Explanation of Significant Differences

For

Fields Brook Superfund Site
Detrex Corporation Source Area (OU 5)

Ashtabula County

Ashtabula, Ohio

January 2014

Approved by:

Date:

Richard C. Karl
Director, Superfund Division

1/15/2014

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Executive Summary

The United States Environmental Protection Agency (EPA) is issuing this Explanation of Significant Differences (ESD) to provide notice of a modification to the cleanup decision for one of the source control areas of the Fields Brook Superfund site in Ashtabula, Ohio. The Fields Brook site consists of Fields Brook, its tributaries, and surrounding source areas that contribute, potentially may contribute, or have contributed to the contamination of the brook and its tributaries. EPA signed a Record of Decision (ROD) on September 29, 1997, to address all source control areas jointly, designating them as Operable Unit (OU) 2. Subsequently, this OU was further subdivided into OUs 5 through 10 in order to facilitate settlement negotiations. The Source Control ROD specified that the remedy was intended to protect Fields Brook. Pathways unrelated to Fields Brook were not evaluated. This ESD pertains only to the remedy at the Detrex Corporation Source Area, OU 5.

The ROD for the Detrex source control area selected a combination of vacuum-enhanced dense non-aqueous phase liquid (DNAPL) extraction wells and slurry wall containment for source control areas; and also established certain general and facility-specific requirements for institutional controls (ICs) related to the active components of the remedy. EPA previously modified the Source Control ROD on April 8, 1999, but that ESD did not apply to OU 5.

To date, the vacuum-enhanced DNAPL extraction wells installed at Detrex have not worked as well as expected. This ESD requires the conversion to a passive well extraction system. In addition this ESD incorporates the inclusion of a groundwater interception trench. The present ESD does not affect the ROD for Fields Brook sediment issued in September 1986, the ROD issued for Fields Brook floodplain areas issued in June 1997, or any of the ESDs issued for those RODs.

List of Acronyms

ARARs	Applicable or Relevant and Appropriate Requirements
Agency	United States Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CRG	Confidence Removal Goal
CUG	Cleanup Goal
DNAPL	Dense Non-Aqueous Phase Liquid
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Difference
EU	Exposure Unit
FBAG	Fields Brook Action Group
FFS	Focused Feasibility Study
FS	Feasibility Study
FYR	Five Year Review
GWIT	Groundwater Interceptor Trench
HCB	Hexachlorobenzene
HCBD	Hexachlorobutadiene
NPL	National Priorities List
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ODH / BRP	Ohio Department of Health / Bureau of Radiation Protection
Ohio EPA	Ohio Environmental Protection Agency
OMM	Operation, Maintenance and Monitoring
OU	Operable Unit
PCBs	Polychlorinated biphenyls
PPB	Parts per billion
piC/g	Pico-curies per gram
PPM	Parts per million
RA	Remedial Action
RI	Remedial Investigation
ROD	Record of Decision
RMI	Reactive Metals Incorporated
$TiCl_4$	Titanium tetrachloride
TSCA	Toxic Substances Control Act

Explanation of Significant Differences
Fields Brook Site
Detrex Corporation Source Area
Ashtabula County, Ashtabula, Ohio

I. Introduction to the Site and Statement of Purpose

A. Site Name and Location

Fields Brook Superfund site
Ashtabula County, Ashtabula, Ohio

B. Identification of Lead and Support Agencies

Lead Agency: U.S. Environmental Protection Agency (EPA)
Support Agency: Ohio Environmental Protection Agency (Ohio EPA)

C. Statement of Purpose

This decision document sets forth the basis for EPA's decision to issue an Explanation of Significant Differences (ESD) to the September 29, 1997, Record of Decision (ROD) for the Source Control Areas of the Fields Brook Superfund site in Ashtabula County, Ashtabula, Ohio. At the time of the ROD, all source control areas were grouped together as Operable Unit (OU) 2. Subsequently, each source area was defined as its own OU. This ESD addresses only the Detrex Corporation Source Area (OU 5).

D. Statutory Basis for Issuing the ESD

EPA is issuing this ESD in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended, and Section 300.435(c)(2)(i) of the National Contingency Plan (NCP). CERCLA is known as the Superfund law, and the NCP contains the regulations setting forth how EPA will carry out its responsibilities under Superfund.

Section 117(c) of CERCLA[1] states that EPA shall publish an explanation of the significant differences if EPA determines that the remedial action at the site should differ significantly from the remedial action previously selected in the ROD. EPA shall also publish the reasons such changes are being made. EPA policy and regulations[2] indicate that an ESD, rather than a ROD

[1] 42 U.S.C 9617(c)
[2] See 40 CFR 300.435(c) of the NCP: EPA Office of Solid Waste and Emergency Response Directive 9355.3-02.

Amendment, is appropriate where the changes being made to the remedy are significant, but do not fundamentally alter the overall remedy with respect to scope, performance, or cost.

E. Summary of Circumstances Warranting this ESD

The goal of the source area remedial actions at the Fields Brook site was to prevent recontamination of Fields Brook sediment above cleanup goals. The Source Control Areas ROD included the following requirements for the Detrex Source Area that are modified by this ESD:

Completion of Partial Slurry Wall – The ROD estimated that the slurry wall would extend approximately 1,500 feet, and final specifications would be determined during Remedial Design. The length of the slurry wall approved by EPA during Remedial Design was limited to the northwest corner of the Detrex property and is approximately 600 feet long. A Groundwater Interceptor Trench (GWIT) was installed on the southern portion of the site in 2006 and 2007. It enhances the containment aspect of the Detrex Source Control Remedy by providing a second line of defense against DNAPL or contaminated groundwater potentially migrating to Fields Brook. EPA did not issue an ESD for the GWIT at the time of installation. Based on groundwater monitoring data, the combination of the Partial Slurry Wall and GWIT appears to be adequately preventing DNAPL migration and groundwater contamination as intended in the ROD, therefore, no additional slurry wall construction is necessary or required by this ESD. The GWIT is part of the selected site remedy.

Change in Design and Operation of Extraction Wells – The ROD estimated that 40 vacuum enhanced extraction wells would be installed. EPA has approved three rounds of well installation. Phase 1 consisted of 12 wells installed in 2002. Almost immediately, Detrex encountered severe operational difficulties, such as product crystallization and plugging of wells. Two additional wells of modified design were installed in 2007 and 2008. The performance of the new wells also has not been as expected. In spite of the operational problems, over 18,000 gallons of DNAPL have been collected to date.

In 2012, Detrex installed six pilot test wells and performed a series of tests on alternative vacuum extraction technologies. The results of these tests are presented in a *Draft DNAPL Recovery Evaluation Report, URS, Inc., April 2013*. The tests show that due to particular site characteristics, vacuum technology does not significantly improve DNAPL recovery over passive methods on the Detrex facility.

This ESD changes the operation of the source area extraction well system by requiring pumping of accumulated DNAPL periodically from passive (non-vacuum) wells. The number of wells, their design, and location shall be determined in work plans submitted and approved by EPA. The first phase of the new wells must be in place by June 30, 2014, and the entire system must be in place and operational by June 30, 2016. The goal is for the entire Detrex source area to achieve a "residual (non-mobile) concentration" of DNAPL in soil, thus rendering the DNAPL immobile and eliminating any potential threat to the brook. Specific minimum design parameters, and operation, monitoring, and recovery parameters, which define remedy standards

and end point, are described in Section III of this ESD. Well cuttings can continue to be managed at the on-site area approved by EPA for use during the 2012 pilot tests.

F. Agency Determination

EPA, in consultation with the Ohio EPA, has determined that changes are required to the ROD for the remedy to be protective of human health and the environment. However, the proposed changes, while significant, do not fundamentally alter the overall site action with respect to scope, performance, or cost. Thus, EPA finds that it is appropriate to issue an ESD to document the remedy modifications.

G. Administrative Record

In accordance with Section 300.435(c) of the NCP, this ESD and supporting documentation will become part of the Administrative Record for the cleanup decision at the Fields Brook site. The Administrative Record is available for public review at the following information repositories:

Records Center
EPA Region 5
77 W. Jackson Blvd. - 7th Floor
Chicago, IL 60604
(Mon through Fri 8:00 am to 4:00 pm Central Time)

The repositories near the site can be found at the following locations:

Ashtabula County District Library
335 West 44th Street
Ashtabula, Ohio
(Mon/Tues 10:00 am – 8:00 pm; Weds/Thurs/Fri 11:00 am – 6:00 pm; Sat 11:00 am – 4:00 pm)

Kent State Campus Library
3325 West 13th Street
Ashtabula, Ohio
(Mon-Thur 8:00 am – 9:00 pm; Fri 8:00 am – 3:00 pm)

II. Site History, Contaminants, and Selected Remedy

A. Site History

The Fields Brook site is located in northeast Ohio, in Ashtabula County, approximately 55 miles east of Cleveland, Ohio (Fig 1). Fields Brook drains a six square-mile watershed. The eastern portion of the watershed drains Ashtabula Township and the western portion drains the eastern portion of the city of Ashtabula. The main channel is 3.9 miles in length and begins at Cook

Road, just south of the Penn Central Railroad tracks. From this point, Fields Brook flows northwest to Middle Road, then west to its confluence with the Ashtabula River. From Cook Road downstream to State Route 11, Fields Brook flows through an industrialized area. Downstream of State Route 11 to near its confluence with the Ashtabula River, Fields Brook flows through undeveloped and residential areas in the City of Ashtabula. Fields Brook discharges to the Ashtabula River approximately 8,000 feet upstream from Lake Erie.

The industrial zone of Ashtabula is concentrated around Fields Brook and is comprised of several chemical industries and waste disposal sites. Manufacturing has occurred since the early 1940's in this area. Activities ranging from metal-fabrication to production of complex chemical products occurred on approximately 18 separate industrial properties. The decades of industrial activity along Fields Brook and its tributaries resulted in the release of chemical contamination to the Fields Brook watershed, particularly the sediments of Fields Brook, the floodplain soils and sediments, and the soils surrounding the industries.

The Fields Brook site was placed on the National Priorities List (NPL) for hazardous waste sites on September 8, 1983. The site consists of Fields Brook, its tributaries, and any surrounding areas that contribute, potentially may contribute, or have contributed to the contamination of the brook and its tributaries.

The Fields Brook site OUs are summarized in the table below. Source control OUs are shown on Figure 2.

Operable Unit	**Description**
1	Fields Brook sediment
2	Historically known as the Source Control OU, OU2 was further broken down into OUs 5 - 10 to allow for facility-specific negotiations
3	Historically the Ashtabula River and Harbor, which is being addressed outside of the Superfund program by the Ashtabula River Partnership
4	Floodplain/wetland areas associated with Fields Brook
5	**Detrex Corporation source area**
6	Millennium $TiCl_4$ Plant source area
7	North Sewers source area
8	Acme Scrap Iron and Metal / South Sewers source area
9	Conrail Bridge Yard source area
10	RMI Metals Property source area

OU 5 is the subject of this ESD.

B. Summary of Contamination for OU Which Is the Subject of this ESD

The primary chemicals of interest at Detrex from past operations include tricholoroethene, 1,1,2,2-tetrachloroethane, hexachlorobutadiene (HCBD), hexachlorobenzene (HCB) and tetrachloroethene. Results from sampling conducted during the Source Control RI indicated that surface soil exceedances for Fields Brook contaminants of concern were identified in several areas of the Detrex facility. These areas include: the storm water collection ditch on the northern property line, several abandoned retention ponds, construction debris piles, sediment in the storm water settling collection basin, and a catalyst pile. In addition, the recontamination assessment identified DNAPL in the groundwater on the Detrex facility.

C. Selected Remedies

EPA signed a Record of Decision (ROD) on September 29, 1997 to address source areas which could re-contaminate Fields Brook sediment above cleanup goals (Source Control Areas ROD). The Ohio EPA elected not to concur with this ROD because they disagreed with limiting the scope of the source area cleanup to those areas which could re-contaminate the brook.

As documented in the Record of Decision, the goal of the source area remedial actions at the Fields Brook site was to prevent recontamination of Fields Brook sediment above cleanup goals. Where institutional controls were required, those controls were intended to limit the future use of areas so as to ensure that contamination does not migrate to the brook.

Remedy Selection

The selected remedy for the Detrex source area required the containment and treatment of groundwater contamination by the construction of a partial slurry wall and vacuum-enhanced extraction wells. The selected remedy would also reduce the potential for migration of contaminated surface soil to the DS Tributary and Fields Brook by containment of surface soil contamination, ditch cleaning, catalyst pile removal, and retention pond sediment removal. See Fig. 3 for a map showing features relevant to the site remediation.

More specifically, the components of the selected and implemented remedy for the Detrex Corporation Source Control Operable Unit that are modified by this ESD include the following:

1.) Vacuum-Enhanced Extraction Wells

Vacuum-enhanced extraction wells were installed near the leading edge of the DNAPL plume near the slurry wall and within the plume to lower groundwater and collect DNAPL in source areas. Based on pilot test results, approximately 36 extraction wells were anticipated.

Fluids collected from the vacuum-enhanced extraction wells are routed to a knockout tank to separate the vapor phase from the liquid phase. The vapor phase is treated with granular activated carbon to remove organic contaminant vapors before being released into the atmosphere.

The liquid phase from the knockout tank is conveyed to a DNAPL/water separator where DNAPL is separated from water. The separated DNAPL is collected and transported to an off-site facility for treatment or recycling. The separated water is conveyed to the existing activated carbon water treatment system at the Detrex facility.

2.) Chemical Monitoring and O&M

O&M activities for the vacuum-enhanced extraction well system include routine inspections of blowers, electrical equipment, belts, fuses, and pertinent operating parameters. O&M requirements for the slurry wall and regraded areas consist of inspections, with regrading and revegetating, as necessary. Routine sampling of selected extraction wells was required to monitor the effectiveness of the system. At a minimum, annual groundwater monitoring was conducted at points of compliance, with samples analyzed for DNAPL, VOC and SVOC parameters. In addition, water level data was gathered on a semi-annual basis from all monitoring wells and piezometers installed inside and outside of the slurry wall to evaluate groundwater gradients within the remedial response area.

3.) Groundwater Points of Compliance and DNAPL Treatment Goals

Groundwater contamination must meet the occupational CUGs to prevent recontamination of the brook. At a minimum, the points of compliance for the contaminants present in groundwater will be the edge of the slurry wall or, for areas without the slurry wall, the property boundary and the DS tributary.

The Source Control ROD also references EPA guidance that recommends that long-term remediation objectives of DNAPL remedies should be to remove free-phase, residual and vapor phase DNAPL "to the extent practicable". The ROD also notes that the DNAPL is a principal threat, and states that, given the selected remedy "Complete removal of DNAPL in low permeability clay soils is not possible with currently available technology and treatment to asymptotic levels is expected".

Groundwater Remedy Implementation

Construction of the slurry wall and installation of groundwater collection trenches began in August of 2000 and were completed in mid-2001. The slurry wall controls the movement of groundwater and provides for a system of drains that collect groundwater and runs it through Detrex's existing water treatment plant. The constructed slurry wall is shown in green on Fig. 3.

In September 2005, EPA issued Detrex a Request for Work Plan for Resolution of DNAPL Release to Fields Brook. The objective of the requested Work Plan was to identify potential DNAPL transport to the brook and propose remedial measures to stop identified current and future contamination movement. In 2006, Detrex agreed to install a Ground Water Interceptor Trench (GWIT) along the southern portion of the site. The work began in November 2006 and was completed in January 2007. It became operational in July 2007. The trench system is shown as a red dashed line on Figure 3. The construction of the GWIT is documented in the January 2008 URS Report *Southern Area Groundwater Interceptor Trench Construction and Installation Report.*

EPA did not issue an ESD for the Southern Area GWIT before it was constructed. This ESD serves to document this remedy change and incorporate the GWIT as part of the OU5 selected remedial action.

EPA and Detrex agreed that the DNAPL extraction system could be phased in to allow the system to be expanded based on field performance data and could be modified to address any problem experienced in the first phase of extraction wells. On October 4, 2001, EPA approved the remedial design for the phase 1 of the DNAPL extraction system. Detrex constructed the system in the summer of 2002. Upon start up in October 2002, Detrex encountered some severe operational difficulties (such as product crystallization and plugging of wells) and eventually had to move to a less automated approach to running the system since they found the extraction system requires close operator attention to maintain. Two additional wells were installed in 2007 and 2008 of modified design, and neither has worked as expected. All wells are located in the boomerang-shaped area labelled "Existing DNAPL Recovery Well Area" on Figure 3.

In 2012, Detrex installed six pilot test wells and performed a series of tests on alternative vacuum extraction technologies. The results of these tests are presented in a *Final DNAPL Recovery Evaluation Report, URS, Inc., September 2013.* The tests show that due to particular site characteristics, vacuum technology does not significantly improve DNAPL recovery over passive methods.

System Operations and Maintenance

Detrex is currently operating under an O&M Plan that includes the inspection and upkeep of the extraction system and the sampling of monitoring wells. Sampling of the Detrex outfall, which assesses the performance of the on-site water treatment system, is addressed by monitoring required under Detrex's NPDES permit. Detrex provides copies of its monthly operating reports

to EPA.

Institutional Controls

Institutional controls (ICs) are sometimes required by EPA to ensure the protectiveness of a remedy. ICs are non-engineered instruments, such as administrative and legal controls that help to minimize the potential for human exposure to contamination and that protect the integrity of the remedy. For source areas at the Fields Brook site, ICs are required to assure long-term protectiveness for any areas that have the potential to re-contaminate the brook above cleanup levels or otherwise are required to maintain the integrity of the remedy. The industrial source area facilities are subject to other environmental regulations such as the Resource Conservation and Recovery Act (RCRA) Corrective Action provisions that may require additional cleanup or institutional controls in the future.

The ICs required at Detrex are limited to those restrictions necessary to maintain the integrity of the engineered controls that are in place to prevent recontamination of the brook. Currently, signs are posted and access controls (not themselves considered institutional controls) are in place in the form of fencing and site security to limit access to critical areas of the facility, where remedial structures are primarily located. Areas to the south of the main production are posted with signs to discourage trespassers. Detrex placed restrictions on its deed in 2010 to protect remedial structures and restrict installation of groundwater wells.

II. Basis for ESD

The modified remedy presented in this ESD addresses the potential of releases from the Detrex facility as it acknowledges the containment of the Detrex source area from Fields Brook. This ESD modifies the selected remedy to require Detrex to implement a different well extraction system to improve DNAPL extraction in the source area and thus further prevent any risk of migration of the DNAPL. This ESD also incorporates into the OU5 remedy the addition of the GWIT.

III. Description of Significant Differences

This ESD does not fundamentally change the remedy in the ROD, but increases the scope of the containment element of the remedy and changes the DNAPL extraction well system from active extraction to passive extraction. These changes are expected to significantly expedite the removal of mobile DNAPL in the Detrex source area, and provide metrics for EPA to determine when the remedy is complete..

A partial 600 foot long slurry wall and groundwater collection trench was installed in 2001. This system was enhanced by construction of a groundwater containment system (i.e., GWIT) in the southern portion of the site in 2006 and 2007. (Fig 3). Based on groundwater data, these containment systems are effectively containing DNAPL and contaminated groundwater, and no additional slurry wall construction is necessary.

Fourteen DNAPL/groundwater extraction wells have been installed but have experienced operational problems. A 2012 Pilot study shows that vacuum extraction does not significantly improve DNAPL recovery from extraction wells. The selected remedial action is being changed by this ESD to include installation of additional passive DNAPL recovery wells/subsurface collection points where there is DNAPL in subsurface soils. DNAPL will accumulate in the recovery wells/subsurface collection points and be periodically measured and removed. In addition, DNAPL will be removed from all monitoring wells at the site, regardless whether they are part of the current monitoring network. All recovered DNAPL will be disposed of in accordance with State and Federal Regulations. Operation and maintenance of the recovery system will continue until the volume of recovered DNAPL reaches "residual levels". The following provides a guide for implementation:

Passive collection system:

- EPA will approve the locations of the DNAPL recovery system via a project-specific work plan.
- Passive recovery wells / subsurface recovery points will be located where investigations have indicated DNAPL is present in the subsurface.
- The April 2012 "*Results of Membrane Interface Probe and Soil Boring Investigation*"report and the September 2013"*Final Dense Non-Aqueous Phase Liquid (DNAPL) Recoverability Report*" will serve to identify DNAPL locations where the passive DNAPL recovery system locations will be proposed. These approximate locations are shown on Figure 4 of this ESD. Upon approval by EPA, additional information may be considered to propose additional recovery system areas or to delete previously identified areas.
- Any currently installed monitoring well, recovery well, observation point, or piezometer which has shown to recover DNAPL may be proposed as a passive recovery well/subsurface recovery location. Alternative passive recovery well/subsurface recovery designs may be proposed. Proposed alternative recovery well designs will need to demonstrate that: 1) they can accumulate measurable and recoverable DNAPL; and 2) they have sufficient design characteristics, including material compatibility, such that they will be operational for the expected operational period.
- Passive recovery wells/subsurface recovery points around the perimeter of DNAPL areas will be located at intervals not to exceed (nominal) 15 feet.
- Passive recovery wells/subsurface recovery points located inside the DNAPL perimeter will be located at intervals not to exceed (nominal) 45 feet.
- Some sentinel monitoring points will be required outside of DNAPL areas as approved by EPA. Existing monitoring wells or monitoring points may be proposed as sentinel monitoring, or new sentinel wells/points may be proposed. The sentinel monitoring will help determine if the extraction system covers sufficient area.
- The extraction system may be designed and installed in phases. The initial phase must be operational by June 30, 2014 and the Final Phase must be operational by June 30, 2016.

This will allow for refinements in the installation of recovery wells/subsurface recovery points.

System Operation:

- Once installed, the passive recovery wells/subsurface recovery points will collect DNAPL for at least 4 weeks (28 calendar days) at which point an Initial Measurement of DNAPL in the well is recorded. The Initial Measurement will provide the basis for decisions made regarding the O&M of the system.
- DNAPL measurement in the recovery wells/passive recovery points will occur no less frequently than monthly, except:
  - ✓ When the measured DNAPL for three consecutive months indicate that a particular recovery well/passive recovery point is less than 10% of the Initial Measurement; the measuring/recovery interval can be extended to not to exceed quarterly, with approval of EPA.
  - ✓ When the measured DNAPL for three consecutive quarterly events is less than 5% of the Initial Measurement, the monitoring/recovery interval can be extended to no less than annually, with approval of EPA.
  - ✓ When the measured DNAPL for four consecutive annual events is less than 1% of the Initial Measurement, with a maximum measured thickness of 0.25 inches, the monitoring and removal can be terminated, with approval of EPA.
  - ✓ Measurements technique and equipment shall be capable of measuring to 0.01 foot (approximately 1/8 inch) accuracy.
- All measurement and recovery events, including those that are more frequent than specified above, shall be reported to EPA in the monthly reports.
- Passive recovery wells/subsurface recovery points which have no DNAPL measured in Initial Measurement can be placed in the quarterly monitoring phase immediately, upon approval of EPA.
- With approval of EPA, timing of monitoring/recovery events may be synchronized quarterly. The intent here is to allow for quarterly monitoring for all points to be synchronized into a single event.
- DNAPL may be recovered by any viable means, including, but not limited to: bailers, peristaltic pumps, vacuum trucks or equivalent, or submersible pumps. The means and methods used to remove the DNAPL shall be documented in the monthly report. While the intent is to recover DNAPL, total fluids (DNAPL plus water) may be recovered. The means used to recover DNAPL can be changed, provided that such change is reported to EPA in the next monthly report.
- All recovered DNAPL and total fluids shall be collected, managed, and disposed of in accordance with applicable State and Federal regulations.
- Monthly reports shall be prepared and submitted to EPA. The reports shall include the following: Initial Measurement for each location; the calculated threshold measurements for reducing measurement/recovery intervals for each location, and all measurement results pursuant to this ESD for each location. The report shall also include a total

quantity of DNAPL (or total fluids) recovered during the reporting period from the system, cumulative quantity of DNAPL (or total fluids) recovered during actions pursuant to this ESD, and cumulative quantity of DNAPL recovered since the ROD was issued. At the discretion of EPA, the reporting period can be extended to a time period greater than monthly.

- Recovery well/passive recovery points may be abandoned upon approval of EPA. All abandonments shall be in accordance with applicable regulations, guidance, or method approved by EPA.

Sampling/recovery intervals noted above are nominal timeframes. Upon approval of EPA different timeframes can be used.

The goal is for the entire Detrex source area to achieve a "residual concentration" of DNAPL in soil, rendering it immobile so that it no longer presents a potential recontamination threat to Fields Brook sediments. This remedial action objective is unchanged from the original ROD. Furthermore, because contamination will be left in place, long term monitoring (LTM) will continue to be required even after completion of the DNAPL removal activities outlined in this ESD. The LTM plan is expected to include groundwater monitoring and monitoring for the presence of DNAPL. The specific LTM activities will be specified in a future LTM plan and approved by EPA.

IV. Support Agency Comments

Ohio EPA did not concur with the original ROD (See Section II C above). Ohio EPA provided technical comments on this ESD, however has not changed position regarding the original ROD. Ohio EPA indicated that it agreed with the goal of achieving residual (non-mobile) concentrations of DNAPL in the source area. Ohio EPA also indicated that the approach discussed in this ESD, passive extraction well system coupled with the existing partial slurry wall and groundwater interceptor trench, may produce better results for protection of the brook than the remedy selected in the original ROD. However, Ohio EPA is not providing concurrence with this ESD.

V. Statutory Determinations

EPA has determined that this remedy modification involving enhancement of the DNAPL containment and extraction wells for the Detrex source control area of the Fields Brook site is in accordance with Section 121 of CERCLA, 42 U.S.C. § 9621, and that the selected remedy for the Fields Brook site is protective of human health and the environment. The remedy modification also complies with federal and state environmental requirements that are applicable or relevant and appropriate, uses permanent solutions to the maximum extent practicable, and is cost-effective. Five Year Reviews will continue to be required for the Detrex Corporation Source Area (OU 5) to ensure the remedy remains protective.

VI. Public Participation Compliance

EPA shall publish a notice of availability and a brief description of this ESD in the local newspaper as required by NCP 300.435(c)(2)(i)(B). EPA will also place this ESD into the Administrative Record file and Site Information Repositories located at the Ashtabula County District Library and the Kent State Campus Library, as required by NCP 300.825(a)(2).

VII. Declaration

EPA has reviewed the Administrative Record for the Fields Brook site and has evaluated current and historical data. Based upon this review, EPA has determined that a modification of the groundwater containment (GWIT) and DNAPL extraction well requirements for the Detrex Source Area of the Fields Brook site is appropriate and will be protective of human health and the environment. EPA has changed the remedy set forth in the September 29, 1997, Source Control Areas ROD in the manner described above.

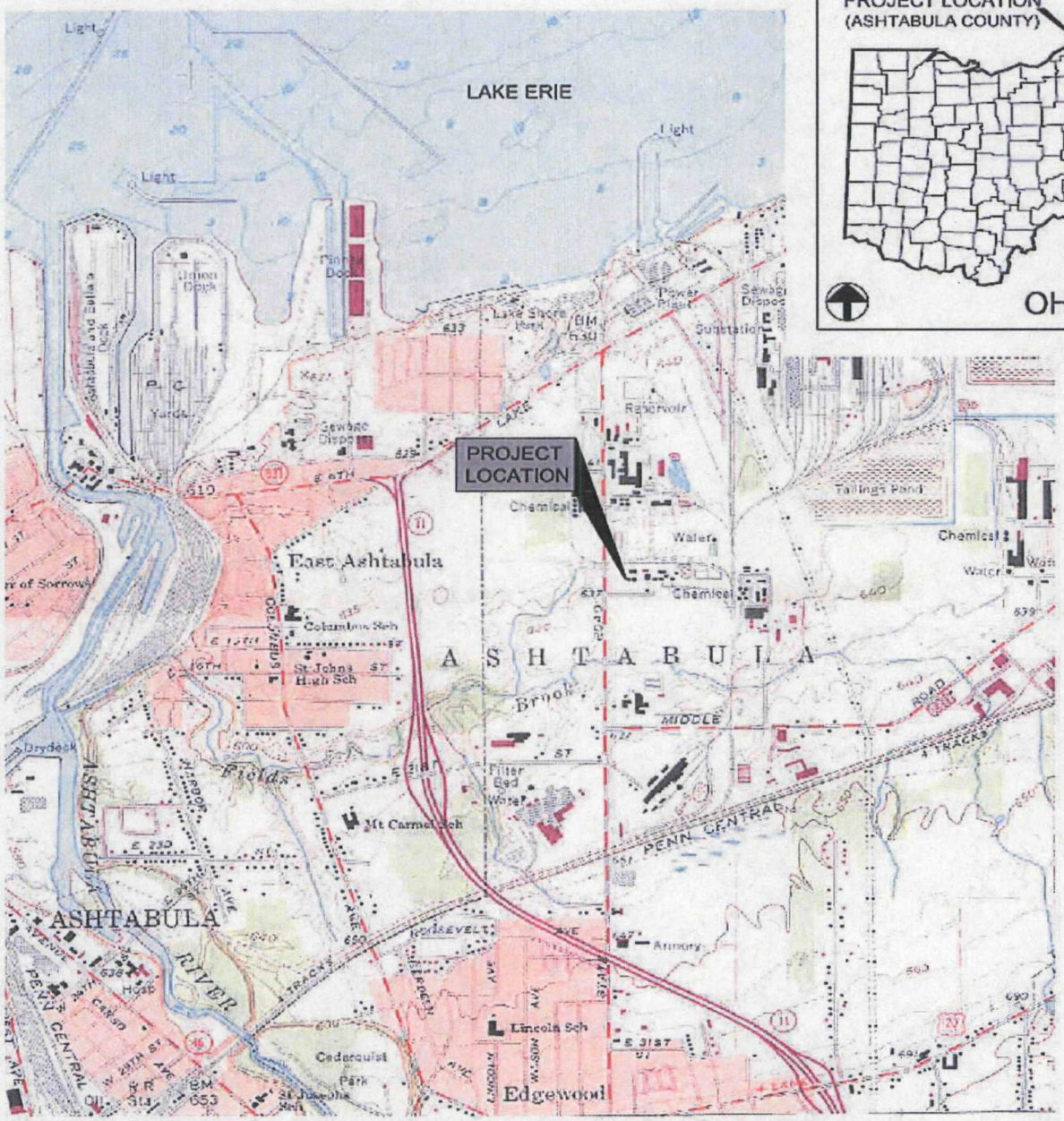
Table

Figures

Table 1. Summary of Existing Requirements and Changes Specified in This ESD

Operable Unit	Remedy	Remedy as Implemented	Changes Specified in Current ESD
Detrex Source Area (OU 5)	Specified in Source Control Areas ROD (1997) Containments and treatment of DNAPL and groundwater contamination by the construction of a partial slurry wall and vacuum-enhanced extraction wells. • Clear Debris and Vegetation, Remove Physical Hazards • Construct slurry wall beyond the down gradient portion of the on-site and off-site DNAPL and dissolved phase COCs plume, located outside of the DNAPL and extended to ensure that the DNAPL and contaminated groundwater flowing westward toward Fields Brook would be contained or captured. The wall was expected to be approximately 1, 500 feet long. • Install approximately 40 vacuum-enhanced extraction wells to lower groundwater and collect DNAPL in source areas. Spoils will be temporarily stockpiled on-site and characterized to determine disposal options. • Surface Water and Erosion Control/Soil Cover • Catalyst Pile Excavation and Disposal • Off-site Surface Water Control in the DS Tributary by excavating sediment and installing new 30" culvert approximately 600' upstream from State Road. • Institutional controls will be implemented for any area where hazardous substances, pollutants or contaminants will remain above levels that allow for unlimited use and unrestricted exposure. ICs will include deed restrictions, security fencing, signs and restrictions on the placement of wells.	Remedial Actions: • Debris and Hazards were removed in 2001. • A partial 600' slurry wall and groundwater collection trench were installed in 2001. • Twelve extraction wells were installed in 2001. Two additional wells of an alternate design were installed in 2007 and 2008. All have suffered from operational problems due to silting, and COC crystallization under vacuum. All drill cuttings were characterized and disposed of off-site. • Surface water and physical hazards removed in 2001 • Catalyst piles were removed in 2001. • Excavation of contaminated sediment was completed in 2001; culvert extension was determined to be unnecessary, but the area is being re-evaluated in 2011. • Institutional controls for Detrex were completed in 2010. • A Groundwater Interceptor Trench was installed in the southern portion of the Site in 2006/2007. • DNAPL Extraction Well Vacuum Enhancement Pilot Tests were completed in 2012.	The existing requirements for design of the slurry wall and extraction wells are replaced with the following and will be implemented in accordance with a work plan to be reviewed and approved by EPA. • The existing 600' slurry wall and southern area groundwater collection trench have been shown to be effective, and so the slurry wall portion of the remedy with inclusion of the groundwater collection trench, is considered complete. • The DNAPL extraction system will be altered by installing passive wells and periodically removing accumulated DNAPL (and contaminated groundwater) until residual concentration is achieved. The number of wells, their design, and location shall be determined in work plans submitted and approved by EPA. The goal of this ESD element is for the entire Detrex source area to achieve a" residual concentration" in soil, so that DNAPL can no longer migrate. Due to the lack of standard analytical methods for measuring DNAPL concentrations, these work plans shall also establish a quantitative metric endpoint for determining when residual concentration has been reached , and will form a basis for determining remedy completion. The wells can be installed all at once or can take place in phases at EPA's option. Well cuttings can continue to be managed at the on-site area approved by EPA for use during the 2012 pilot tests[1]..

[1] The soils management area, while allowed, may need to be moved in order to extract DNAPL from underneath it.



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1:24,000 QUADRANGLE
ASHTABULA NORTH, OHIO
1960 PHOTO REVISED 1970
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SCALE: 1"=2000'

URS

DETREX CORPORATION
ASHTABULA, OHIO

PROJECT SITE LOCATION MAP

DRAWN BY:	CHECKED BY:	PROJECT No:	
YRC	MLS	13810732	ESD Figure 1

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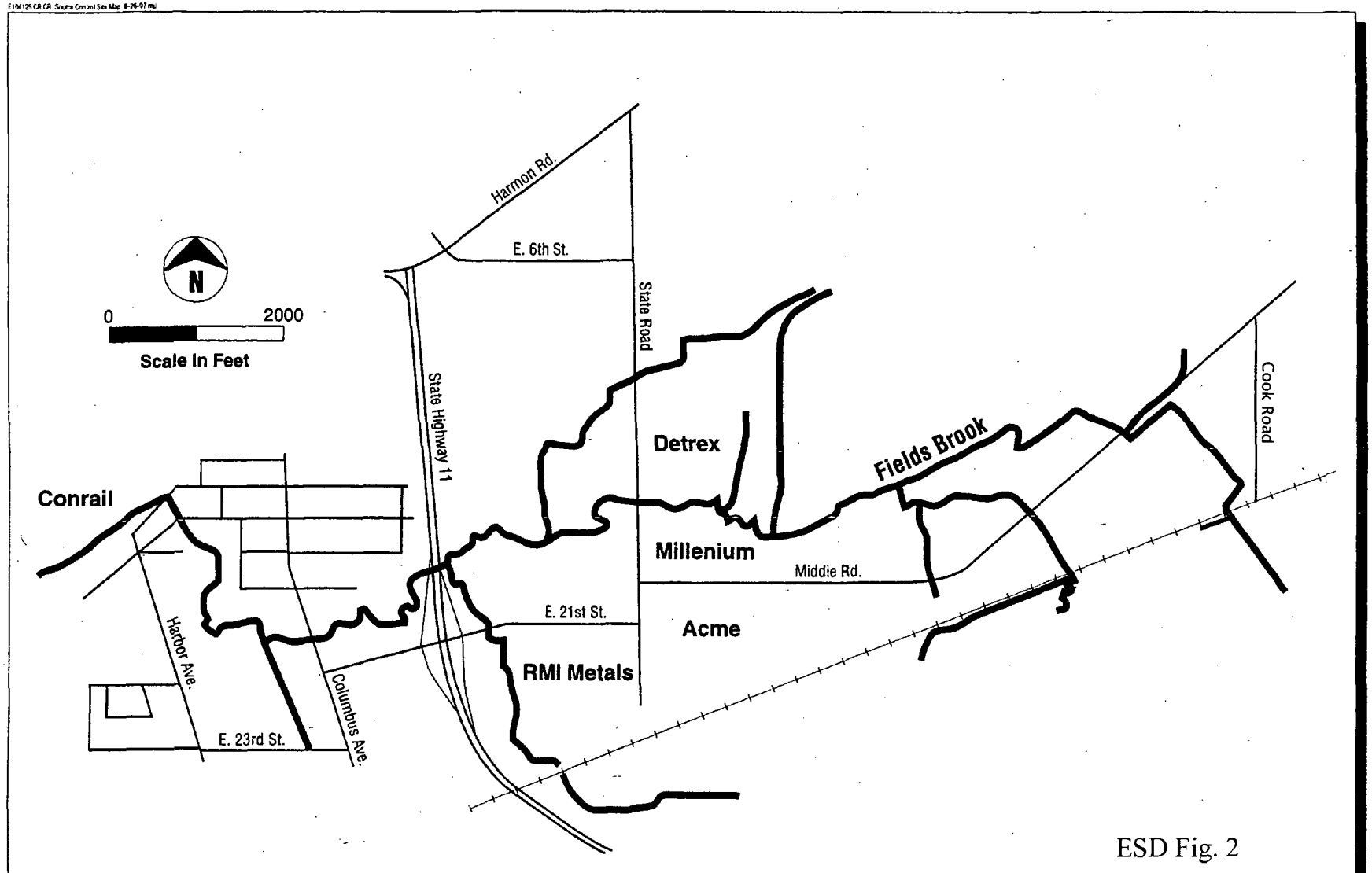
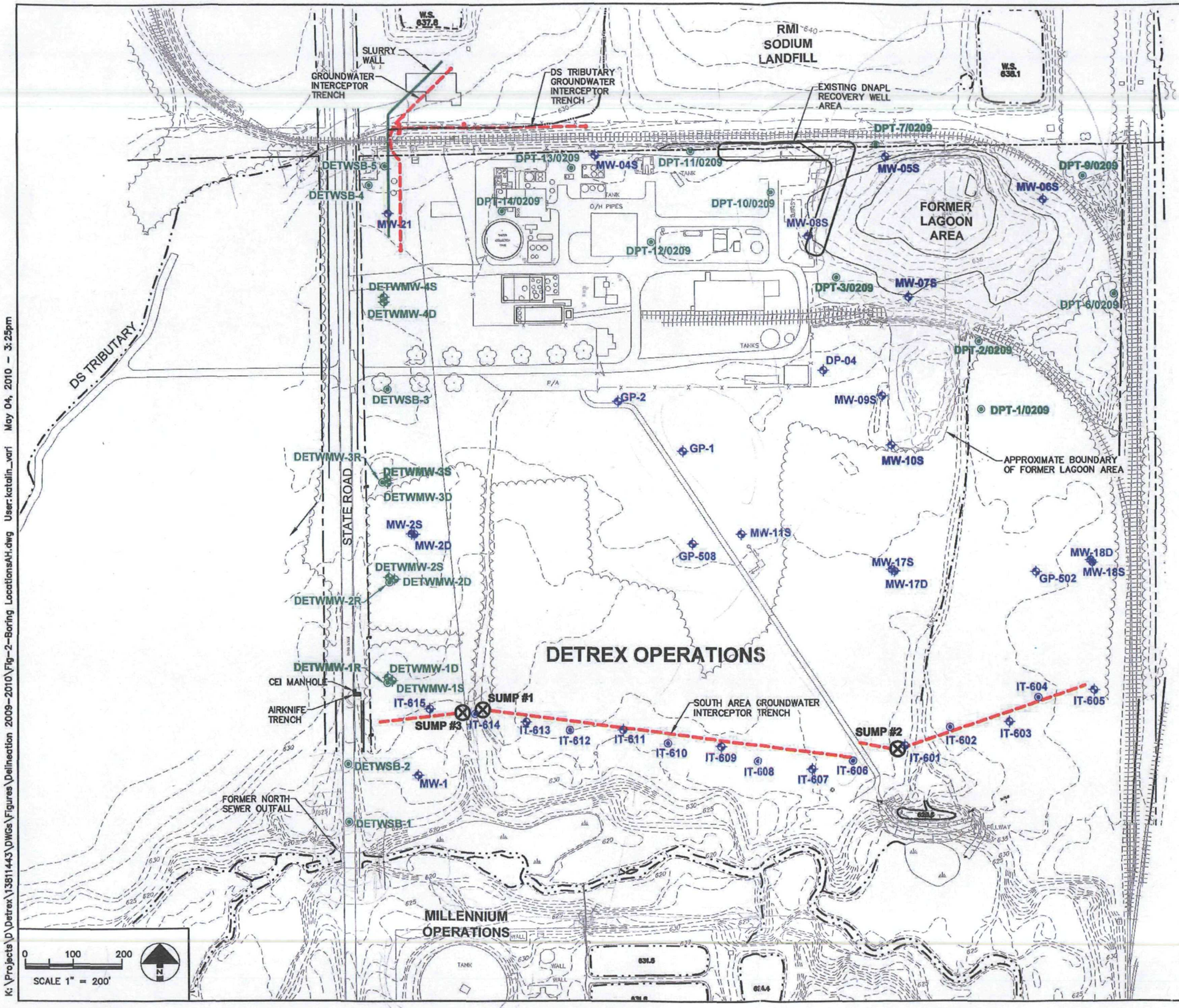


ESD Fig. 2

Source Control Site Map
(Industrial Portion of Fields Brook Watershed)



LEGEND

- MONITORING WELL (2009)
- MONITORING WELL (1993-2008)
- SOIL BORING (2009)
- SOIL BORING (1993-2008)
- 640 EXISTING GROUND SURFACE CONTOUR (ft. MSL)
- GROUNDWATER COLLECTION TRENCH SUMP
- GROUNDWATER INTERCEPTOR TRENCH
- SLURRY WALL

URS

DETREX CORPORATION
ASHTABULA, OHIO

SITE FEATURES AND BORING LOCATIONS MAP

DRAWN BY:	CHECKED BY:
AMH	MLS

Detrex ESD - Figure 3

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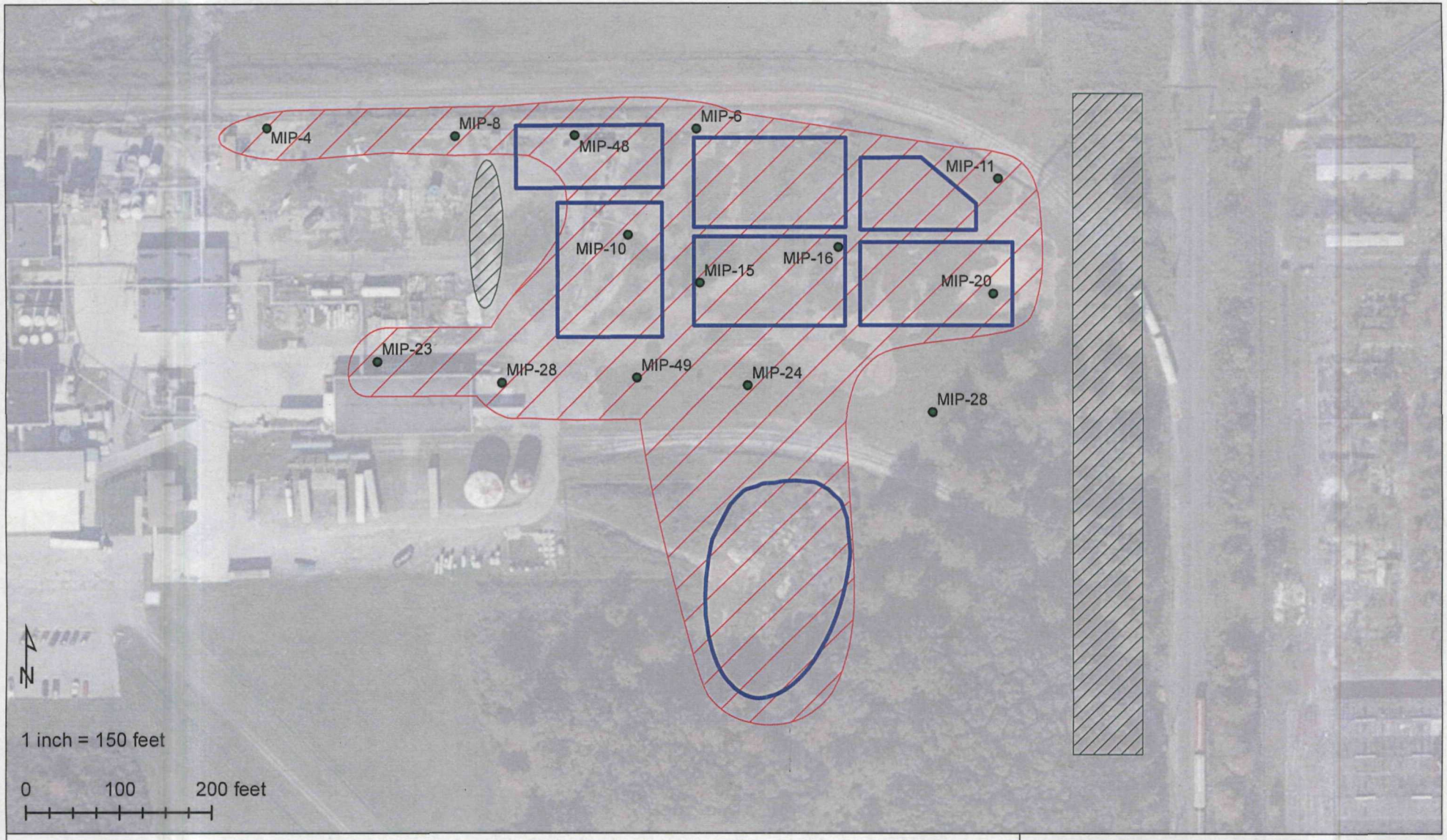

- MIPs
- DNAPL area
- Sentinel wells
- Former lagoon

FIELDS BROOK
ASHTABULA COUNTY, OHIO

DETREX ESD

FIGURE 4
APPROXIMATE AREA OF RECOVERABLE DNAPL

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