitigate the potential for dermal contact and incidental ingestion exposures of recreational receptors (i.e., adults and children) to the localized sediments along the edge of the Black River downgradient of the LNAPL investigation area with constituent concentrations exceeding the Site-specific sediment RBCs by reducing all concentrations to below the RBCs;
- Mitigate the potential for dermal contact and incidental ingestion exposures to ephemeral leachate seeps with constituent concentrations exceeding the Site-specific RBCs by reducing all concentrations to below the RBCs; and
- Mitigate the potential for direct contact, incidental ingestion, and food chain exposures of ecological receptors to COPCs in surface soils, sediments, and surface water by reducing

to concentrations below USEPA ecological soil screening levels, sediment threshold effect concentrations (TECs) , or Ohio EPA water quality standards, respectively.

8.2 Applicable or Relevant and Appropriate Requirements (ARARs)

CERCLA, as amended by SARA, specifies that Superfund remedial actions must comply with the substantive requirements of federal and state environmental laws. Such requirements may be ARARs. In addition to ARARs, federal and state advisories and guidance documents exist that, although not binding regulations, contain information "to be considered" (TBC). ARARs and TBCs are important in developing remedial objectives that comply with regulatory requirements or guidance (as appropriate). The identification of site-specific ARARs is based on specific constituents at a site, the various response actions proposed, and the general site characteristics. As such, ARARs are classified into three general categories:

- **Chemical-Specific ARARs** – specific to the type(s) of constituents, pollutants, or hazardous substances at a site; include state and federal requirements that regulate contaminant levels in various media;

- **Action-Specific ARARs** – specific to the cleanup activities being considered; usually technology- or activity-based; regulatory requirements that define acceptable excavation, treatment, and disposal procedures; and

- **Location-Specific ARARs** – specific to actions at the geographic location; requirements for contaminant concentrations or remedial activities resulting from a site's physical location (e.g., wetlands or floodplains).

Potentially applicable federal and state ARARs and TBCs are summarized in 8A-8C.

9.0 Description of Alternatives

Following development of the RAOs, a screening and evaluation of potential remedial alternatives was conducted in accordance with CERCLA and the NCP in the FS Report.

To support the development of potential remedial alternatives used to achieve the RAOs several General Response Actions were identified. The General Response Actions are typically media-specific technology types that may be used to satisfy one or more of the RAOs. For the Site, the General Response Actions are grouped into nine broad categories:

1. No Further Action: This includes no new or additional remedial activities or technologies and serves as a baseline for comparing the overall effectiveness of other remedial technologies.
2. Institutional Controls: Institutional controls generally consist of nonintrusive legal and/or administrative controls that reduce potential exposure to impacted materials and/or

mitigate the potential for jeopardizing the integrity of the selected remedy (e.g., an engineered cap).

3. Monitoring: Monitoring activities include periodic collection of field samples (e.g., soil, sediment, leachate, and/or groundwater) and/or performing visual reconnaissance to monitor changes or improvements in Site conditions and any associated remedy.
4. Engineering Controls: Engineering Controls include techniques to reduce erosion along the perimeter of the existing surface cover and reduce the transport of COPCs.
5. Removal: Removal consists of excavation of select areas outside of the landfill proper to remove soils that may pose a potential risk.
6. *In Situ* Containment: *In situ* containment generally consists of enhancing the existing surface cover by placing additional low-permeability material in thin or eroded sections over the subject area.
7. Groundwater/Leachate Collection and Treatment: Groundwater/leachate collection and treatment generally involves extracting groundwater/leachate out of the ground and subsequently treating the extracted water onsite or at an approved offsite facility.
8. Hydraulic Modifications: Hydraulic modifications generally involve groundwater extraction and/or reinjection to modify hydraulic conditions and minimize the potential for migration of affected groundwater/ leachate. Depending on the specific extraction location, extracted groundwater may require treatment prior to discharge or reinjection.
9. *In Situ* Groundwater/Leachate Treatment: *In situ* groundwater/leachate treatment generally involves installing impermeable walls ("funnels") and permeable "gates" in the shallow subsurface perpendicular to groundwater flow or other applicable methods that could be identified as part of design. The funnels direct the shallow groundwater through the gates. The gates comprise treatment media material that will react with the impacted groundwater to reduce COPC concentrations. Barrier treatment walls consisting entirely of treatment media are a viable alternative to a funnel and gate system.

General Response Actions retained after a screening process were combined to develop two sets of potential remedial alternatives: one for the portion of the Site within the limits of the landfill, including cascaded waste on the side slopes, and one for the area of interest outside of the landfill limits.

Remedial Alternatives: Within the Landfill Limits

- Alternative 1 – No Further Action
- Alternative 2 – Monitoring and Institutional Controls
- Alternative 3 – In-Situ Containment with Surface Cover Enhancement
- Alternative 4 – Groundwater/Leachate Control:
    - Alternative 4a – In-Situ Barrier Treatment Wall.
    - Alternative 4b – Pump and Treat.

Remedial Alternatives: Outside the Landfill Limits

- Alternative A – Select Removal of Specifically Identified Areas Outside of Landfill Limits

- **Alternative B – In-Situ Containment by Extension of Existing Surface Cover Outside of Landfill Limits**

The Remedial Alternatives that are specific to the areas outside of the landfill limits are not "stand alone" remedial options. These two choices were included as a possibility to use in conjunction with the first four alternatives.

9.1 Description of Remedy Components

Each of the alternatives is briefly described below. More detailed information about each of the alternatives can be found in the FS Report, which is included in the Administrative Record for the Site.

Alternative 1: No Further Action

(1) *Description of Alternative*: Under this alternative, no further remediation would occur at Ford Road Landfill. No monitoring would be conducted to assess the overall condition of the landfill over time. Naturally-occurring processes would occur on their own, over time. No institutional controls would be put in place. Evaluation of the No Action or No Further Action alternative is required by the NCP and provides a baseline against which the other potential remedial alternatives are evaluated.

(2) *Treatment Technologies and Materials they will Address*: There would not be treatment of any materials under this alternative.

(3) *Containment Component*: There is no containment component associated with this remedy.

(4) *Costs*: The only costs associated with this alternative would be for annual site inspections over a 15-year period. The total estimated cost is approximately $46,000 and is provided in 2006 dollars.

Alternative 2: Monitoring, Natural Attenuation and Institutional Controls

(1) *Description of Alternative:* This alternative would be limited to the performance of long-term monitoring activities and the application of relevant institutional controls. The monitoring program would involve regular Site inspections, groundwater sampling and other Site monitoring activities. Natural attenuation involves various naturally occurring processes by which constituents are degraded or attenuated. Institutional controls generally consist of nonintrusive legal and/or administrative controls that reduce potential exposure to impacted materials and/or to mitigate the potential for jeopardizing the integrity of the selected remedy. Typical institutional controls involve the placement of deed restrictions on the property to prevent intrusive actions and future development that could potentially compromise the landfill cover including the construction of structures for routine human or drinking-water wells.

(2) *Treatment Technologies and Materials they will Address*: The only treatment that would be occurring under this alternative is associated with natural attenuation.

(3) *Containment Component*: There is no containment component associated with this remedy.

(4) *Costs*: The costs assume implementation of deed restrictions and installation of a Site perimeter fence. The total costs of this alternative are estimated to be $624,000. The Operation and Maintenance (O&M) costs assume annual visual inspections of the Site for 15 years and sampling activities for 15 years. The total estimated cost is provided in 2006 dollars.

Alternative 3: In Situ Containment with Surface Cover Enhancement

(1) *Description of Alternative*:

- This alternative would involve implementing the measures outlined under Alternative 2 (e.g., monitoring and institutional controls) in conjunction with the focused removal of waste on the side slopes and enhancement of the existing surface cover over the landfill, as appropriate.

- The enhancement of the landfill cover would involve Site grading to improve surface water control and the placement of additional low-permeability material over those areas of the landfill that do not currently meet the requirement that a minimum 2-foot cover exists over the subject area. As per Ohio EPA DSIWM Guidance Document No. 0123: Construction of a 1976 Cap System (1995) the testing specifications for the cover material will include: moisture/density relationship; moisture content range; permeability; and grain size analysis. The construction specifications will include: compaction to at least 95% of the maximum Standard Proctor Density (ASTM D-698) or 90% of the maximum Modified Proctor Density (ASTM D-1557); compaction using loose lifts, no greater then eight (8) thick prior to compaction; and monitoring of compaction.

- Cascaded waste was encountered over an approximately 5,000 square foot area on the north slope of the landfill and an approximately 15,000 square foot area on the south slope of the landfill, both outside the limits of waste. Alternative 3 will address this waste by consolidation within the existing or extended limits of the landfill or disposal at a licensed facility, if necessary. It was assumed that a limited amount of the material will require offsite disposal and most of the material will be consolidated within the limits of the landfill. Material consolidated within the limits of waste will be placed in lifts and compacted in areas on the top of the landfill after the existing cover has been stripped for reuse. Surficial wastes will be removed to native material, unless the underlying material exceeds regulatory limits. Backfill would only be expected to be placed in these areas, as required, to result in appropriate stable slopes beyond the limits of the landfill, depending on the final grade.

- The possibility of slope modifications will also be addressed under Alternative 3. Currently, most areas of the landfill have side slopes in the range of 1.25-1.5:1 horizontal: vertical ratio and are not imminently unstable. The proposed modifications to the existing cap, though, may affect the stability of the side slopes. It is assumed that the northern slope, southern slope, the northern portion of the eastern side slope, and approximately half of the southern portion of the eastern side slope (approximately 73,000 square feet, total) may require stabilization. Should it be found during the Remedial Design that further modifications are required to maintain slope stability during and after cap modifications, possible response actions could include laying back the side slopes from the existing toe, extending the existing toe with appropriate adjustment of the side slopes, or adding a structural enhancement at the existing toe then adjusting the side slopes from the top of the structure.

- Upon completion of the cover enhancements and other components of Alternative 3, the presence of a continuous 2-foot cover over the entire landfill surface would serve to significantly reduce potential exposure to impacted media and migration of COPCs by reducing the volume of precipitation that infiltrates through the landfill.

(2) *Treatment Technologies and Materials they will Address*: There are no treatment technologies associated with this remedy.

(3) *Containment Component*: This alternative can be largely categorized as a containment remedy. Most of the cascaded debris found on the side slopes of the landfill would be placed back into the existing landfill, and the landfill as a whole would be re-graded and capped appropriately. The landfill cap would meet the 1976 capping requirements (Ohio EPA ARAR) and all other federal and state requirements.

(4) *Costs*: The costs assume inclusion of the work items in Alternative 2 as well as placement of two feet of clay and a geotextile layer over the northern and southern side slopes (approximately 8,100 square yards), assuming that 50% of the cover material required will be imported. The costs also assume that approximately 250,000 cubic yards of material could be affected by slope modifications to a 3:1 slope and 1,500 cubic yards of cascaded waste will be relocated. The O&M costs assume annual visual inspections of the Site for 15 years and sampling activities for 15 years. The integrity of the landfill cap will be determined every year by visual inspection. Maintenance activities will be conducted, if needed, to maintain the integrity of the landfill cap. The total costs associated with implementing Alternative 3 are estimated to be $3,367,000. The total estimated cost is provided in 2006 dollars.

Alternative 4a – Groundwater/Leachate Control – In Situ Barrier Treatment Wall

(1) *Description of Alternative*:

- This technology would involve implementing all of the components discussed in connection with Alternative 3 in conjunction with installing a downgradient in situ permeable barrier treatment wall to intercept groundwater in order to react with and mitigate COPCs in groundwater. This alternative assumes that the treatment wall would be approximately 220 feet long, 4 feet wide, and 15 feet deep and would be located to intercept groundwater flow beyond the toe of the landfill slope from along the Black River.

- The assumed treatment media selected for this comparison is granular activated carbon. The selection of granular activated carbon was based on its versatility to address a variety of COPCs and because it is the most commonly used treatment media

(2) *Treatment Technologies and Materials they will Address*: The remedy would involve the use of granular activated carbon to treat contaminated groundwater flowing from the landfill and into the Black River. The installation of this technology could reduce the potential for migration of COPCs in groundwater and reduce their toxicity.

(3) *Containment Component*: This alternative has the same containment component that Alternative 3 would include since it involves implementing everything dictated under Alternative 3, as well as a barrier treatment wall.

(4) *Costs*: The total capital cost to implement this alternative is estimated to be $2,271,600. Including indirect costs associated with institutional controls and a present worth analysis of O&M costs (total estimated cost of $1,593,500 per year for 15 years), the total 15-year present worth cost associated with implementing Alternative 4a is estimated to be $4,916,000. The O&M costs assume annual visual inspections of the Site for 15 years and sampling activities for 15 years. Replacement of the granular activated carbon is expected once every three years for the first 15 years and once every five years for the final 15 years. It is assumed that the overlying backfill material will be reused. The total estimated cost is provided in 2006 dollars.

Alternative 4b – Groundwater/Leachate Control – Pump and Treat

(1) *Description of Alternative*:

- This technology would also involve implementing all of the components discussed in connection with Alternative 3 in conjunction with groundwater/leachate collection and treatment. The additional component of this alternative involves extracting groundwater/leachate out of the ground (e.g., using trenches or wells) and subsequent treatment of extracted water to address COPCs in groundwater. Collected water would be transported offsite for treatment. This alternative assumes that the recovery trench would be approximately 220 feet long, 4 feet wide, and 15 feet deep and would be located to intercept groundwater flow beyond the toe of the landfill slope along the Black River.

(2) *Treatment Technologies and Materials they will Address*: This option is very similar to Alternative 4a, but instead of a treatment wall, this option would install a pumping and treating system in a similar location. This pump and treat would capture any contaminated groundwater leaving the landfill and treat this contaminated groundwater before releasing it.

(3) *Containment Component*: This alternative has the same containment component that Alternative 3 would include since it involves implementing everything dictated under Alternative 3, as well as a pump and treat system.

(4) *Costs*: The costs assume inclusion of the work items in Alternative 3 as well as construction of a 220-foot long, 4-foot wide, and 15-feet deep trench. The excavation is assumed to be filled with 65% stone fill and 35% backfill. It is assumed that, for excavated materials, most of the material will be placed under the final landfill cover and a minimal amount will need to be disposed of at an appropriate, offsite facility. The total capital cost to implement this alternative is estimated to be $2,148,700. Including indirect costs associated with institutional controls and a present worth analysis of O&M costs (total estimated cost of $8,005,100 for 15 years), the total 15-year present worth cost associated with implementing Alternative 4b is estimated to be $11,150,000. The O&M costs assume annual visual inspections of the Site for 15 years and sampling activities for 15 years. Pump replacement is expected once every five years, and treatment of 5,466,000 gallons of water is assumed annually. The total estimated cost is provided in 2006 dollars.

<u>Alternative A – Select Removal of Specifically Identified Areas Outside of Landfill Limits</u>

(1) *Description of Alternative*:

This alternative would involve the removal of selected soil/sediment observed to contain COPCs that exceed Site-specific RBCs outside of the landfill limits in the northeast corner of the Site. The removal depth is assumed to be approximately fifteen feet. The focus of this excavation would begin at the location along the edge of the river where evidence of LNAPL migration was observed (e.g., the thin sand unit exhibiting trace sheen). The excavation would remove the impacted sediment at the edge of the river then extend back toward the toe of the landfill slope, removing impacted soil that represents the preferential migration pathway along which the LNAPL impacts may have migrated toward the edge of the river. It is conservatively estimated that up to 6,400 cubic yards of soil and sediment will be removed, although the actual removal limits and depth will be determined during the Remedial Design stage. To the degree practicable, non-impacted surface soil would be removed, stockpiled, and characterized, which could significantly reduce the volume of soil requiring disposal. Excavated materials that do not contain elevated levels of PCBs, or other hazardous components would be used either in construction of landfill cover improvements or placed under the cap within the landfill. Soils and sediment containing PCBs and/or motor oil with levels exceeding regulatory limits will be sent offsite for disposal. The excavated areas would be backfilled, as required to establish surface contours, with clean, compacted, low permeability fill and re-vegetated. A reducing media that can fully degrade any residual levels of COPCs may be used as or added to the backfill if necessary.

(2) *Treatment Technologies and Materials they will Address*: There are no treatment technologies associated with this alternative since this option elects for removal of contaminated materials.

(3) *Containment Component*: This alternative does not include any containment of contaminated materials since they will be removed.

(4) *Costs*: Including indirect costs associated with administration, engineering, and contingencies, the total 15-year present worth cost associated with implementing Alternative A is estimated to be $227,000. Note that costs for institutional controls, construction setup/preparation, additional waste disposal, and O&M activities are included in the remedial alternatives for areas inside the landfill limits and, thus, are not considered here. It is assumed that, for excavated materials, most of the material will be placed under the final landfill cover and a minimal amount will need to be disposed of at an appropriate offsite facility. The total estimated cost is provided in 2006 dollars.

Alternative B – In Situ Containment by Extension of Existing Surface Cover Outside of Landfill Limits

(1) *Description of Alternative*:

This alternative would rely on the extension of the existing surface cover and would involve enhancing the surface materials covering or encapsulating impacted materials with "clean" material(s). This alternative would be assumed to involve the placement of 2-foot of clay cover material over selected portions of the LNAPL investigation area between the toe of the landfill slope and the edge of the river. The exposed bank along the river in this area will be covered, and an erosion protective layer will be provided.

(2) *Treatment Technologies and Materials they will Address*: There are no treatment technologies associated with this alternative since this option elects for removal of contaminated materials.

(3) *Containment Component*: This alternative solely involves containing the contaminated soil/sediment by placing a clay cover over the area.

(4) *Costs*: Including indirect costs associated with administration, engineering, and contingencies, the total 15-year present worth cost associated with implementing Alternative B is estimated to be $35,000. Note that costs for institutional controls, construction setup/preparation, additional waste disposal, and O&M activities are included in the remedial alternatives for areas inside the landfill limits and, thus, are not considered here. The total estimated cost is provided in 2006 dollars.

9.2 Common Elements and Distinguishing Features of Each Alternative

The most noticeable common element between Alternative 3, 4a, and 4b is that all three address the exposed waste along the side slopes of the landfill and all three will involve enhancing the existing landfill cap. The distinguishing feature of each of these alternatives is what occurs after the landfill itself has been addressed. Alternative 4a uses a media treatment wall to intercept contaminated groundwater, while Alternative 4b uses pump and treat to address this contaminated groundwater.

Alternatives 1 and 2 involve no active remediation whatsoever, but Alternative 2 does implement institutional controls as the remedy to protect humans and the environment.

9.2.1 Institutional Controls

To be protective of human health and the environment, each active alternative described within this ROD requires use or access restrictions at the Site. Use restrictions or access restrictions would be implemented through the use of institutional controls. Institutional controls are administrative or legal constraints that minimize the potential for exposure to contamination by limiting land or resource use. Specific actions taken at sites to restrict access or use could include: Governmental Controls - such as zoning restrictions or ordinances; Proprietary Controls - such as easements or covenants; Enforcement Tools - such as consent decrees or administrative orders; and Informational Devices- such as deed notices or state registries. Several types of access or use restrictions employed simultaneously can increase the effectiveness of institutional controls.

For Ford Road Landfill, it is anticipated that institutional controls will be needed since the Site will have contaminants remaining at levels that do not allow unrestricted use or unlimited access. The goal of these institutional controls is to prevent direct contact exposure with the residual contamination. Therefore, digging or disturbance of the cover (or underlying contaminated material) will be prevented (or if needed, repairs will be made). There will be a program of Operation, Monitoring and & Maintenance, and this will include routine inspection of the cover and require any necessary repairs. It is anticipated that institutional controls will be relatively simple to develop, likely through a layered approach, including: proprietary controls (easements and/or covenants including environmental covenants pursuant to Sections 5301.80 to 5301.92 of the Ohio Revised Code); deed restrictions; and enforcement tools (AOCs and/or consent decrees), which will ensure the long-term reliability of the controls.

9.2.2 Additional Work to be Performed During the Design Phase

Alternatives 3, 4a, 4b, A and B would require work to be preformed prior to the implementation of the remedy, during the design phase of the project. The following activities will be done during the design phase of the remedy implementation process:

- Determining the precise extent of contamination in the northeastern corner of the Site where the LNAPL was found and contaminated soil/sediment is present; and

- Further qualitative analysis of the side slopes of the landfill side slopes for stability purposes and to aid in development of the actual layout of the regraded landfill.

9.2.3 Operation, Monitoring and & Maintenance

Each active remedial alternative will require a detailed program of Operation, Monitoring and & Maintenance for the soil and groundwater components. This program will be developed during remedial design, and modified as necessary after construction of the remedy. Groundwater will be monitored routinely to assess effectiveness of treatment and monitor trends and compared to Ohio EPA Water Quality Standards. The plan will also include provisions to ensure that soil and sediment RBCs have been attained after construction.

9.2.4 Surface Water Management

Each active remedy will result in considerable surface earthwork construction. A property-wide surface water management system will be developed to provide for the effective control of surface water runoff and to minimize future erosion. The property-wide surface water management system is anticipated to include:

- A grading plan that integrates final surface topography in the remedial areas into the surrounding areas.

- Use of proper slopes, berms, channels, etc., and surface armoring using natural vegetation and/or other materials to effectively convey surface water runoff off the remediated areas and provide erosion protection.

- A program of regular inspection, maintenance and repair.

9.3 Expected Outcomes of Each Alternative

Alternatives 1 and 2, which include limited active remediation measures, would not achieve protectiveness in the foreseeable future. Alternatives 3, 4a and 4b, each are expected to be protective, attain ARARs, and achieve the RAOs for the Site. Alternatives 3, 4a and 4b each leave the majority of the contaminated materials in place at the Site since it is an existing landfill, and would require long-term land-use restrictions on portions of the Site. As stated above, alternatives A and B are not intended as stand alone remedies, but were each considered as an addition to one of the first four alternatives. Alternative A would completely eliminate any risks associated with the hot spot area of PCB contaminated soil/sediment since it would be removed, while Alternative B also would reduce the risks, but the hot spot area of contamination would remain in place. Each active remedial alternative will require additional design investigation and each requires about the same time to complete physical construction (about one to two years). None of the alternatives would leave Ford Road Landfill available for unrestricted use and unlimited exposure at the completion of the remedial action, although several leave the Site available for reuse.

9.4 Preferred Alternative

The preferred alternative described in the Proposed Plan for the Ford Road Landfill Site is a combination of Alternative 3 and Alternative A. The estimated cost of the preferred alternatives is roughly $3.4 million.

10.0 Summary of Comparative Analysis of Alternatives

This section explains the U.S. EPA's rationale for selecting the preferred alternative. The U.S. EPA has developed nine criteria to evaluate remedial alternatives to ensure that important considerations are factored into remedy-selection decisions. These criteria are derived from the statutory requirements of Section 121 of CERCLA, the NCP, as well as other technical and policy considerations that have proven to be important when selecting remedial alternatives. When selecting a remedy for a site, U.S. EPA conducts a detailed analysis of the remedial alternatives consisting of an assessment of the individual alternatives against each of the nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

The nine evaluation criteria are described in more detail below.

<u>**Threshold Criteria**</u>
The two most important criteria are statutory requirements that must be satisfied by any alternative in order for it to be eligible for selection.

1. **Overall protection of human health and environment** addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls or institutional controls.

2. **Compliance with ARARs** addresses whether or not a remedy will meet all of the Applicable or Relevant and Appropriate Requirements of other Federal and State environmental statutes and/or provide grounds for invoking a waiver.

<u>**Primary Balancing Criteria**</u>
Five primary balancing criteria are used to identify major trade-offs between remedial alternatives. These trade-offs are ultimately balanced to identify the preferred alternative and to select the final remedy.

3. **Long-term effectiveness and permanence** refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

4. **Reduction of toxicity, mobility, or volume through treatment** addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce toxicity, mobility or volume of the hazardous

substances as their principal element. This preference is satisfied when treatment is used to reduce the principal threats at the site through destruction of toxic contaminants, reduction of the total mass of toxic contaminants, irreversible reduction in contaminant mobility, or reduction of total volume of contaminated media.

5. **Short-term effectiveness** addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction of the remedy until cleanup levels are achieved. This criterion also considers the effectiveness of mitigative measures and time until protection is achieved through attainment of the RAOs.

6. **Implementability** addresses the technical and administrative feasibility of a remedy from design through construction, including the availability of services and materials needed to implement a particular option and coordination with other governmental entities.

7. **Cost** includes estimated capital costs, annual operation and maintenance costs (assuming a 15-year time period), and net present value of capital and operation and maintenance costs, including long-term monitoring.

Modifying Criteria
These criteria may not be considered fully until after the formal public comment period on the Proposed Plan and RI/FS Report are complete.

8. **State Acceptance** considers whether the State support agency concurs with the selected remedy for the site.

9. **Community Acceptance** addresses the public's general response to the remedial alternatives and the preferred alternative presented in the Proposed Plan. This ROD includes a responsiveness summary that summarizes the public comments and U.S. EPA's response to those comments. The responsiveness summary is included as Appendix A.

The full text of the detailed analysis of the five remedial alternatives against the nine evaluation criteria (including both the individual analysis and the comparative analysis) is contained in the FS Report for the Ford Road Landfill which is included in the Administrative Record for the Site. Because the two Modifying Criteria cannot be fully evaluated until public comment is received, they were not evaluated in the FS. The responsiveness summary of this ROD contains a more detailed discussion of public comments received. This section of the ROD summarizes the highlights of the comparative analysis.

10.1 Overall Protection of Human Health and the Environment

Each alternative provides for some level of protection through natural processes. Alternatives 2, 3, 4a, and 4b provide for increased protection of human health by limiting future use of the Site through institutional controls. Alternatives 3, 4a, and 4b all provide further protection by better containing COPCs within the landfill cap. Alternatives 4a and 4b also include additional actions to mitigate potential risks associated with COPCs in groundwater that contaminate surface water in the Black River. However, Alternatives 4a and 4b were conceived before completion of the risk assessment and the risk assessment and evaluations lead to the conclusion that Alternatives 4a and 4b are not warranted from a risk perspective since they would provide the same amount of protection of human health and the environment at Alternative 3. Alternative A provides additional protection outside of the landfill limits by selectively removing specific materials that contain elevated levels of COPCs identified as contributing to potentially unacceptable human health and/or environmental risk. Alternative B also provides additional protection through the in situ containment of materials that contain elevated levels of COPCs identified as contributing to potentially unacceptable human health and/or environmental risk.

10.2 Compliance with ARARs

Alternatives 1 and 2 do not address the COPCs present at the Site and, thus, would not be in compliance with state or federal ARARs. Alternatives 3, 4a, and 4b would meet the requirements of ARARs with respect to the remedial objectives relative to the area within the limits of the landfill and those areas of cascaded waste identified beyond the limits of the landfill. Outside of the landfill limits, Alternatives A would likely meet the requirements of ARARs. Alternatives B may also meet the requirements of ARARs, but it is preferred that the limited hot spot area of contamination simply be removed to comply with all ARARs.

10.3 Long-Term Effectiveness and Permanence

Alternative 1 would not be protective or reliable through time. Alternative 2 would decrease potential human exposure by limiting future use of the Site, but no other long-term increase or decrease in exposure or associated potential risks would occur. The process options associated with Alternatives 3, 4a, and 4b are proven and reliable technologies. However, there is a substantial amount of evidence from decades of remedial experiences demonstrating the difficulties associated with attempting to achieve permanent remedies through the use of pump and treat technology. In addition, while the use of permeable reaction wall technology in conjunction with a funnel and gate groundwater interception system has been successfully used at sites where they were appropriately applied, these technologies typically can be very difficult to implement and have significant potential for problems with respect to long term effectiveness, maintenance and permanence. In the long term, the reliability of these alternatives would be assessed during annual Site inspections.

Outside of the landfill limits, Alternatives A and B would provide reliable and effective remedial options. In the long term, the reliability of these alternatives would be assessed during annual Site inspections and groundwater sampling results. In the event that the results of annual Site inspections and/or monitoring results indicate that the selected remedial components are not adequately achieving the RAOs established for this Site, it may be necessary to consider supplementing the selected remedial actions (e.g., groundwater/leachate control and treatment).

10.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

Alternatives 1 and 2 provide no active remediation of COPCs that would reduce the toxicity, mobility, or volume of COPCs through treatment beyond that achieved through natural attenuation processes. Alternative 3 would reduce the mobility, but not toxicity or volume, of COPCs. By reducing the mobility of the contaminants under a new cap, toxicity and volume of COPCs will not pose a risk since all COPCs will be contained within the landfill. Alternatives 4a and 4b would reduce the mobility, volume, and toxicity of COPCs in groundwater by either in situ or ex situ treatment. Regarding the alternatives to address conditions outside of the landfill limits, Alternative A would reduce the mobility, volume, and toxicity of COPCs in the media through removal. Alternative B would reduce the mobility, but not toxicity or volume, of COPCs.

10.5 Short-Term Effectiveness

Alternatives 1 and 2 essentially would maintain current conditions and, as such, no short-term increase or decrease in exposure or associated potential risks would occur. The potentials for short-term exposure to workers and offsite migration of COPCs under Alternative 3 due to dust-borne releases are limited as all activities involved in this alternative will take place over the existing cap. Alternatives 4a and 4b would have some additional potential exposures related to trench excavation activities associated with these alternatives and the potential for offsite transport of impacted materials may be temporarily increased.

Outside of the landfill limits, excavation activities associated with Alternative A may result in the exposure of onsite workers to Site-impacted materials, and the potential for offsite transport of impacted materials may be temporarily increased. The potentials for short-term exposure to workers and offsite migration of COPCs due to dust-borne releases are limited, as all activities involved in Alternative B will take place over the existing cap.

10.6 Implementability

Alternatives 1 and 2 would not involve the implementation of any active remedial responses. No difficulties are anticipated in implementing institutional controls or sampling activities for Alternatives 2, 3, 4a, and 4b. The services and materials necessary to implement Alternatives 3, 4a, and 4b would be readily available. Alternative 4a would be difficult to implement due to the volume of media that would require replacement. Similarly, Alternative 4b would be difficult to implement due to issues associated with groundwater handling. More specifically, the large volume of water would make transportation and treatment relatively impracticable. In addition, while the use of permeable reaction wall technology in conjunction with a funnel and gate groundwater interception system has been successfully used at sites where they were appropriately applied, these technologies typically can be very difficult to implement and have significant potential for problems with respect to long term effectiveness, maintenance and permanence.

Outside of the landfill limits, the services and materials necessary to implement Alternative A or B would be readily available. Construction equipment would be obtained locally or transported to the Site from other areas, as appropriate. Removal in the selected areas is considered to be technically feasible.

10.7 Cost

Alternatives 1 and 2 have the lowest costs. However, these alternatives are not capable of achieving the RAOs for this Site. The costs related to Alternative 3 are moderately higher. However, this alternative would be anticipated to achieve RAOs relevant to the landfill while remaining reasonable from a fiscal perspective. While Alternatives 4a and 4b also have the ability to achieve the RAOs, both of these alternatives were originally conceived to mitigate possible risks to either the human health or the environment associated with COPC migration in groundwater which might not have been adequately addressed by Alternative 3. As there are no additional risks associated with the COPCs in groundwater downgradient that would not be addressed under Alternative 3, the application of this remedial alternative would serve only to further reduce the potential for migration of COPCs in groundwater. Given the fact these alternatives are not substantially more protective than Alternative 3, the increase in costs associated with either of these alternatives as compared with Alternative 3 is not warranted.

Both of the remedial alternatives being considered to address conditions outside of the landfill limits would be implementable from a fiscal perspective. A summary of the estimated costs for each alternative is provided in the Table 9 below.

Alternative	Capital Cost	O&M Cost	Other Costs[1]	Total Cost (rounded)
1	$ -	$ 45,500	—	$ 46,000
2	$ 51,000	$ 528,000	$ 44,900	$ 624,000
3	$ 1,932,600	$ 535,900	$ 898,800	$ 3,367,000
4a	$ 2,271,200	$ 1,593,500	$1,051,300	$ 4,916,000
4b	$ 2,148,700	$ 8,005,100	$ 996,000	$11,150,000
A	$ 167,900	$ -	$ 58,600	$ 226,700
B	$ 25,500	$ -	$ 9,000	$ 35,000

Note:
[1]This sum includes indirect, administration, engineering, and contingency costs.

Table 9 - Summary of Estimated Costs for Each Alternative

10.8 State Agency Acceptance

The State of Ohio was involved with the Site before it was listed as a Superfund Site, and has continued to be actively involved with the Site throughout the RI/FS process, has reviewed documents and provided comments to U.S. EPA and the Ford Road Group, and provided support at the public meeting for the proposed plan.

Although the State of Ohio has not yet provided a concurrence letter for this ROD, the State has indicated that it intends to concur with the selection of Alternative 3 and Alternative A for the Ford Road Landfill Site. The State of Ohio's concurrence letter will be added to the Administrative Record upon receipt.

10.9 Community Acceptance

During the public comment period on the Proposed Plan, the community expressed very few concerns with the proposed remedy for the Ford Road Landfill. As discussed in the Responsiveness Summary found as Appendix A to this ROD, public concerns focused on dealing with the current state of the landfill by implementing the proposed remedies, Alternative 3 and Alternative A.

11.0 Principal Threat Wastes

The NCP establishes an expectation that U.S. EPA will use treatment to address principal threats posed by a site wherever practicable. The term "principal threat" refers to source materials that are considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The LNAPL found at Ford Road Landfill could have been termed as a principal threat if left in place. This source, though, can be reliably contained by removing the LNAPL and the surrounding contaminated media as part of the remedy at the Site. Therefore, the principal threat waste definition does not apply to the LNAPL found at the Site.

12.0 Selected Remedy

This section describes the selected remedy and provides U.S. EPA's reasoning behind its selection. Alternatives can change or be modified if new information is made available to U.S. EPA through further investigation or research. An appropriate range of alternatives was developed, based upon the initial screening of technologies, the potential for contaminants to impact the environment, and site-specific RAOs and goals.

12.1 Identification of the Selected Remedy and Summary of the Rationale for its Selection

Based on the analysis of the nine criteria conducted in the FS Report and summarized in Section 10 of this ROD, the selected remedy for the Ford Road Landfill Site is a combination of both Alternative 3 and Alternative A. These two alternatives represent the best balance of overall protectiveness, compliance with ARARs, long-term effectiveness and permanence, costs, and other criteria, including State and community acceptance.

12.2 Description of the Selected Remedy

A summary of the selected remedies, Alternative 3 and Alternative A are provided below (See Figure 5 and Figure 6 for a conceptual layout):

- The cascaded debris on the side slopes of the landfill will be collected and managed on-site. A Waste Management Plan will be developed and approved by U.S. EPA that determines what waste will be shipped off-site (if any) and what will be placed back into the existing landfill or covered by an extended cap. The entire landfill would then be re-graded and appropriately capped to meet all ARARs identified for the Site. The cap would then be vegetated to maintain a more "natural" state.

- North and south perimeter soil sampling will be performed to ensure that all ancillary waste was identified prior to the end of the remedy. This confirmation sampling will have to meet each COPC's respective RBC before moving on with completing the final landfill cover (See Tables 4, 5, 6 and 7 for RBCs).

- A surface water plan will be developed and approved by U.S. EPA and various models will be used to ensure that the system is fully functioning and reducing the infiltration of water through the landfill. A site water-balance model will be compiled after the remedy is in place to ensure that the cap installation was done properly and is functioning as intended.

- For groundwater monitoring, Ohio's Water Quality Standards, Lake Erie Basin, in Ohio Administrative Code Chapter 3745-1 Outside Mixing Zone Average for Aquatic Life, will be used to ensure that the groundwater entering into the Black River meets the appropriate standard to eliminate the risks to both human health and the environment (See Table 10). This monitoring also includes any COPCs identified when sampling the leachate seeps at the Site.

- The area of contaminated soil/sediment in the northeastern corner of the landfill will be fully delineated to characterize the extent of contamination. Soil/sediment will then be managed on-site to the extent possible. Soil/sediment that is found to be hazardous will be shipped to an appropriate licensed facility. Soil/sediment that is not hazardous but has contaminant levels above RBCs will be placed into the existing landfill. Soil/sediment that has contaminant levels below RBCs can be used in the construction of the landfill cover. This soil and sediment area will have to meet each COPC's respective RBC for both soil and sediment and the TEC for any sediment ECOPCs (See Tables 4, 5, 6 and 7 for RBCs).

- Current streambank inspections downgradient of the northeastern corner of the landfill do not show any evidence of the black staining where contaminant seepage occurred. Confirmatory soil sampling will be performed if any evidence of this is observed at any time. This will protect and help restore riverine resources to their highest beneficial use and serve to eliminate any risks to human and wildlife population
- Periodic leachate sampling will occur at the areas staked during the RI (USACE Stake). If these areas become regraded or altered during construction activities, periodic checks of potential seeps will be conducted to ensure that no seepage is occurring. Leachate

of potential seeps will be conducted to ensure that no seepage is occurring. Leachate sampling will have to meet Ohio's Water Quality Standards, Lake Erie Basin, in Ohio Administrative Code Chapter 3745-1 Outside Mixing Zone Average for Aquatic Life (See Table 11).

- Regular inspections and sampling will occur at the Site. O&M will include annual visual inspections of the Site for 15 years and sampling activities for 15 years. Wells FR-MW-3, FR-MW-4, and FR-MW-6 will be sampled annually for five years for metals and VOCs. Wells FR-MW-1, FR-MW-7, and FR-MW-8 will be sampled quarterly for two years and semiannually for the following three years for a full analytical suite. Once the initial five-year period is complete and if all contaminant levels are found to be below risk levels, wells FR-MW-1, FR-MW-6, FR-MW-7, and FR-MW-8 will be sampled annually for an additional 10 years. A full O&M plan will be developed after completion of the Remedial Design phase to incorporate any additional sampling that will be required.

- Any institutional controls will be put in place at the site as needed, such as deed restrictions and groundwater use restrictions. Also, signage will be required surrounding the Site stating that hazardous materials are present until after the remedy has been implemented.

- The existing landfill gas monitoring system will be operated and maintained and all appropriate state requirements will be met for the life of the Site.

- Once the remedy has been implemented, the areas on the landfill footprint that had existing grasses, plants and trees will be revegetated with appropriate native vegetation that will not compromise the new landfill cover. The areas within the Site, but not within the footprint of the new landfill that had a limited amount of vegetation removed (due to construction traffic, soil management areas, etc) during the implementation of the remedy will be revegetated with new shrubs, trees or grasses as approved by the U.S. EPA.

12.3 Summary of the Estimated Remedy Costs and Time Required for Implementation

The estimated cost of the selected remedy for the Ford Road Landfill is approximately $3.4 million. The design of the remedial alternatives is expected to take approximately one to two years to complete and the physical construction of the remedy is also estimated to take approximately one to two years to complete. Table 12 and Table 13 show the cost breakdown for both Alternative 3 and Alternative A.

12.4 Expected Outcomes of the Selected Remedy

The selected remedies for the Ford Road Landfill Site, Alternative 3 and Alternatives A, will achieve the RAOs for the Site. The selected remedies will be protective and are expected to attain ARARs. The following are expected to occur by implementing Alternative 3 and Alternative A:

- Current groundwater levels in the downgradient wells generally concur with Black River stages to indicate that upgradient landfill infiltration controls (capping, grading, stormwater management) are functioning properly for the current cap – it is those areas outside of the current cap on the steep side slopes of the landfill that need to be addressed since most of the waste material is exposed in these areas. Once the remedy is implemented, the exposed portions of the landfill waste will be covered and will prevent the infiltration of water through the waste material, preventing any future contamination of any media.

- Groundwater sampling results should show positive results within the initial five year sampling period. Specifically, metals contamination in the eastern and southeastern wells should decline and sampling in the northeastern corner of the site should show no PCB, metals or PAH contamination in the groundwater meaning that surface water to the Black River is not being contaminated.

- The upgradient well (MW-6) should show a lowering water-level trend due to the reduced landfill infiltration and associated modeling.

- The remedies will be re-evaluated if groundwater sampling data exhibits trends indicative of remedy failure (upward trends of COPCs) or variable results that indicate uncertainty in the remedy.

- The selected remedy leaves a majority of the contaminated materials in place at the Site, and requires long-term land-use restrictions on some portions of the Site. Ford Road Landfill will not be available for unrestricted use and unlimited exposure at the completion of the remedial action, and institutional controls will be required.

- After the physical construction period (estimated to be about one to two years), there will be immediate risk reductions to human and ecological receptors by both the elimination of the exposed waste material along the side slopes of the landfill for soil and the removal of the hot spot area of PCB contaminated soil and sediment along the Black River. After construction, there will be immediate benefits to groundwater because the primary source of contamination (PCBs in northeastern corner of Site) will be removed, resulting in the removal of the LNAPL source.

13.0 Statutory Determinations

Under CERCLA Section 121 and the NCP, remedies selected for Superfund sites are required to be protective of human health and the environment, comply with applicable or relevant and appropriate requirements (unless a waiver is justified) and be cost effective. The following sections discuss how the selected remedies for Ford Road Landfill Site meet these statutory requirements.

13.1 Protection of Human Health and the Environment

The current and potential future risks at Ford Road Landfill are primarily due to the presence of PCBs in the soil, sediment and groundwater in the northeastern corner of the Site and the lead in surface soils on the side slopes of the landfill. Implementation of the selected remedy will be protective of human health and the environment through the removal of the cascading waste on the slopes of the landfill (one source of groundwater contamination) and removal of the hot spot area of PCB contaminated soil and sediment (the other source of groundwater contamination). The site specific RAOs were developed to protect current and future receptors that are potentially at risk from contaminants at the Site. The selected remedy will meet the RAOs. The Site will not be available for unrestricted use and unlimited exposure at the completion of the remedial action and institutional controls will be required to ensure that the remedy remains protective.

13.2 Compliance with ARARs

Section 121(d) of CERCLA requires that Superfund remedial actions meet ARARs. 8A – 8C provides a list of all ARARs that have been identified and will be met under this ROD. In addition to ARARs, non-enforceable guidelines, criteria, and standards may be useful in designing the selected remedy. As described previously in Section 8.2 of this ROD, these guidelines, criteria and standards are known as TBCs. The selected remedy will comply with the ARARs for the Site.

13.3 Cost Effectiveness

U.S. EPA has determined that the selected remedy for the Ford Road Landfill Site is cost effective and represents a reasonable value for the money to be spent. A cost-effective remedy in the Superfund program is one whose costs are proportional to its overall effectiveness. The overall effectiveness of the potential remedial alternatives for the Site was evaluated in the FS by considering the following three criteria: long-term effectiveness and permanence, reduction in toxicity, mobility and volume through containment, and short-term effectiveness. The overall effectiveness was then compared to cost to determine whether an alternative is cost effective. Of the remedial alternatives evaluated for this Site, Alternative 3 and Alternative A (the selected remedy) provide the highest degree of overall cost effectiveness.

13.4 Five-Year Review Requirements

The NCP requires that the remedial action be reviewed no less often than every five years if the remedial action results in hazardous substances, pollutants or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure. Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on the Site above levels that allow for unlimited use and unrestricted exposure at the completion of the remedial action, a statutory review will be conducted within five years after initiation of remedial action to ensure

14.0 Documentation of Significant Changes

The Proposed Plan for Ford Road Landfill was released for public comment near the end of June 2006 and the public comment period ran from July 10 through August 9, 2006. The Proposed Plan identified Alternative 3 and Alternative A (Enhancement of landfill and addressing cascaded waste and hot spot removal of PCB contaminated area), as the preferred alternative for the Ford Road Landfill. U.S. EPA reviewed all written and verbal comments submitted during the public comment period and determined that no significant changes to the remedy, as originally identified in the Proposed Plan, were necessary or appropriate.

TABLES

Constituent	Soil	Black River Sediment	Surface Water	Groundwater	Leachate
Volatile Organic Compounds					
Benzene				X	X
Chloroform					X
Vinyl chloride				X	
Semi-Volatile Organic Compounds					
Benzo(a)anthracene	X	X			
Benzo(a)pyrene	X	X			
Benzo(b)fluoranthene	X	X			
Benzo(k)fluoranthene	X				
Bis(2-ethylhexyl)phthalate	X		X	X	X
Dibenzo(a,h)anthracene	X	X			
Indeno(1,2,3-cd)pyrene	X	X			
Pesticides/PCBs					
Aroclor 1242	X			X	
Aroclor 1254	X	X			
beta-BHC					X
Dieldrin					X
Heptachlor					X
Metals					
Aluminum			X	X	X
Antimony	X		X	X	X
Arsenic	X	X	X	X	X
Barium				X	
Beryllium				X	
Cadmium	X	X		X	
Chromium	X	X			
Copper	X			X	
Iron	X	X	X	X	X
Lead	X				
Manganese	X			X	X
Mercury				X	
Nickel	X			X	
Selenium				X	
Thallium	X	X	X	X	X
Vanadium				X	
Zinc				X	

Table 3 – COPCs for Ford Road Landfill Site

TR / target cancer risk (unitless)	1.00E-06
AT / averaging time (days) (cancer)	25550
EF/exposure frequency (days/year)	120
SF / cancer slope factor (mg/kg-d)[1]	Chemical Specific
IFSadj / age-adjusted soil ingestion factor (mg-yr/kg-day)	114
SFSadj / age-adjusted dermal factor (mg-yr/kg-day)	361
ABS_d / dermal absorption fraction (unitless)	Chemical Specific
InhFadj / age-adjusted inhalation factor (m^3-yr/kg-day)	11
PEF / Particulate emission factor (m^3/kg)	1.32E+09

Constituent	SF_o (mg/kg-day)[1]	SF_{ABS} (mg/kg-day)[2]	SF_i (mg/kg-day)[1]	ABS_d	ABS_{gi}	RBC
Benzo(a)anthracene	7.30E-01	7.30E-01	7.30E-01	0.13	0.89	1.8
Benzo(a)pyrene	7.30E+00	7.30E+00	7.30E+00	0.13	0.89	0.19
Benzo(b)fluoranthene	7.30E-01	7.30E-01	7.30E-01	0.13	0.89	1.8
Benzo(k)fluoranthene	7.30E-02	7.30E-02	7.30E-02	0.13	0.89	18.1
Bis(2-ethylhexyl)phthalate	1.40E-02	1.40E-02	1.40E-02	0.10	0.50	101
Dibenzo(a,h)anthracene	7.30E+00	7.30E+00	7.30E+00	0.13	0.89	0.18
Indeno(1,2,3-cd)pyrene	7.30E-01	7.30E-01	7.30E-01	0.13	0.89	1.8
Aroclor 1242	2.00E+00	2.00E+00	2.00E+00	0.14	0.81	0.65
Aroclor 1254	2.00E+00	2.00E+00	2.00E+00	0.14	0.81	0.65
Arsenic	1.50E+00	1.50E+00	1.50E+01	0.03	0.95	1.1

Notes:

(1) Risk-based concentrations were developed using the algorithms for combined ingestion, dermal absorption, and inhalation (particulate) exposure to contaminants in soil from USEPA (1989, 1991) Risk Assessment Guidance for Superfund, Parts A and B.

(2) In accordance with USEPA (2004) RAGS Part E, dermal toxicity values were only adjusted for those chemicals with an ABS_{gi} > 50%.

RBC = Risk Based Concentration.

NA = Not available.

Table 4 – Development of Site-specific Risk-Based Concentrations For Carcinogenic Constituents in Soil

THQ / target hazard quotient (unitless)	1.00E-01
BW / body weight (kg)	15
AT / averaging time (days) (non-cancer)	2190
EF/exposure frequency (days/year)	120
ED/exposure duration (years)	6
SF / cancer slope factor (mg/kg-d)$^{-1}$	Chemical Specific
RfD / reference dose (mg/kg-day)	Chemical Specific
IRS / soil ingestion rate (mg/day)	200
AF / skin-soil adherence factor (mg/cm^2-event)	0.2
ABS_d / dermal absorption factor (unitless)	Chemical Specific
SA / skin surface exposed (cm^2)	2800
IRA / inhalation rate (m^3/day)	20
PEF / Particulate emission factor (m^3/kg)	1.32E+09

Constituent	RfD_o (mg/kg-day)	RfD_{abs} (mg/kg-day)	RfD_i (mg/kg-day)	ABS_d	ABS_{gi}	RBC
Antimony	4.00E-04	6.00E-05	4.00E-04	0.001	0.15	9.0
Arsenic	3.00E-04	3.00E-04	3.00E-04	0.03	0.95	6.3
Cadmium	1.00E-03	2.50E-05	1.00E-03	0.001	0.025	21
Chromium	3.00E-03	7.50E-05	2.20E-05	0.001	0.025	56
Copper	4.00E-02	1.20E-02	4.00E-02	0.001	0.30	934
Iron	3.00E-01	4.50E-02	3.00E-01	0.001	0.15	6,718
Lead	NA	NA	NA	NA	NA	400 (a)
Manganese	1.40E-01	5.60E-03	1.40E-05	0.001	0.040	1,748
Nickel (Soluble Salts)	2.00E-02	8.00E-04	2.00E-02	0.001	0.040	426
Thallium	6.60E-05	6.60E-05	6.60E-05	0.001	1.000	1.5
Aroclor 1242	2.00E-05	2.00E-05	2.00E-05	0.14	0.81	0.33
Aroclor 1254	2.00E-05	2.00E-05	2.00E-05	0.14	0.81	0.33

Notes:

(1) Risk-based concentrations were developed using the algorithms for combined ingestion, dermal absorption, and inhalation exposure to contaminants in soil from USEPA (1989, 1991) Risk Assessment Guidance for Superfund, Parts A and B.

(2) In accordance with USEPA (2004) RAGS Part E, dermal toxicity values were only adjusted for those chemicals with an ABS_{gi} > 50%.

(a) RBC for lead represents the USEPA Region 9 Preliminary Remediation Goal for Residential Soils.

RBC = Risk Based Concentration.

NA = Not available.

Table 5 – Development of Site-Specific Risk-Based Concentrations for Non-Carcinogenic Constituents in Soil

TR / target cancer risk (unitless)	1.00E-06
AT / averaging time (days) (cancer)	25550
EF/exposure frequency (days/year)	350
SF / cancer slope factor (mg/kg-d)$^{-1}$	Chemical Specific
IRSadj / age-adjusted sediment ingestion factor (mg-yr/kg-day)	57.1
SFSadj / age-adjusted dermal factor (mg-yr/kg-day)	360
ABS_d / dermal absorption fraction (unitless)	Chemical Specific

Constituent	SF_o (mg/kg-day)$^{-1}$ (1)	SF_{ABS} (mg/kg-day)$^{-1}$ (2)	ABS_d	ABS_{GI}	RBC
Benzo(a)anthracene	7.30E-01	7.30E-01	0.13	0.89	3.2
Benzo(a)pyrene	7.30E+00	7.30E+00	0.13	0.89	0.32
Benzo(b)fluoranthene	7.30E-01	7.30E-01	0.13	0.89	3.2
Dibenzo(a,h)anthracene	7.30E+00	7.30E+00	0.13	0.89	0.32
Indeno(1,2,3-cd)pyrene	7.30E-01	7.30E-01	0.13	0.89	3.2
Aroclor 1254	2.00E+00	2.00E+00	0.14	0.81	1.1
Arsenic	1.50E+00	1.50E+00	0.03	0.95	3.3

Notes:

(1) Risk-based concentrations were developed using the algorithms for combined ingestion, dermal absorption, and inhalation exposure to contaminants in soil from USEPA (1989, 1991) Risk Assessment Guidance for Superfund, Parts A and B.

(2) In accordance with USEPA (2004) RAGS Part E, dermal toxicity values were only adjusted for those chemicals with an ABS_{GI} > 50%

RBC = Risk Based Concentration.

NA = Not available.

IRSadj = (EDc x IRSc/BWc) + ((EDr - EDc) x IRSa/BWa))

where:

EDc = Exposure duration (child) = 6 years

IRSc = Sediment ingestion rate (child) = 100 mg/day

BWc = Body weight (child) = 15 kg

EDr = Exposure duration (residential) = 30 years

IRSa = Sediment ingestion rate (adult) = 50 mg/day

BWa = Body weight (adult) = 70 kg

SFSadj = ((EDc x AFc x SAc/BWc)) + ((EDr - EDc) x AFa x SAa/BWa))

where:

EDc = Exposure duration (child) = 6 years

AFc = Adherence factor (child) = 0.2 mg/cm2

SAc = Exposed skin surface area (child) = 6,600 cm2/day

BWc = Body weight (child) = 15 kg

EDr = Exposure duration (residential) = 30 years

AFa = Adherence factor (adult) = 0.07 mg/cm2

SAa = Exposed skin surface area (adult) = 18,000 cm2/day

BWa = Body weight (adult) = 70 kg

Table 6 – Development of Site-Specific Risk-Based Concentrations for Carcinogenic Constituents in Sediment

THQ / target hazard quotient (unitless)	1.00E-01
BW / body weight (kg)	15
AT / averaging time (days) (non-cancer)	2190
EF/exposure frequency (days/year)	50
ED/exposure duration (years)	5
SF / cancer slope factor (mg/kg-d)$^{-1}$	Chemical Specific
RfD / reference dose (mg/kg-day)	Chemical Specific
RS / sediment ingestion rate (mg/day)	100
AF / skin-soil adherence factor (mg/cm^2-event)	0.2
ABS_d / dermal absorption fraction (unitless)	Chemical Specific
SA / skin surface exposed (cm^2)	5500

Constituent	RfD_o (mg/kg-day)	RfD_{ABS} (mg/kg-day)	ABS_d	ABS_{GI}	RBC
Arsenic	3.00E-04	3.00E-04	0.03	0.95	20
Cadmium	1.00E-03	2.50E-05	0.001	0.025	60
Chromium	3.00E-03	7.50E-05	0.001	0.025	179
Iron	3.00E-01	4.50E-02	0.001	0.15	35 161
Thallium	6.60E-05	6.60E-05	0.001	1.0	5.9
Aroclor 1254	2.00E-05	2.00E-05	0.14	0.31	0.64

Notes:

(1) Risk-based concentrations were developed using the algorithms for combined ingestion, dermal absorption and inhalation exposure to contaminants in soil from USEPA (1989, 1991) Risk Assessment Guidance for Superfund, Parts A and B.

(2) In accordance with USEPA (2004) RAGS Part E, dermal toxicity values were only adjusted for those chemicals with an ABS_{GI} > 50%.

RBC = Risk Based Concentration.

NA = Not available.

Table 7 – Development of Site-Specific Risk-Based Concentrations for Sediment (Adult Receptor)

Regulation	Citation	ARAR or TBC	Description	Rationale
FEDERAL ARARs AND TBCs				
Toxic Substances Control Act (TSCA)	40 CFR Part 761	ARAR	Provides regulations for storage, handling, and disposal of materials containing PCBs greater than 50 ppm.	Applies to remedies involving excavation.
STATE ARARs AND TBCs				
Voluntary Action Program (VAP) Generic Numerical Standards	OAC 3745-300-08	TBC	Provides direct contact soil standards for the protection of human health.	May be considered for evaluation of cleanup goals.
VAP Property-Specific Risk Assessment Procedures	OAC 3745-300-09(F)	TBC	Provides direct contact soil standards for ecological receptors.	May be considered for evaluation of cleanup goals.

Table 8A – Chemical Specific ARARs and TBCs

Regulation	Citation	ARAR or TBC	Description	Rationale
			FEDERAL ARARs AND TBCs	
Clean Water Act	40 CFR Part 131	ARAR	Specifies water quality criteria for all surface waters.	Applies to all sites where surface water is present.
Endangered Species Act	16 USC 1531 et seq. 50 CFR Part 200 50 CFR Part 402	ARAR	Requires federal agencies to ensure that the continued existence of any endangered or threatened species and their habitats will not be jeopardized by a site action.	Applies to any action taken at the site. Site-specific information requests regarding the possible occurrence of threatened/endangered species and critical habitat were submitted to both the U.S. Fish & Wildlife Service (USFWS) and the ODNR Natural Heritage Program. Responses from the agencies are included as Appendix P.
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities	40 CFR Part 264.18(b)	ARAR	Landfill facilities within a 100-year floodplain must be designed, constructed, operated, and maintained to avoid washout.	Applies to capping and post-excavation restoration activities.
Executive Order 11988, Protection of Floodplains	40 CFR Part 6 App. A	ARAR	Actions taken within a floodplain must avoid adverse effects, minimize potential harm, restore, and preserve natural and beneficial values of the floodplain.	Applies to capping and post-excavation restoration activities.
National Historic and Historical Preservation Acts	36 CFR Part 65 36 CFR Part 800 16 USC 470	ARAR	Requires actions to protect and preserve artifacts and historic and cultural properties.	Applies to any action taken at the site. A full historic investigation will be completed before any alternative is implemented.
			STATE ARARs AND TBCs	
Water Quality Standards – All Waters	OAC 3745-1-04	ARAR	Specifies water quality criteria that all surface waters of the state must meet.	Applies to all sites where surface water is present.
Water Quality Standards – Black River Drainage Basin	OAC 3745-1-27	ARAR	Specifies water quality criteria that all surface waters within the Black River drainage basin must meet.	Applies to all sites within the Black River drainage basin where surface water is present.
Water Quality Standards – Lake Erie Drainage Basin	OAC 3745-1-33	ARAR	Specifies water quality criteria that all surface waters within the Lake Erie drainage basin must meet.	Applies to all sites within the Lake Erie drainage basin where surface water is present.

Table 8B – Location Specific ARARs and TBCs

Regulation	Citation	ARAR or TBC	Description	Rationale
			FEDERAL ARARs AND TBCs	
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities	40 CFR Part 264	ARAR	Requirements for placement of a cap over hazardous waste, run-on/run-off prevention, property use restrictions, and operation and maintenance requirements.	Applies to remedies involving capping.
National Emission Standards for Hazardous Air Pollutants	40 CFR Part 61	ARAR	Requirements for air emissions testing during excavation.	Applies to remedies involving excavation.
Occupational Safety and Health Act (OSHA)	29 CFR Part 1910 29 CFR Part 1926 29 CFR Part 1904	ARAR	Established requirements for worker safety and health.	Would apply for any action taken at the Site
USDOT Placarding and Handling	49 CFR Part 171	ARAR	Transportation and handling requirements for hazardous materials.	Applies to remedies involving transport of hazardous materials on public roadways.
Resource Conservation and Recovery Act (RCRA)	40 CFR Part 257	ARAR	Establishes regulations regarding criteria for classification of solid waste disposal facilities and practices.	Applies to residuals removed from the Site.
Resource Conservation and Recovery Act (RCRA)	40 CFR Parts 257 and 258 42 U.S.C. 7401 et seq.	TBC	Establishes standards for the management and disposal of solid waste.	May be considered as guidance on the management of waste.
Clean Air Act (CAA)	40 CFR Part 52 42 U.S.C. 7401 et seq.	TBC	Establishes requirements for emission rates in accordance with National Ambient Air Quality Standards (NAAQS); provides guidelines for minimizing effects of fugitive dust/airborne COCs resulting from excavation; establishes primary and secondary ambient air quality standards for emissions.	May be considered for remedial alternatives that include removal and/or relocation of soils.
EPA 540/G-90/007	OSWER Directive 9355.4-01	TBC	Guidance on remedial actions for Superfund landfill sites. Advocates appropriate engineering and institutional controls for material that is managed in place.	May be considered as general guidance for activities at the Site.

Table 8C – Action Specific ARARs and TBCs

Regulation	Citation	ARAR or TBC	Description	Rationale
STATE ARARs AND TBCs				
Standards for Current Construction of a 1976 Cap System	Ohio EPA – DSIWM Guidance #0123 OAC 3745-27-09(F) (1995)	ARAR	Establishes criteria for materials, construction, and testing specifications for a cap at a landfill.	Applies to remedies involving surface cover enhancement.
Identification and Listing of Hazardous Waste	Ohio EPA Rule 3745-51	ARAR	Establishes procedures for identifying solid wastes which are subject to regulation as hazardous wastes.	Applies to remedies involving excavation.
Acceptance and Handling of Hazardous Waste and the Manifest System	Ohio EPA Rule 3745-53-20	ARAR	Provides standards relating to the use of the manifest system and its record keeping requirements.	Applies to the transportation of removed materials.

Table 8C (Continued) – Action Specific ARARs and TBCs

Contaminant of Concern	Groundwater and/or Surface Water COC	Human Health COC	Ecological COC (Surface Water Only)	OMZA standard (μg/l)
		Metals		
Aluminum	S and G	X		4,500[3]
Antimony	S and G	X		190
Arsenic	S and G	X		150
Barium	G	X		220
Beryllium	G	X		(g)[1]
Cadmium	G	X	X	Table 7-9[2]
Copper	S and G	X	X	Table 7-9[2]
Iron	G	X		300[4]
Lead			X	Table 7-9[2]
Manganese	G	X		61,000[3]
Mercury	G	X		.91
Nickel	G	X	X	Table 7-9[2]
Selenium	G	X	X	5.0
Thallium	S and G	X		17
Vanadium	G	X		44
Zinc	G	X	X	10
		VOCs		
Benzene	G	X		160
Vinyl Chloride	G	X		930
		Pesticides		
PCBs (Arochlor 1242)	G	X		.000026[3]
		SVOCs		
Bis(2-ethylhexl) phthalate	S and G	X	X	8.4

Table 10 – Groundwater and Surface Water Standards

[1] Refer to footnote (g) in Chapter 3745-1 OAC for the Lake Erie Drainage Basin Summary Table

[2] Refer to Chapter 3745-1-07, Table 7-9, Statewide Water Quality Criteria for the Protection of Aquatic Life for Water Hardness Dependent Criteria

[3] No OMZA standard available - Ohio EPA Human Health Non-Drinking Standard Used.

[4] No OMZA or Human Health Standard available – MCL used.

Contaminant of Concern	Human Health COC	Ecological COC	OMZA standard (µg/l)
Metals			
Aluminum	X		4,500[3]
Antimony	X		190
Arsenic	X		150
Barium		X	220
Cadmium		X	Table 7-9[2]
Copper		X	Table 7-9[2]
Iron	X		300[4]
Lead		X	Table 7-9[2]
Manganese	X		61,000[3]
Nickel		X	Table 7-9[2]
Selenium		X	5.0
Silver		X	1.3
Thallium	X		17
Zinc		X	10
VOCs			
Benzene	X		160
Chloroform	X		930
Pesticides			
Beta BHC	X		.46[c]
Dieldrin	X		.056
Heptachlor	X		.0021[c]
SVOCs			
Bis(2-ethylhexl) phthalate	X	X	8.4

Table 11 – Leachate Standards

[2] Refer to Chapter 3745-1-07, Table 7-9, Statewide Water Quality Criteria for the Protection of Aquatic Life for Water Hardness Dependent Criteria.
[3] No OMZA standard available - Ohio EPA Human Health Non-Drinking Standard Used.
[4] No OMZA or Human Health Standard available – MCL used.
[c] This criterion is based on a carcinogenic endpoint.
[e] 25°C specific conductance values are 1200 micromhos/cm as a maximum and 800 micromhos/cm as a thirty-day average.

Item #	Description	Estimated Quantity	Units	Unit Cost	Estimated Amount
Indirect Costs					
1	Institutional Controls (deed restrictions)	1	LS	$20,000	$20,000
		Total Indirect Costs for Alternative 3:			**$20,000**
Capital Costs					
Construction Setup/Preparation Costs					
2	Mobilization/Demobilization	1	LS	$90,800	$90,800
3	Construction Support	6	Months	$2,500	$15,000
4	Construction Oversight	26	Weeks	$4,500	$117,000
5	Health and Safety Monitoring	6	Months	$1,000	$6,000
6	Fence Installation	3,000	LF	$15	$45,000
7	Site Preparation				
	- Clearing and Grubbing	3	Acres	$6,000	$18,000
	- Temporary Material and Equipment Staging Area	1	LS	$25,000	$25,000
	- Temporary Decontamination Area	1	LS	$25,000	$25,000
	- Temporary Erosion/Sedimentation Controls	1,500	LF	$1	$1,500
Landfill Cap Construction, Regrading, and Restoration Costs					
8	Slope Modifications	250,000	CY	$5	$1,250,000
9	Placement of Cover Material				
	- Imported clay	2,700	CY	$25	$67,500
	- Reused clay	2,700	CY	$12	$32,400
	- Geotextile	8,100	SY	$1	$8,100
10	Regrading of Waste from Outside of the Landfill Limits	1,200	CY	$5	$6,000
11	Additional Surface Regrading	72,700	SF	$0.25	$18,200
12	Erosion Control Blanket	8,100	SY	$1	$8,100
13	Site Restoration Upon Completion	14,500	CY	$12	$174,000
Transportation and Disposal (T&D) Costs					
14	Contingent Waste Disposal	1	LS	$25,000	$25,000
		Total Capital Cost for Alternative 3:			**$1,932,600**
		Total Indirect and Capital Cost for Alternative 3:			**$1,952,600**
		Administration (10%)			$195,300
		Engineering (10%)			$195,300
		Contingency (25%)			$488,200
		Total Estimated Indirect and Capital Cost for Alternative 3:			**$2,831,400**
Operation and Maintenance (O&M) Costs					
15	Annual Site Inspection	1	Per Event	$5,000	$5,000
		Present Worth Factor (15 years @ 7%)			9.11
		Present Worth Cost			$45,500
16	Cover Maintenance Activities (1 every five years for 15 years)	1	LS	$5,000	$5,000
		Present Worth Cost			$7,300
17	Additional Sampling (3 wells quarterly for 2 years; 3 wells semiannualy for 3 years; 3 wells annually for 5 years; 4 wells annually for 10 years)	6	Per Well	$1,500	$9,000
		Present Worth Cost			$101,700
18	Additional Laboratory Analysis (3 wells quarterly for 2 years; 3 wells semiannualy for 3 years; 3 wells annually for 5 years; 4 wells annually for 10 years)	1	Per Event	$10,700	$10,700
		Present Worth Cost			$223,300
19	Engineer's Data Evaluation (3 wells quarterly for 2 years; 3 wells semiannualy for 3 years; 3 wells annually for 5 years; 4 wells annually for 10 years)	1	Per Event	$7,500	$7,500
		Present Worth Cost			$156,300
		Total O&M Costs for Alternative 3:			**$535,900**
		Total Estimated Present Worth Cost for Alternative 3:			**$3,367,300**
		Total Estimated Present Worth Cost for Alternative 3 (Rounded):			**$3,367,000**

Table 12 – Cost Breakdown for Alternative 3

Item #	Description	Estimated Quantity	Units	Unit Cost	Estimated Amount
Indirect Costs					
1.	Institutional Controls	0	---	---	$0
				Total Indirect Costs for Alternative A:	$0
Capital Costs					
Construction Setup/Preparation Costs					
2.	Construction Set-Up/Preparation Costs	0	---	---	$0
Construction, Removal, and Replacement Costs					
3.	Excavation	6,400	CY	$10	$64,000
4.	Backfill	6,400	CY	$15	$96,000
5.	Additional Surface Regrading	11,500	SF	$0.25	$2,900
Transportation and Disposal (T&D) Costs					
7.	Contingent Waste Disposal	1	LS	$5,000	$5,000
				Total Capital Cost for Alternative A:	$167,900
				Total Indirect and Capital Cost for Alternative A:	$167,900
				Administration and Engineering (10%)	$16,800
				Contingency (25%)	$42,000
				Total Estimated Indirect and Capital Cost for Alternative A:	$226,700
Operation and Maintenance (O&M) Costs					
7.	O&M Activities	0	---	---	$0
				Total O&M Costs for Alternative A:	$0
				Total Estimated Present Worth Cost for Alternative A:	$226,700
				Total Estimated Present Worth Cost for Alternative A (Rounded):	$227,000

Table 12 – Cost Breakdown for Alternative A

FIGURES

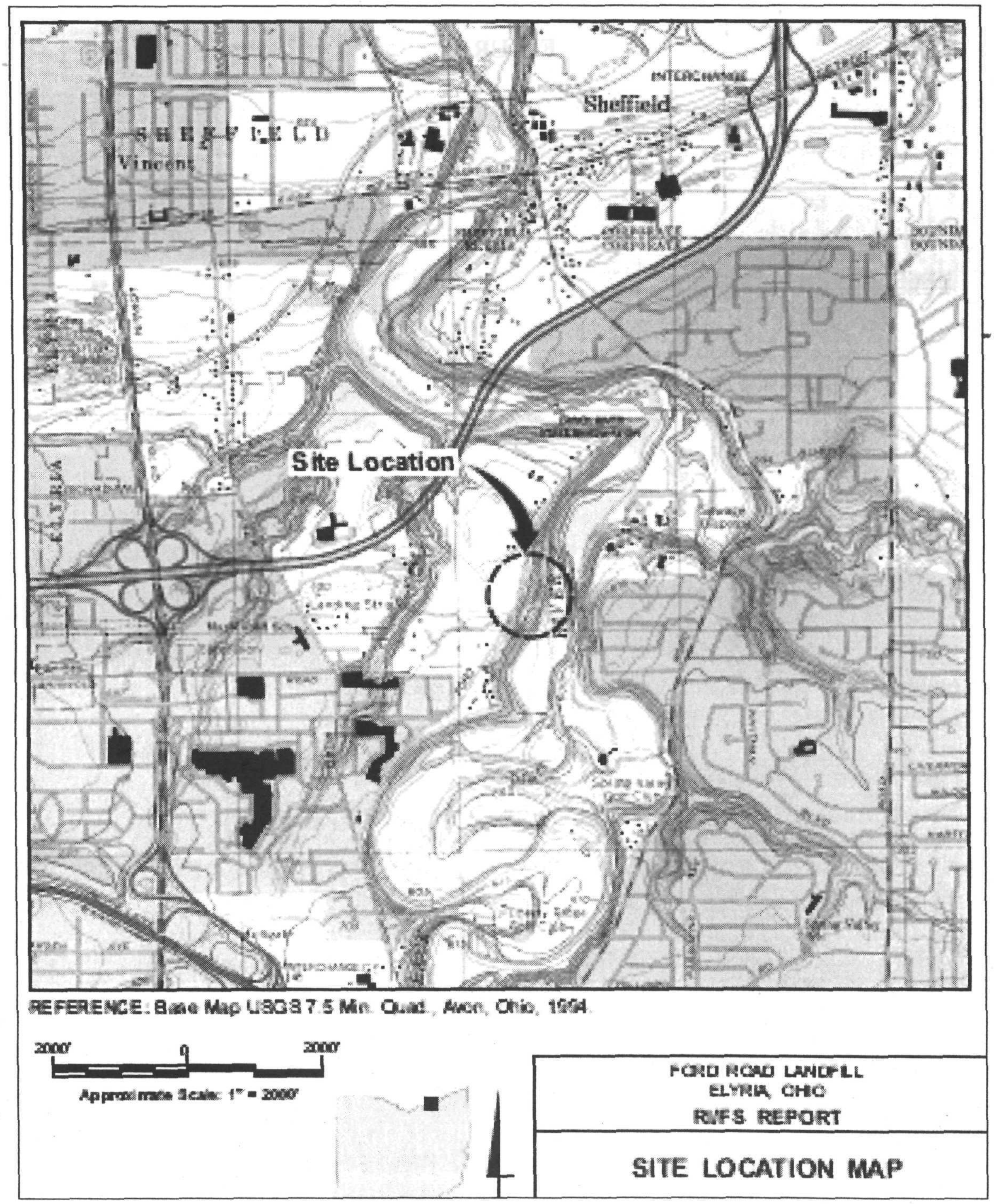


Figure 1 – Site Location Map

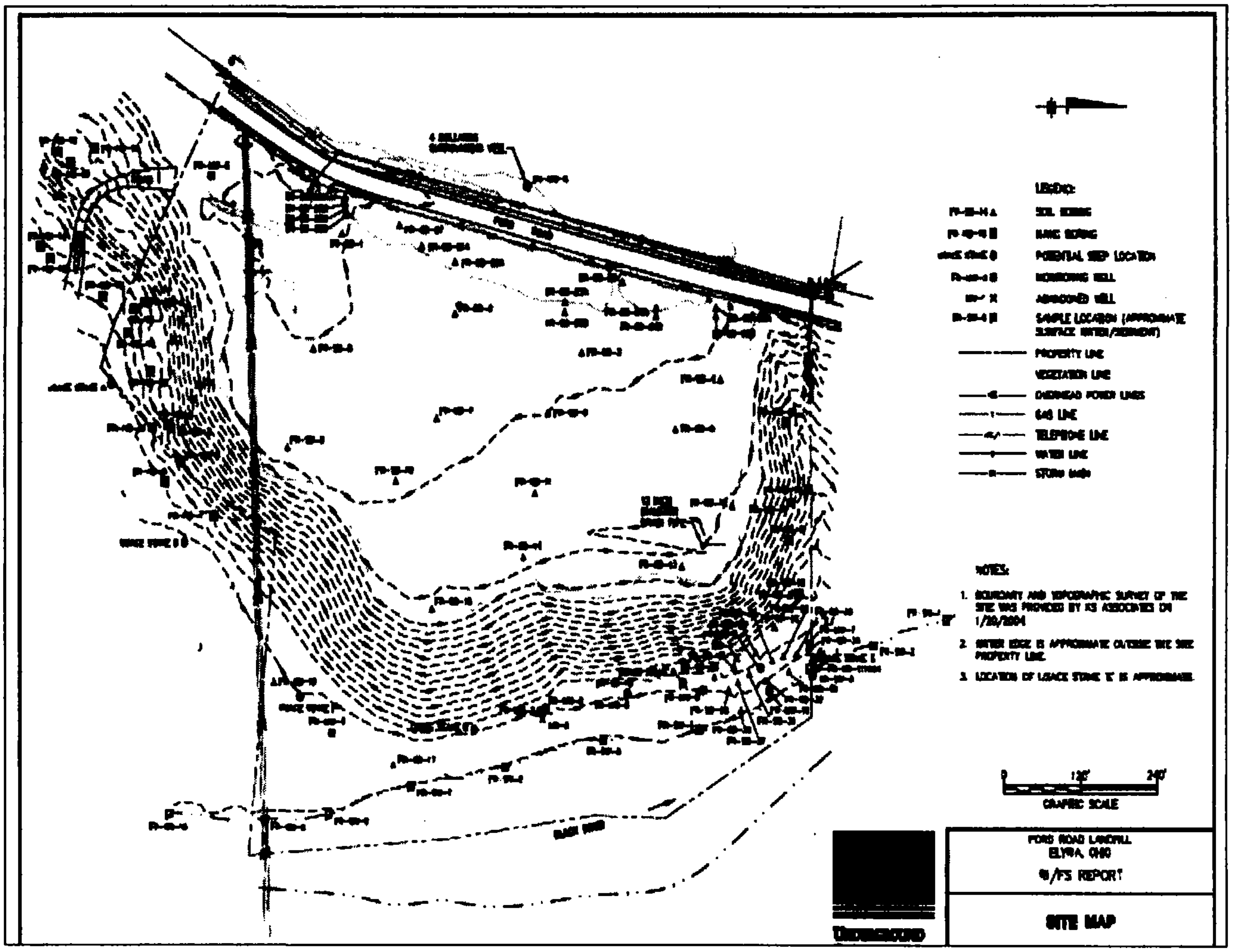
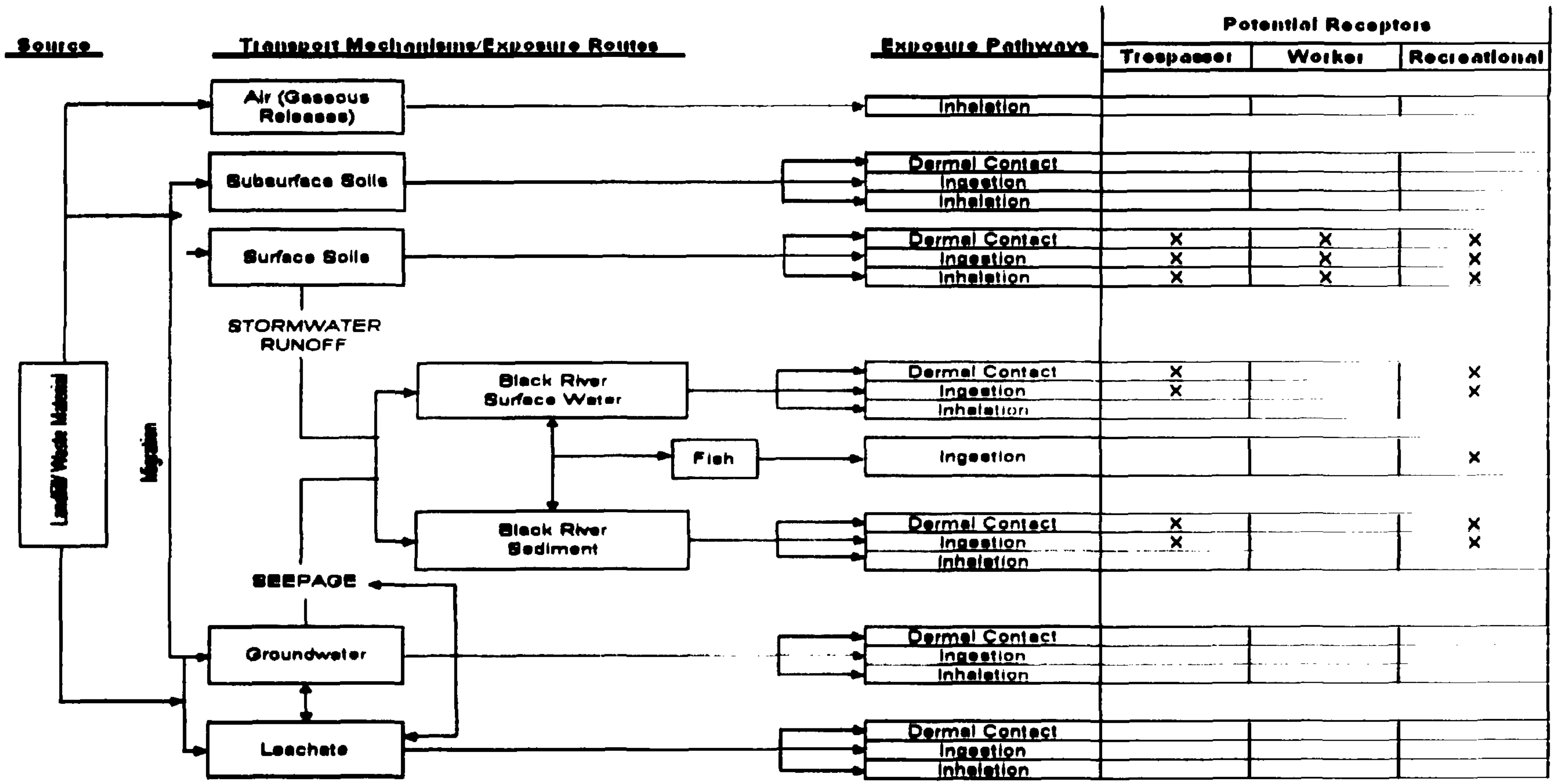


Figure 2 – Site Layout Map



Notes
1) X denotes primary exposure pathways identified in the human health evaluation.

Figure 3 – Conceptual Site Model

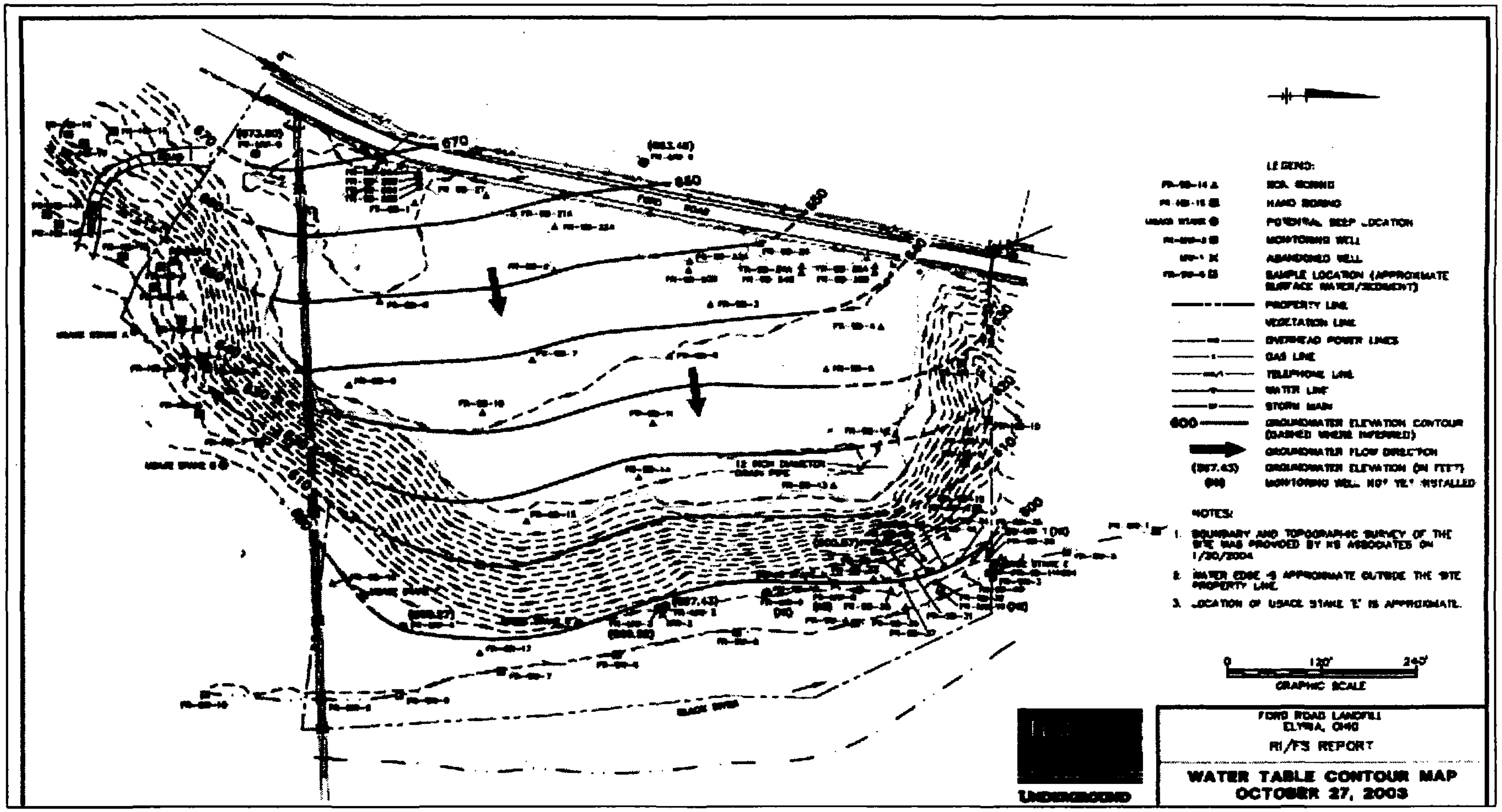


Figure 4 – Water Contour Map

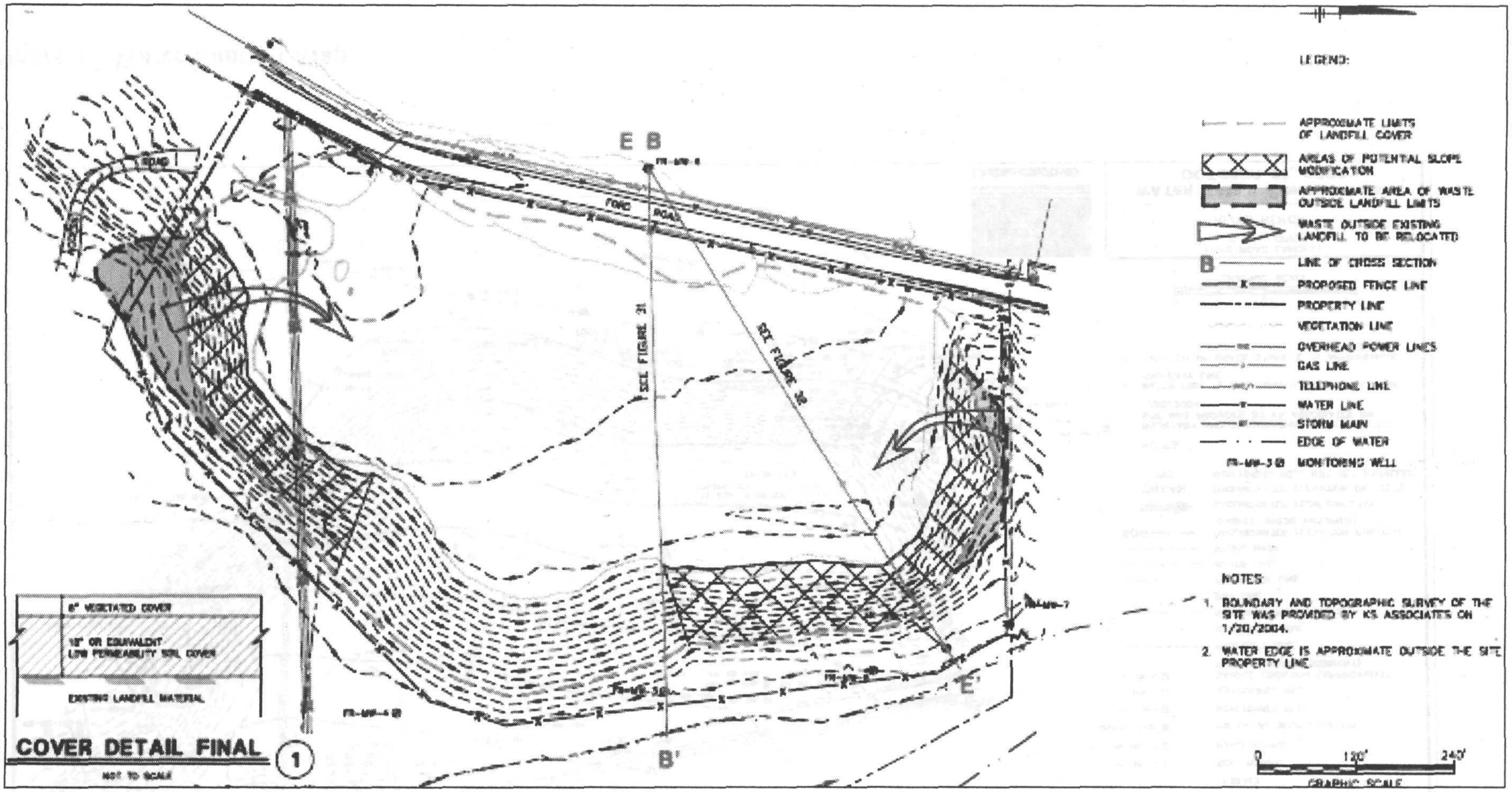


Figure 5 – Alternative 3 Conceptual Illustration

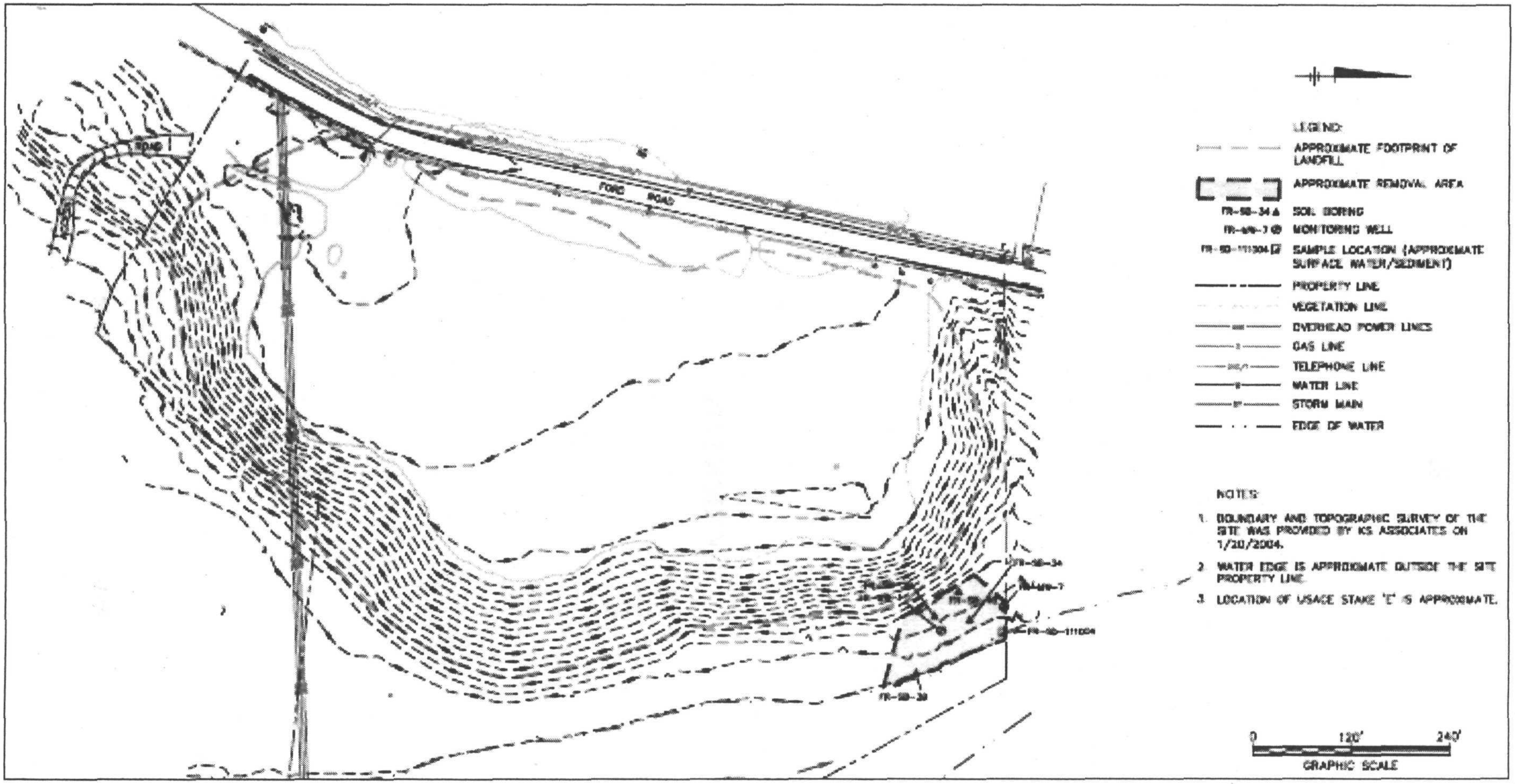


Figure 6 – Alternative A Conceptual Illustration

APPENDIX A

APPENDIX A

RESPONSIVENESS SUMMARY
for the Ford Road Industrial Landfill Site

This Responsiveness Summary provides both a summary of the public comments U.S. EPA received regarding the Proposed Plan for the Ford Road Industrial Landfill Site and U.S. EPA's responses to those comments. The Proposed Plan was released to the public near the end of June 2006, and the public comment period ran from July 10, 2006, through August 9, 2006. Ohio EPA provided support on the Proposed Plan. U.S. EPA held a public meeting regarding the Proposed Plan on July 26, 2006, at the French Creek Nature Center in Elyria, Ohio. Ohio EPA participated in the public meeting, assisted in responding to questions, and provided support at the meeting.

U.S. EPA received written comments (via regular and electronic mail) and verbal comments (at the public meeting) during the public comment period. In total, U.S. EPA received comments from approximately 6 different people. Copies of all the comments received during the public meeting (including the verbal comments reflected in the transcript of the public meeting) are included in the Administrative Record for the Site. U.S. EPA carefully considered all comments prior to selecting the final Site remedy documented in the ROD.

This Responsiveness Summary does not repeat verbatim each individual comment, except in reference to the comments sent in by the Ford Road Group. Rather, the comments are summarized and grouped by the type of issue raised. The comments fell within several different categories: support for the proposed remedy, future use of the Site, concerns during the Site cleanup and one request for a different alternative.

U.S. EPA received a comment letter dated August 8, 2006, submitted on behalf of the Ford Road Landfill PRP Group (the Group of companies who signed the Order to pay for the investigation of the Site). The Ford Road Group has cooperated with Ohio EPA and U.S. EPA to address the Site. The Ford Road Group was represented at the public meeting to be available if needed. A summary of the Ford Road PRP Group's comments and U.S. EPA's responses is included below.

The remainder of this Responsiveness Summary contains a summary of the comments U.S. EPA received and U.S. EPA's responses to those comments, grouped by category.

I. SUPPORT FOR THE PROPOSED REMEDY

The Ford Road Group expressed support for the proposed remedy for the Site (Alternative 3 – Enhancing the cover of the landfill and incorporating cascaded landfill debris back into the landfill AND Alternative A – Hot spot removal of PCB contaminated soil/sediment in the northeastern corner of the Site).

Several commentors expressed support of the cleanup of the Ford Road Landfill Site and indicated that the need for protection to human health and the environment from any contaminants existing on the Site is a high priority.

II. FUTURE USE OF THE SITE

A few commentators requested that whatever cleanup plan was ultimately selected for this Site, that the plan allow for the Site to be left as "naturally" as possible. The area around the Site and on the side slopes of the landfill itself has a mixture of field, scrub shrub, floodplain forest, and upland forest habitat. The top of the landfill is a level grassed area. Also, it was requested that after the cleanup the Site be left in a way that it could possibly be utilized for recreational purposes such as bike paths or multi-purpose trails.

It is anticipated that, during the cleanup, there will be a need to clear some of the vegetation away, especially on the side slopes of the landfill to collect exposed debris, but especially if the side slopes of the landfill required modification for stability purposes. This being said, it is the Agency's wish to also keep the area in a natural state to allow for recreational use once the cleanup efforts are complete. Therefore, unnecessary removal of trees, shrubs or other vegetation will not occur at the Site and areas that have been cleared will be revegetated after the remedy is complete.

III. CONCERNS DURING SITE CLEANUP

One comment expressed concern with the current state of the Site and possible health effects during the Site cleanup. The suggestions were to 1) put signs around the property warning about the hazardous nature of the Site; 2) installing a split rail fence around the Site; and 3) receiving notice before cleanup actions occur at the Site so that residents in the area can keep their doors and windows closed.

The area surrounding the Site will have signs posted that warn of the hazardous nature of the Site (both contamination and the physical hazards).

It is not planned to have a split rail fence installed along the Site since it will not keep trespassers off of the Site and construction traffic will need access to the Site.

U.S. EPA will be sending out mailings throughout the course of this remedy at the Site and it will be noted that a mailing should occur once a timeframe is decided, informing residents in the area that earth moving activities will be occurring at the Site so residents can take precautions if desired.

IV. PREFERENCE FOR DIFFERENT ALTERNATIVE

One comment indicated their preference for Alternative 4b – Groundwater Control – Pump and Treat instead of Alternative 3 stating that this choice would stop landfill pollution from contaminating the nearby Black River. Based upon U.S. EPA's evaluation of all of the cleanup options, Alternative 3 provided the same level of protection to humans and the environment, specifically in regard to the Black River. This alternative was originally conceived before completion of the risk assessment to mitigate possible risks to either the human health or the environment associated with chemicals of potential concern (COPCs) migration in groundwater which would not be adequately addressed by the previously discussed alternatives. As the risk assessment and evaluations in this document have shown, there are no additional risks associated with the COPCs in groundwater downgradient that would not be addressed under Alternative 3. Therefore, the application of this remedial alternative is not warranted from a risk perspective.

V. FORD ROAD LANDFILL PRP GROUP COMMENTS

The Ford Road Group had several comments specific to the Proposed Plan language that are addressed below:

Comment 1

Statement: In the first paragraph of the Proposed Plan, the document states "The U.S. EPA is proposing to collect and dispose of debris found on the southern and northern side slopes of the Ford Road Industrial Landfill.

Comment: As stated in the RI/FS it is planned that waste materials in these areas of the site will be incorporated under the landfill cap or the cap extended over these areas. The RI/FS does not envision disposal of these materials and this statement should be revised to state "excavation and on-site management of debris".

Response: U.S. EPA agrees that the cascaded debris on the side slopes will be incorporated back into the existing landfill or covered by extending the landfill cap, unless something is found that would require off-site disposal (i.e. drums containing hazardous waste, etc). The Proposed Plan serves as a generalization to inform the public and is not intended to supply detailed information relating to the remedy.

<u>Comment 2</u>

Statement: In the second paragraph, referring to Alternative A, the document states "The proposed cleanup of this soil area would involve digging it up and transporting it off-site to another landfill facility".

Comment: This broad statement assumes that all soil excavated in this area will be transported off-site for disposal. The RI/FS states that non-impacted surface soil will be removed, stockpiled and characterized. Soil that is demonstrated to be non-hazardous or meets required standards would be used either in construction of landfill cover improvements or placed under the existing cap within the landfill. While some of the soils to be excavated are contaminated, to some extent, they may be classified as remediation wastes under RCRA ARAR, not as hazardous waste. U.S. EPA policy for CERCLA includes a preference for on-site management of waste and the ROD should state that "contaminated soil and wastes will be managed on-site, to the extent possible".

Response: U.S. EPA agrees that it is likely that not all soil/sediment will need to be shipped off-site for disposal. However, any materials that are found to be have hazardous levels of contaminants will need to be shipped off-site to an appropriate disposal facility. Material that is found to have contamination above RBCs, but below hazardous levels can be placed within the existing landfill and materials found to have levels below RBCs can be used in the creation of the cover of the landfill. Again, the Proposed Plan serves as a generalization to inform the public and is not intended to supply detailed information relating to the remedy.

<u>Comment 3</u>

Statement: On page 2, fifth paragraph, the Proposed Plan states "Browning-Ferris" disposed of chemicals, heavy metals, sanitary sewage wastes, paint sludges and small quantities of unknown hazardous waste".

Comment: If small quantities of "unknown" waste were disposed in the landfill, it cannot be stated that these wastes were hazardous.

Response: The statement above was taken directly from the Health Consultation Report generated by the Ohio Department of Heath. The Health Consultation Report also stated that "Harshaw Chemicals, a subsidiary of Gulf Oil Company, sent more than 700 tons of hazardous materials to the Ford Road Landfill from 1950 until 1974. Materials sent included heavy metals, other inorganic substances, and miscellaneous catalysts and insecticides (OEPA 1980)." It is very likely that the Ford Road Landfill did accept hazardous waste during some time in its period of operation, although BFI may have only play a small role in contributing to the amount of hazardous waste present in the landfill.

Comment 4

Statement: The last paragraph of page 2 and the first paragraph of page 3 states "Sampling showed the soil on the northern and southern slopes where the waste has spilled out contains high levels of organic compounds, 3 PCBs and metals. Underground water samples also showed widespread metal and PCB contamination on the northeastern corner of the Site."

Comment: It is misleading to state that PCB contamination is "widespread" in the northeastern corner of the Site. PCBs were detected in groundwater in one small area of the site. This contamination appears to be isolated and currently cannot be attributed to flow from the landfill based on the lack of PCBs in leachate analyses. The term "cascaded" or a similar term, seems more appropriate that "spilled out".

The term "high levels" and "dangerous" are subjective and may be unduly alarming. EPA should make more of an effort to put site concentrations and risks in perspective. This was done by EPA at the July 26, 2006 public meeting through responding to questions raised by residents. As indicated by EPA that meeting, there is no imminent risk and no need for emergency/interim actions.

Also, the statement on the bottom of page 1 indicating that semi-volatile organic compounds dissolve in water and evaporate easily is questionable.

Response: U.S. EPA agrees that the PCB contamination is not widespread across the Site and is in fact in a very limited area of the Site. Also, U.S. EPA agrees that there are no "emergency level risks" at the site that warrant immediate action. Finally, the wording in the Proposed Plan relating to semi-volatile compounds dissolving in water should not been included.

Comment 5

Statement: In paragraph 8, page 3, the projected cost for Alternative 1 – No Further Action is shown as $0.

Comment: The RI/FS estimate for Alternative 1 is $46,000.

Response: The Proposed Plan is incorrect and should state $46,000.

Comment 6

Statement: The discussion of Alternative 3, paragraph 10, page 3, states "If to the waste on the slopes is found to be too hazardous, it would be moved to an approved disposal facility somewhere else".

Comment: This statement "too hazardous" is a general statement that should be corrected. It is expected that most, if not all, of this material will be incorporated under *the landfill cap. As stated in a previous comment, the ROD should specify that "contaminated soil and wastes will be managed on-site to the extent possible". If materials are to be disposed off-site, the ROD should discuss the process that will be used to make this determination, in accordance with CERCLA guidance, policies and ARARs. If this is not known at present, the ROD should state that waste materials will be managed in accordance with a Waste Management Plan to be developed as part of the remedial design and approved by U.S. EPA.*

Response: Again, the Proposed Plan serves as a generalization to inform the public and is not intended to supply detailed information relating to the remedy. The statement "too hazardous" was simply used to indicate what might need to be shipped off-site without going into additional details relating what those determinations include.

The suggestion of creating a Waste Management Plan was incorporated into the ROD since there is a chance for a small amount of cascaded debris to be shipped off-site to an appropriate facility.

<u>Comment 7</u>

Statement: The third paragraph, page 4, states that "It is planned that this contaminated soil and mud would be transported off-site to another landfill facility".

Comment: Materials excavated as part of Alternative A should be managed on-site to the extent possible and only disposed off-site if required by ARARs, characteristics of the material, and concentrations, require off-site disposal. This broad statement would require off-site disposal of all material from Alternative A and should be clarified. The ROD should state that all materials excavated as part of Alternative A will be managed, on-site to the extent possible. EPA should avoid the use of non-technical term "mud" in favor of "soil" or "sediment".

Response: The Proposed Plan is a non-technical document that must be presented in a way that is understandable to individuals, both technical and non-technical. Please also refer to Comment 2 for additional response information.

<u>Comment 8 – Cover Materials</u>

The RI/FS specifies that low permeability soil will be placed over areas where current cover is less than 2-feet. This will comply with the ARAR for the 1976 cap. However, while this type of cap can be constructed, it could require the removal of all trees and shrubs within the landfill footprint. Also, it will limit the design process and should be revised to provide more flexible language and allow the potential for innovation and alternative technologies. The ROD should state that "the cover will consist of 2-feet of low permeability soil…or a cover that is equally protective and approved by the U.S. EPA". This language would allow the design to potentially include, geosynthetic and geocomposite materials in certain areas, if necessary, and possibly less cover.

Response: The ROD does contain language that states "the cover will consist of 2-feet of low permeability soil or a cover that is equally protective and approved by the U.S. EPA" in order to allow for possible innovative cover enhancements. However, all of the work performed out at the Site will comply with both State and Federal ARARs unless it is determined by the Agencies that a provision can be made that is more beneficial to the project and equally protective of human health and the environment.

Comment 9 – Cover Materials

The RI/FS assumes that all vegetation will be removed from the landfill "footprint", as typically required for conventional landfill capping. However, this statement does not allow consideration of leaving large trees that contribute to the natural setting and may have value if the decision is made in the future to develop the Site as some type of park. The trees also appear to promote slope stability and limit soil erosion potential. For those reasons, the PRPs concur with the comment voiced by the Site owner (MetroParks) at the July Public Meeting that the vegetation/trees should remain in a natural state to the extent possible. ROD language should allow consideration of an alternative, such as a limited phytocap, that might leave trees largely intact. If considered, this type of capping would be evaluated as part of the remedial design and would have to be approved by U.S. EPA based on a demonstration of effectiveness.

Response: The U.S. EPA disagrees with the suggestion to leave large trees in place on the side slopes of the landfill. In order to provide an effective landfill cap, the entire landfill must be adequately covered and it must be ensured that trees and shrubs with large root systems do not compromise the integrity of the cap. That being said, U.S. EPA agrees that the area should be left as naturally as possible and highlights that the trees and shrubs that are on the Site but not within the footprint of the landfill itself will remain in place to the degree possible. The cap itself will be revegetated with materials appropriate for landfills after the enhancements are complete so that it provides a more natural setting and areas outside of the landfill footprint that had vegetation removed for remedy implementation purposes will be revegetated with new trees, shrubs and other flora.

Comment 10 – PRP Group

During the July Public Meeting, U.S. EPA listed the respondents that signed the AOC as the Ford Road Landfill PRPs. While this Group does comprise some of the PRPs, additional PRPs have been identified to the U.S. EPA. A list of additional PRPs was most recently provided to the U.S. EPA on Aug.1, 2006. Special Notice letters should be sent to the additional PRPs and these PRPs should be included in the ROD, along with the City of Elyria and the MetroParks, which were identified as PRPs by the U.S. EPA.

Response: U.S. EPA is aware that there are potentially responsible parties other than those who signed onto perform the investigation work for Ford Road Landfill.

After the completion of the ROD, U.S. EPA will begin discussions of the next phase of the project that concerns negotiating the cleanup work with potentially responsible parties.

APPENDIX B

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR
FORD ROAD LANDFILL SITE
ELYRIA, LORAIN COUNTY, OHIO

ORIGINAL
JULY 24, 2006

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	07/02/02	U.S. EPA	Respondents	Administrative Order by Consent for the Ford Road Landfill Site	
2	06/12/03	Ohl, M., U.S. EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: RI/FS Work Plan Approval with Conditions for the Ford Road Landfill Site	
3	11/05/03	Gereby, C., Ohio EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: Additional Sampling at the Ford Road Landfill Site	
4	03/05/04	McCune, W., Blasland, Bouck & Lee, Inc.	Collier, D., U.S. EPA	Preliminary Site Characterization Summary for the Ford Road Landfill Site	
5	04/02/04	McCune, W., Blasland, Bouck & Lee, Inc.	Collier, D., U.S. EPA	Letter re: Preliminary Response Actions and Remedial Technologies for the Ford Road Landfill Site	
6	04/23/04	Collier, D., U.S. EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: Preliminary Response Actions and Remedial Technologies Letter for the Ford Road Landfill Site	
7	06/08/04	Collier, D., U.S. EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: Response to Preliminary Site Characterization Summary for the Ford Road Landfill Site	
8	06/16/04	Collier, D., U.S. EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: Proposed Additional Monitoring Well Locations at the Ford Road Industrial Landfill Site	
9	07/00/04	Weston Solutions, Inc.	U.S. EPA	Community Involvement Plan for the Ford Road Industrial Landfill Site	

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
10	07/21/04	McCune, W., Blasland, Bouck & Lee, Inc.	Collier, D., U.S. EPA	Letter re: Supplemental Activities to Assess LNAPL Observation in MW-1 at the Ford Road Landfill Site	
11	09/30/04	McCune, W., Blasland, Bouck & Lee, Inc.	Collier, D., U.S. EPA	Letter re: Responses to U.S. EPA Comments on the Preliminary Site Characterization Summary for the Ford Road Landfill Site	
12	02/28/05	McCune, W., Blasland, Bouck & Lee, Inc.	Collier, D., U.S. EPA	Letter re: Second FS Deliverable Preliminary Remedial Alternatives for the Ford Road Landfill Site	
13	03/31/05	McCune, W., Blasland, Bouck & Lee, Inc.	Collier, D., U.S. EPA	Letter re: Second Risk Assessment Deliverable for the Ford Road Landfill Site	
14	04/27/05	Collier, D., U.S. EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: Comments on the Second Risk Assessment Deliverable for the Ford Road Landfill Site	
15	05/20/05	Collier, D., U.S. EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: Response Letter to Second Risk Assessment Deliverable for the Ford Road Landfill Site	
16	08/11/05	Collier, D., U.S. EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: Comments on the June 2005 RI/FS for the Ford Road Landfill Site	
17	10/05/05	McCune, W., Blasland, Bouck & Lee, Inc.	Collier, D., U.S. EPA	Letter re: Responses to U.S. EPA Comments on the RI/FS for the Ford Road Landfill Site	
18	10/20/05	Collier, D., U.S. EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: Comments on the Ford Road Landfill Group's Response to Comments on the RI/FS for the Ford Road Landfill Site	

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
19	02/23/06	Schmidt, J. & M. Tukel, Ohio EPA	Martin, J., Lorain County Metropolitan Park District	Letter re: Explosive Gas Monitoring Plan Certification Concurrence for the Ford Road Landfill Site	
20	03/00/06	Blasland, Bouck & Lee, Inc.	U.S. EPA	Remedial Investigation/ Feasibility Study Report for the Ford Road Landfill Site	
21	04/17/06	Collier, D., U.S. EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: Comments on the Second Version of the Draft RI/FS for the Ford Road Landfill Site	
22	05/10/06	Collier, D., U.S. EPA	Steerman, P., Steerman Environmental Management & Consulting, LLC	Letter re: Approval of RI/FS for the Ford Road Industrial Landfill Site	

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR
FORD ROAD LANDFILL SITE
ELYRIA, LORAIN COUNTY, OHIO

UPDATE #1
SEPTEMBER 26, 2006

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	06/00/06	U.S. EPA	Public	U.S. EPA Fact Sheet: "EPA Proposes Cleanup Plan; Requests Public Comment"	10
2	07/26/06	Hart, J., City of Elyria	Collier, D., & R. Gonzalez, U.S. EPA	Ford Road Industrial Land-fill Site Comment Sheet	2
3	08/08/06	Steerman, P., Steerman Environmental Management & Consulting, LLC	Collier, D., U.S. EPA	Ford Road Landfill PRP Group Comments on U.S. EPA Proposed Remedy for the Ford Road Site	5
4	08/08/06	Residents	Collier, D., U.S. EPA	Electronic Transmittals re: Public Comments to the Proposed Plan for the Ford Road Industrial Landfill Site	4
5	08/25/06	Volkmer, D., Weston Solutions, Inc.	Gonzalez, R., U.S. EPA	Public Meeting Transcript for the July 26, 2006 Meeting re: U.S. EPA's Proposed Cleanup Plan for the Ford Road Industrial Landfill Site w/Cover Letter	68