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LIST OF ACRONYMS

ACO	Administrative Consent Order
ACOE	Army Corps of Engineers
AEC	Atomic Energy Commission
AOC	Area of Concern
ASTM	American Society of Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
AUF	Area Use Factor
AUL	Activity and Use Limitation
AVS	Acid Volatile Sulfide
AWQC	Ambient Water Quality Criteria
BAF	Bioaccumulation Factor
BCF	Bioconcentration Factor
BERA	Baseline Ecological Risk Assessment
bgs	below ground surface
BOD	Biological Oxygen Demand
cm^2	square centimeters
CAPCOA	California Air Pollution Control Officers Association
CBRs	Critical Body Residue
cm	centimeter
COC	Constituent of Concern
COD	Chemical Oxygen Demand
COPC	Constituent of Potential Concern
COPEC	Constituent of Potential Ecological Concern
CR/O	Surface Runoff Coefficient
CRDL	Contract Required Detection Limit
CSF	Cancer Slope Factor
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compound
DCA	Dichloroethane
DCE	Dichloroethene
DCQAP	Data Collection Quality Assurance Plan
DEP	Department of Environmental Protection
DNA	Deoxyribonucleic Acid
DQAP	Data Quality Assurance Plan
DTW	Depth to Ground Water
ECOC	Ecological Constituent of Concern
Ec0-SSL	Ecological Soil Screening Level
ENVIRON	ENVIRON International Corporation
EPT	Ephemeroptera, Plecoptera, Tricoptera
EqP	Equilibrium Partitioning
ERA	Ecological Risk Assessment
ER-L	Effects Range-Low
ER-M	Effects Range-Median
ESA	Environmental Site Assessment
ESB	Ecotoxicity Screening Benchmark
F	Fahrenheit

FLUPA	Future Land Use Proposal Application
foc	Fraction of Organic Carbon
g	gram
H	Henry's Law Constant
HDPE	High Density Polyethylene
HEAST	Health Effects Assessment Summary Tables
HERA	Human and Ecological Risk Assessment
HI	Hazard Index
HPGe	High Purity Germanium
HQ	Hazard Quotient
hr	hour
HSDB	Hazardous Substances Data Bank
ID	Insider Diameter
IPCS	Information, Planning and Conservation System
IRIS	Integrated Risk Information System
Kd	Soil/Water Partition Coefficient
kg	kilogram
Koc	Organic Carbon/Water Partition Coefficient
Kow	Octanol/Water Partition Coefficient
K_p	Permeability Constant
L	Liter
LEL	Lowest Effect Level
LEU	Low Enrichment Uranium
LOAEL	Lowest Observed Adverse Effect Level
LOE	Lines of Evidence
LOEL	Lowest Observed Effect Level
m	meter
m^3	cubic meter
MAAQS	Massachusetts Ambient Air Quality Standard
MassDEP	Massachusetts Department of Environmental Protection
MADFW	Massachusetts Division of Fisheries & Wildlife
MCL	Maximum Contaminant Limit
MCP	Massachusetts Contingency Plan
MDFW	Maryland Department of Fish and Wildlife
MDL	Method Detection Limit
MEK	Methyl Ethyl Ketone
mg	milligram
MNA	Monitored Natural Attenuation
MOE	Ontario Ministry of the Environment
mph	Mile(s) per hour
MTBE	Methyl Tertiary Butyl Ether
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MSL	Mean Sea Level
MW	Monitoring Well
NCEA	(USEPA) National Center for Environmental Assessment
NCP	National Contingency Plan
NGVD	National Geodetic Vertical Datum
NOAA	National Oceanic and Atmosphere Administration
NOAEL	No Observed Adverse Effect Level

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NTU	Nephelometric Turbidity Units
NYSDEC	New York State Department of Environmental Conservation
NWI	National Wetland Inventory
OCHCA	Orange County Health Care Agency
OD	Outside Diameter
ORNL	Oak Ridge National Laboratories
OVM	Organic Vapor Monitor
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
pCi	Picocuries
PEL	Permissible Exposure Level
PET	Potential Evapotranspiration
pH	Hydrogen Ion
PID	Photoionization Detector
ppm	parts per million
R	Retardation Coefficient
RAIS	Risk Assessment Information System
RCRA	Resource Conservation and Recovery Act
RfC	Reference Concentration
RfD	Reference Dose
RFI	RCRA Facility Investigation
RL	Reporting Limit
RME	Reasonable Maximum Exposure
s	second
SAP	Sampling and Analysis Plan
SDI	Supplemental Design Investigation
SEL	Severe Effect Level
SEM	Simultaneous Extracted Metals
SLC	Screening Level Concentration
SLERA	Screening Level Ecological Risk Assessment
SMDP	Scientific Management Decision Point
SPLP	Synthetic Precipitation Leaching Procedure
SPM	Suspended Particulate Matter
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TCA	Trichloroethane
TCE	Trichloroethylene
T&E	Threatened and Endangered
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TRV	Toxicity Reference Value
TPHD	Total Petroleum Hydrocarbons as Diesel
TU	Toxic Unit
UCL	Upper Confidence Limit
µg	microgram
µR	MicroRoentgen
UST	Underground Storage Tank
USCS	Unified Soil Classification

USDA	United States Department of Agriculture
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compound
WOE	Weight of Evidence
WTP	Water Treatment Plan
∑	Sum

Executive Summary (ES)

ES 1.1 Introduction

BASF Corporation (formerly Engelhard Corporation, hereafter referred to as BASF after its acquisition in 2007) owns a former manufacturing facility located at 32 Taunton Street in Plainville[1], Massachusetts (referred to as the Facility or the Site). This Facility operated from the mid-1950s to 1993 and, after a five-year shutdown period, recommenced in Buildings 8 and 10 only, dry (non-chemical usage), small wire-making and warehousing operations in 1999. Those operations were subsequently sold to a third party, FSP, who as a tenant continued to occupy a portion of the facility, undertaking manufacturing activities initially, and then since 2007, has continued primarily warehousing and storage activities. A second tenant, Wolverine Corporation, also maintained storage operations of industrial equipment (machinery) and packaging materials in Building 8 from 1999 until approximately 2007.

As a result of its historical metallurgical operations, Engelhard produced a variety of aqueous and solid wastes that were managed at the Facility. Based on historical information and preliminary studies, the United States Environmental Protection Agency (USEPA) Region I and, as a secondary party, the Massachusetts Department of Environmental Protection MassDEP), and Engelhard Corporation entered into an Administrative Consent Order (ACO) [RCRA Docket No. I-92-1051] in the Fall of 1993 that, among other items, required Engelhard to: 1) investigate several potential areas of concern (AOCs)[2]; 2) assess the potential for migration of constituents off-site; 3) evaluate the potential human health and ecological risks posed by the presence of these constituents in the AOCs; and 4) implement certain specified “Stabilization Measures”, as defined under RCRA, at the Site.

The results of this investigation, and an assessment of the potential for migration of constituents off-site, are summarized in this *Revised Draft RCRA Facility Investigation Report* (*Revised Draft RFI Report*). In addition, this report provides an assessment of the Stabilization Measures implemented to date at the Site including: 1) the mitigation of surface runoff from roof drains through the demolition of on-site structures; 2) the installation, operation and optimization of a Groundwater Stabilization Measure (GSM) to collect and treat ground water on-site, thereby significantly reducing the potential for constituents of concern to migrate off-site; 3) the implementation of physical access restrictions (six-foot-high galvanized steel fence) to prevent potential exposures to constituents along the southern property boundary bordering Turnpike Lake; and 4) the development of a Stabilization plan for soils in AOC B, which is also undergoing a separate radiological investigation under the jurisdiction of the Massachusetts Department of Public Health (MADPH).

This executive summary is divided into six sections. Following a brief introduction (Section ES 1.1), a Conceptual Site Model (CSM) is presented in Section ES 1.2. The CSM includes a description of the Site and surrounding area and introduces areas and constituents of concern and potential exposure pathways under current and reasonably foreseeable future land use conditions at the Site. In Section ES 1.3, a brief summary of the results of the Phase I, Phase II, and Supplemental RFI field investigations is presented by media. Constituent fate in ground water is described in Section ES 1.4. The results of an ecological

1 Formerly known as 30 Taunton Street.
2 Areas of Concern are identified in Figure 2.1.

risk assessment (ERA) for the Site and surrounding area including the low-lying wetlands east of Route 152 are presented in ES 1.5. Lastly, Section ES 1.6 contains a discussion of the Stabilization and interim measures conducted at the Site, and provides an evaluation of whether additional measures would be warranted based on Site conditions observed during the RFI. The findings and conclusions in this executive summary are provided at an overview level, and details are provided in the subsequent sections of the RFI report itself.

A human health risk assessment will be submitted as a separate document following submission of this Revised Draft RFI Report. A Draft Future Land Use Proposal Application (FLUPA) has been submitted to the USEPA, and based on received comments, is being finalized. This Application seeks to restrict the foreseeable future use of the Site to commercial or industrial land use and prevent residential use of the property. In addition, Media Protection Standards (MPSs) will be developed based on regulatory standards and the risk-based concentrations derived from the RFI risk assessment. The proposed MPSs for the Site will be presented in the Media Protection Standard Proposal, which will be submitted along with the human health risk assessment. The MPSs will be used as guidelines for measuring the necessity for and/or the degree of protection afforded by any future corrective measures. A detailed comparison of constituent concentrations detected at the Site with MPSs will be provided as a future insert to this report following completion of the human health risk assessment and MPS Proposal.

ES 1.1.1 Operating History

The BASF Facility is a former metal fabrication and finishing plant located on approximately 22 acres in Plainville, Massachusetts. BASF also owns approximately 10 acres adjacent to the Facility to the west beneath Turnpike Lake, as well as 20.5 acres of land located immediately east of the Facility across Route 152, including five (5) former residential properties (approximately 2.2 acres) and a former drive-in theater (18.3 acres). The Facility was constructed in 1957 and initially consisted of two buildings where operations primarily consisted of rolling and fabricating steel and titanium, and fabricating uranium fuel elements under license from the U.S. Atomic Energy Commission (AEC). Wastewaters from the uranium fabrication operations were discharged after treatment into leach fields located on the southeastern side of Building 2[3]. In 1962, fabrication of uranium fuel elements ceased and all nuclear materials and equipment were removed from the Facility and sold.

Over the subsequent years until operations ceased in 1993, the Facility was expanded by the construction of additional adjoining buildings, eventually covering a contiguous area of approximately 300,000 square feet. Operations primarily consisted of fabrication and finishing of gold and silver into wire and flatstock for the jewelry and electronics industries. Processes included melting raw materials, mixing metals to make alloys, shaping (drawing and forming) the metal, and heat-treating and finishing products. The Facility generated various aqueous, airborne and/or solid process waste streams, which may have contained cyanides, metals (including cadmium and chromium), chlorinated solvents, acids, metal hydroxide sludges, and metal-containing dusts.

Historically, wastewater generated at the Facility was discharged on-site in various disposal ponds and leach fields. Beginning in 1973, the Facility operated a water treatment plant consisting of an ion exchange system designed to remove metals from the metal processing

3 Former and current buildings onsite are identified in Figure 2.1.

wastes and to return treated wastewater to the manufacturing process for re-use. Due to insufficient capacity and operational inefficiencies, some treated and untreated wastewaters were released to pits and to the ground surface. The wastewater treatment plant was replaced in 1981 with a pretreatment plant where wastewater was treated by pH adjustment and solids settling and then discharged to a municipal sewer. Selected waste streams were pretreated for reduction of hexavalent chromium and cyanide destruction before being combined with the main waste stream.

ES 1.2 Conceptual Site Model

ES 1.2.1 Environmental Setting

The portion of the Site west of Route 152 is zoned industrial, and the portion of the Site east of Route 152 is zoned commercial. This latter area consists of five vacant lots, and in the northern portion, a former drive-in theater. The site overall is located in an area of mixed commercial, residential, and natural resource preservation land uses. It is bordered by Turnpike Lake to the west and south, and a forested and wetland area owned by the Natural Resources Trust of Plainville to the north. There is also a private residence and associated car garage/barn, and a commercial operations building used by that home owner for a construction business, all of which are located to the southeast.

The Site is located within the Taunton River Drainage Basin, a small sub-area of the Narragansett Basin. The principal aquifer system in the basin is the Middle Wading River aquifer, which is composed of stratified, unconsolidated glacial drift. The Massachusetts Department of Environmental Protection (MassDEP) has classified the majority of the area surrounding the Facility and the low-lying areas east of the Facility as a potentially productive high yield aquifer. An underlying bedrock zone also serves as an aquifer in some parts of the basin, and is used as a source of water supply for private wells located approximately 0.9 miles northeast of the Facility, adjacent to Lake Mirimichi.

Turnpike Lake forms a natural source of ground water recharge in the areas west and beneath the Facility, with the subsequent flow of both ground water and surface water to the east into low lying areas and two small streams located across Route 152. The lake has two surface outlets, one from the embayment immediately south of the Facility, and one approximately 0.13 miles to the north of the main facility. The surface outlet to the north empties into Turtle Brook and the surface outlet to the south empties into Sawmill Brook, which eventually merges with Turtle Brook to the northeast of the former drive-in. The low-lying wetlands surrounding Sawmill Brook also receive drainage from the south and east, and Turtle Brook receives drainage from the north. Drainage from the low-lying areas eventually enters Lake Mirimichi, approximately 0.9 miles to the northeast of the Facility, via Turtle Brook.

ES 1.2.2 Areas and Chemicals of Potential Concern

In 1986, EPA issued a RCRA 3007 letter requesting information about solid waste management units (SWMUs) and releases of hazardous constituents to the environment at the Site. Following several years of investigation, a Consent Order identifying 46 potential Areas of Concern (AOCs) was signed between BASF and regulators in 1993. During the consent negotiations, it was agreed that 20 of the 46 potential AOCs required further investigation. These 20 AOCs include land areas formerly receiving storm water runoff and wastewater discharge; areas affected by emissions from air pollution control devices; locations of former dry wells and degreaser pits; and waste storage areas.

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These AOCs can be grouped into five categories based on common attributes related to operating histories and exposure potential. These categories include:

- **Exterior AOCs (outside the building footprint).** These AOCs and sub-AOCs, including AOC B (B-2, B-3, B-4, B-18 and B-35) and AOC 19, are characterized by shallow surface soils containing metals, radionuclides, polychlorinated biphenyls (PCBs) and/or chlorinated volatile organic compounds (CVOCs). Contaminants in these AOCs represent potential concerns for direct exposure to on-site workers, as well as the potential for migration into off-site areas as wind-blown dust or suspended sediments in storm water runoff. AOC B (including sub-AOCs B-2, B-3, B-4 and B-18) will eventually be addressed by a Stabilization Measure to remove/stabilize the contaminated soil, thus reducing this risk.
- **Exterior AOCs formerly used for the disposal of wastewater.** These AOCs and sub-AOCs, including AOC A (A-1, which is associated with the operation of former wastewater disposal ponds behind Building 10, and A-12) and AOC 16, are characterized by subsurface contamination by metals, radionuclides (AOC 16 only) and to a lesser degree CVOCs. Contaminants in these AOCs represent a potential source of metals, radionuclides and CVOCs to ground water.
- **Interior AOCs (inside the building footprint).** These AOCs, including AOCs 5, 6, 14, 22, 26, 29, and 30, represent a potential source of CVOCs in ground water, and in some cases, CVOCs in indoor air of remaining Buildings 8 and 10. Some of these (AOCs 5, 6 and 14) were active prior to construction of Building 8. Some AOCs (AOCs 5, 6, 14, 22 and 26) AOCs may also be a potential source of metals in soils and ground water.
- **AOC 7.** AOC 7 is an area of the Facility used primarily for material/equipment storage and shipping/receiving and includes the Courtyard Area, which is bounded by former Buildings 1, 2, 5 and 6, and areas currently covered by concrete slabs associated with former Buildings 3, 9 and 12. A drywell apparently used for disposal of CVOCs was also discovered in the "Upper Courtyard" portion of this area.[4] This former drywell was excavated and removed along with surrounding soils in late 2007 – early 2008 (LFR Inc., 2009a). Contaminants remaining in this AOC, including metals, CVOCs and PCBs, are typically found in the subsurface or covered beneath macadam pavement and currently represent a principal concern for migration of CVOCs to ground water. This AOC has been evaluated for use as an on-site containment cell for soil, which would be compatible with RCRA standards (e.g. impermeable top and bottom liners).
- **AOCs associated with the discharge of storm water from roof areas.** These AOCs include AOC 13 (Turnpike Lake) and AOC 44 (an on-site retention/percolation pond) and typically contain metals and radionuclides/PCBs (AOC 13 only) in sediments.

ES 1.2.3 Potential Exposure Pathways

Current land use at the facility is industrial and workers at the site could be exposed to site-related chemicals via several pathways. Workers inside Building 8 could be exposed to CVOCs via soil gas infiltration into indoor air. CVOCs have been detected in both soil gas

4 As described further in Section 2.2, this dry well may be what has historically been described as AOC 22.

collected from beneath Building 8 and in Building 8 indoor air, although indoor air levels were below OSHA Permissible Exposure Levels (PELs). At the conclusion of four quarterly rounds of indoor air sampling (anticipated in April 2011), an indoor air risk characterization will be prepared and a determination will be made as to whether an additional Stabilization Measure is required to address the migration of CVOCs into Buildings 8 and 10 via soil gas. Workers involved in subsurface excavation activities could also be exposed to metals, PCBs and radionuclides in sediments and soils in AOC B including the courtyard area and the south embayment of Turnpike Lake (AOC 13). This is an area also slated for a Stabilization Measure.

BASF will continue to maintain the property for industrial use in the future, and will submit a revised non-residential Future Land Use Proposal Application (FLUPA) for the Site. Ultimately, an Activity and Use Limitation (AUL), which is a MassDEP legal instrument that is recorded on the property deed, is anticipated for portions of the property. A Human Health Risk Assessment (HHRA) will be performed for the Site and surrounding area following submission of this Revised Draft RFI Report. Potential exposure pathways under a non-residential land use scenario include inhalation of CVOCs in indoor air, incidental ingestion and dermal exposure to sediments and soils, and inhalation of windblown dusts. A residential use scenario at the Site would introduce additional potential exposure pathways associated with domestic use of ground water and consumption of homegrown produce.

Recreational use of the surface water and sediments in the low-lying wetlands east of Route 152 could result in potential exposures to metals and CVOCs via incidental ingestion and direct contact. Inhalation of CVOCs volatilizing from ground water to outdoor air is also a potential exposure pathway. Future residential use of off-site areas will be considered under current and reasonably foreseeable future use scenarios in the HHRA.

ES 1.3 Nature and Extent of Contamination

ES 1.3.1 Chemicals Detected in Ground Water

Chemicals that have been detected in ground water and are potentially related to historic operations at the Facility include CVOCs, and to a lesser degree metals and PCBs. The principal CVOCs detected in on-site ground water are tetrachloroethene (also known as perchloroethylene or PCE), 1,1,1-trichloroethane (TCA) and trichloroethene (TCE). These three chemicals were used as degreasing agents and may have been spilled, leaked or disposed at the Facility. Chemical and biological degradation by-products of these CVOCs that have been consistently detected in groundwater include cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene (1,1-DCE) and 1,1-dichlorethane (1,1-DCA). Vinyl chloride, chloroethane and trans-1,2-dichlorethene have also been detected, but less frequently.

The highest concentrations of CVOCs have been detected in ground water in the vicinity of the following AOCs:

- **AOC 29** – the location of a former above-floor degreaser within Building 8.
- **AOC 14** – the location of a former leach field that reportedly received wastewaters from metal-cleaning operations. This is the closest AOC to MW12, where elevated levels of CVOCs have been detected in ground water. However, there is no history of chlorinated solvent use associated with AOC 14; and subsurface soil data suggest that the source of CVOCs in ground water may be located further upgradient near AOCs 5 and 6.

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- **AOC 22** – the location of a former dry well that reportedly received steam condensate from a sump containing two steam-heated vapor degreasers. It was initially believed that this dry well was located under the northeast corner of former Building 9, although no physical evidence of a dry well exists in this area.[5] However, this dry well now appears to have been located in the Upper Courtyard Area, in AOC 7 (see below).
- **AOC 7 (Upper Courtyard Area)** – the location of a dry well was discovered in 2005, exhibiting a sand and gravel bottom and permeable brick side walls which was apparently used for the disposal of materials containing solvents. This may be the dry well that has originally been described as AOC 22. This dry well and surrounding soils were subsequently removed and disposed of off-site in 2007-2008.

Groundwater concentrations of PCE and TCA in monitoring wells located near and downgradient of these AOCs (particularly AOCs 7, 14, and 22), have been historically detected in the 10 – 100 mg/L range, and as high as 150 mg/L for PCE alone at the dry well in AOC 7. This indicates that residual dense non-aqueous phase liquids (DNAPLs) may have migrated over time through the overburden and into the fractured bedrock in these areas.[6]

CVOCs in ground water from these and other minor source areas have migrated downgradient towards the low-lying areas east of Route 152. Although the plume of detectable CVOCs spans much of the frontage of the Facility property along Route 152, the most concentrated portion of the plume leaving the Site is found near monitoring wells MW4/15/17 and extends downgradient to well nests MW40A/B, MW41A/B and MW21A/B/C. This migration pathway corresponds with the alignment of a fracture zone in the bedrock that was identified during the pump testing of EW2 (associated with the GSM) and subsequent geophysical testing of existing monitoring wells in the area. This fracture may have contributed to the off-site migration of CVOCs in groundwater in this area. Historically, along this flow path, concentrations of total CVOCs have been detected in the range of 1- 10 mg/L in both the overburden and bedrock zones. Based on levels detected in upgradient monitoring wells and on ground water flow patterns, the principal sources of these CVOCs are likely associated with AOCs 5, 6 and 14 beneath Building 8, AOCs 22/26 in Building 1, and the dry well in AOC 7.

Metals and/or PCBs have also been found in on-site ground water in the vicinity of AOCs A-1, 7, 16 and 29 and immediately downgradient of former Buildings 1 and 2; although, there is no evidence that these constituents have migrated off-site. Radiological parameters (uranium compounds) were detected at low levels in the AOC 16 area, but at concentrations below standards, and migration off-site does not appear to have occurred (Engelhard, 2004).

5 The location of AOC 22 was initially based on a 1977 report describing the presence of a degreaser pit sump pump located in the wire cleaning room (Building 2) which discharged hot condensate to a floor drain in former Building 4 that subsequently drained to an under floor dry well.

6 Aqueous concentrations detected at 1% to 10% of the effective solubility limit are often used as a rule of thumb to indicate the presence of residual DNAPL. The aqueous solubilities of PCE and TCA are 150 and 1,500 mg/L, respectively (USEPA, 1998).

ES 1.3.2 Chemicals Detected in Soil

Metals, radionuclides, CVOCs, and/or PCBs have been detected above background levels in shallow soils in AOCs B and 7, and subsurface soils in AOCs A, 7 and 16. In 1995, soils in AOCs B, 7, and 16 were analyzed for radioisotopes including uranium and, on selected samples, plutonium, thorium, radium, and potassium (Berlin and Duggan, 1995). The primary radiological constituent identified was uranium and the highest concentrations were detected in soils under Building 2, and to a much lesser extent in the former wastewater leach pits and drywell areas in AOC 16. Radiological constituents have also been detected in Upper Courtyard soils and immediately below the pavement and floor slabs of Building 12 in the Courtyard area west of Building 2. Radiological constituents were also found in a limited area (South Embayment) of Turnpike Lake, around the storm water outfalls associated with the roof drains from Building 2 and a former drainage ditch from AOCs B and 7 that ran through the courtyard area into Turnpike Lake.

The metals, radionuclides and PCBs detected in soil in the area of AOCs B, 7, and 16 are likely related to former manufacturing operations in Buildings 1 and 2, and represent a generally continuous area of soil contamination across these contiguous AOCs. Metals detected at concentrations above background include cadmium, chromium, copper, lead, nickel, silver and zinc. The highest concentrations were reported for cadmium, likely associated with fugitive releases from bag-houses operated in this area. The elevated concentrations of contaminants in AOCs B, 7, and 16 have been the focus of a RCRA soil Stabilization Measure, continued implementation of which will be coordinated with the completion of the radiological decommissioning of these same areas.

Elevated levels of metals (including cadmium, chromium, copper, lead, nickel, silver, and zinc) and PCBs have also been detected in surface and subsurface soils near AOCs A-1 and A-12. AOC A-1 consists of a land area located west of Building 10 where wastewater was released to two former surface impoundments (Frog Ponds). AOC A-12 was a former waste storage area and below ground wastewater containment basin located beneath what is now the central portion of current Building 10. Low levels of CVOCs have also been detected in this area.

ES 1.3.3 Chemicals Detected in Surface Water and Sediments

Turnpike Lake. The results of the sediment sampling conducted in Turnpike Lake indicate that elevated levels of several metals (cadmium, chromium, copper, lead, nickel, selenium, silver and zinc), PCBs (Aroclors 1242, 1248 and 1254), and radionuclides are present in the South Embayment area of Turnpike Lake (AOC 13). Cadmium, chromium and nickel were also detected in lake sediments collected west of AOC A. However, testing for metals in sediments collected from the small cove located north of the Facility near the spillway to Turtle Brook suggest that Site-related activities have not impacted this area.

Although elevated metal concentrations were detected in surface water samples collected during pre-RFI sampling activities, the sources of these metals (roof drain runoff) have since been removed and surface water concentrations of metals detected during the Supplemental RFI are comparable to background levels.

Sawmill Brook. Sediment samples collected from Sawmill Brook contained a number of metals exceeding background levels including cadmium, chromium, copper, lead, nickel, selenium, silver, and zinc. The spatial distribution of metal concentrations in Sawmill

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Brook sediments is consistent with surface water transport from the South Embayment of Turnpike Lake and subsequent deposition in downstream sedimentation areas near the former drive-in. Surface water concentrations of metals detected during the most recent rounds of sampling in the brook were similar to background levels. Radionuclides detected in Sawmill Brook sediments have been at levels comparable to background.

CVOCs (PCE, TCE and TCA) have also been detected in surface water and sediment samples collected from Sawmill Brook. The pattern of concentrations detected in the brook is consistent with a source of CVOCs in ground water upwelling into the brook and low-lying wetlands.[7] CVOC concentrations in surface water and sediments have decreased significantly compared to levels detected during pre-RFI sampling activities. These lower concentrations likely reflect the cessation of facility operations in 1993 and the significant beneficial effect that the GSM is having on ground water concentrations in the overburden aquifer since startup in 1998. Only low levels of PCE and TCA (near 1 µg/L) have been detected in surface water entering Turtle Brook, indicating that ground water discharge to Sawmill Brook and the low lying wetlands is having a very minor effect on water quality in those wetlands. Therefore, the likelihood of any CVOCs reaching Lake Mirimichi, approximately one mile away, by surface water transport is considered negligible.

ES 1.3.4 Chemicals Detected in Soil Gas

Five separate soil gas investigations have been conducted at the Facility during pre-RFI and RFI field investigations. Soil gas “hot spots” have been identified near AOCs A-1, 5, 6, 7, 14 and 22/26. PCE and TCA were the primary VOCs detected in soil gas.

The soil gas sampling program conducted during the summer of 2005 was designed to further investigate potential sources of CVOCs beneath Buildings 8 and 10 and adjacent slabs of former Buildings 5 and 6. As a result of this work, PCE and/or TCA soil gas hot spots were identified near AOC 5/6 and near AOC 14. Compared to soil gas samples collected near AOC 5/6 in July 1989, concentrations have decreased by about an order of magnitude since that time (ENVIRON, 2005).[8] These same CVOCs have been detected at low concentrations in indoor air samples collected from Buildings 8 and 10. At the conclusion of four quarterly rounds of indoor air sampling (anticipated in April 2011), an indoor air risk characterization will be prepared and a determination will be made as to whether an additional Stabilization Measure is required to address the migration of CVOCs into Buildings 8 and 10 via soil gas. Elevated CVOCs were also detected near AOC 22/26 along the eastern edge of former Building 9. This area was also sampled in 1990 when soil gas concentrations ranged as high as 441,000 ppbv PCE and 58,560 ppbv TCA (ENVIRON, 1999). This area is well outside the footprint of the current buildings and does not likely represent a current source of CVOCs in indoor air.

CVOCs have also been observed in soil gas samples collected near AOC 30. AOC 30 is the location of a former degreaser pit in former Building 6 that was subsequently filled in and covered with concrete. In October 2005, the concrete slab covering this former degreaser pit was removed and underlying soils contained in two concrete pits were excavated and disposed at an approved off-site landfill. Soil samples collected from beneath the concrete structures revealed only low levels of CVOCs in soils.

7 Numerous seeps or springs containing low levels of CVOCs are evident in the area east of Route 152.
8 For example, PCE concentrations have decreased from a maximum value of 550,992 ppbv detected in July 1989 to a maximum value of 66,000 ppbv detected in August 2005.

ES 1.3.5 Chemicals Detected in Fish

The proposed sampling for fish in the Phase I investigation included the collection of 45 fish of various types (i.e., bottom feeders, prey species, and game species) from Turnpike Lake, a private impoundment east of Route 152, and a background site (Old Mill Pond). Because it was not possible to collect all 45 fish during the Phase I Investigation, the remaining fish were collected in Phase II. Fish samples were analyzed for metals, PCBs, and lipids. Phase I fish sampling was conducted on May 18, 1995 and Phase II fish sampling was conducted from June 18 through July 3, 1996.

Several metals were detected in the fish samples above background concentrations including: arsenic, cadmium, chromium, copper, and silver. Cadmium was routinely detected in elevated concentrations. No discernible trend was observed among the fish species. PCB Aroclors 1254 and 1260 were detected in all of the bottom feeders and several of the game and prey species. The highest concentrations were in general observed in the bottom feeders.

ES 1.3.6 Principal Source Areas

The patterns of chemical concentrations observed in ground water monitoring wells and in soil and soil gas indicate that a number of the identified AOCs are contributing to the occurrence of CVOCs in ground water. However, the majority of the on-site ground water contamination appears to originate in two principal source areas: the area beneath Building 8 potentially involving AOCs 5, 6, 14 and 29; and the area comprised by the Upper Courtyard portion of AOC 7 and AOC 22/26.

AOCs 5, 6, 14 and 29 in Building 8. AOC 5 is a former land disposal area/pit located beneath the northwest corner of Building 8 that reportedly received contact and non-contact cooling waters and acid cleaning and annealing wastewaters. An above-floor degreaser was also operated in this area within Building 8. AOC 6 is an area located in the southwest corner of what is now Building 8 where wastewaters from metal cleaning operations were reportedly released to the ground. AOC 14 is the location of a former leach field that reportedly received wastewaters from metal-cleaning operations, and AOC 29 is the location of a second above-floor degreaser operating within the northeast area of Building 8. The highest groundwater concentrations in this area have historically been observed in monitoring wells MW12 (east of Building 8) and MW29 (along the northern edge of Building 8). While concentrations of CVOCs in the overburden zone have declined since the early 1990s in the area downgradient of Building 8, recent testing of the shallow bedrock zone indicates that concentration of total CVOCs remain in the range of 1- 5 mg/L. It is unknown whether DNAPLs have been released beneath the building, however, the persistence of elevated concentrations of CVOCs indicate the likely presence of a CVOC source in this area. These AOCs are regarded as potential sources of CVOCs in downgradient ground water as well as a source of CVOCs in Building 8 indoor air.

AOC 22 and AOC 7. AOC 22 is the location of a former dry well that reportedly received steam condensate from a sump containing two steam-heated vapor degreasers. The location of AOC 22 may be in error. It is based on a single reference in a 1977 report describing the presence of a degreaser pit sump pump located in the wire cleaning room (former Building 1), which discharged hot condensate to a floor drain in old Building 4[9]

9 Old Building 4 was located on the south side of old Building 3, which was in the northeast corner of former

that subsequently drained to an under floor dry well. It is unclear if the dry well in the upper courtyard area of AOC 7 is related to this system.

AOC 7 once contained a dry well in the northeast corner, north of former Building 12, which was apparently used for the disposal of PCE and TCA solvents.[10] Concentrations of both PCE and TCA have been measured in ground water at over 100 mg/L indicating the likely presence of source material (DNAPL) in the overburden and/or bedrock zones. Further downgradient, near AOC 22, elevated concentrations of PCE and its degradation products have been found in soil gas and ground water, with recent total CVOCs in ground water in the range of 10-20 mg/L in the shallow bedrock and near 70 mg/L at 200 feet bgs in the deep bedrock. Although no DNAPL layers have been directly observed, the consistently high concentration of CVOCs in this area since the Facility was closed indicate the likely presence of source material in the overburden and bedrock zones. The area comprised by the northeast corner of AOCs 7 and AOC 22 is regarded to be a significant source of the CVOC contamination found in downgradient ground water, but is not likely a source of CVOCs beneath Building 8.

This area, comprising the former drywell and surrounding soils, was the subject of an interim remedial measure in late 2007 – early 2008 (LFR, Inc., 2009a). Excavation of the area (approximately 65 feet long by 30 feet wide) down to the bedrock surface (approximately 20 feet bgs) began on October 25, 2007 and continued until December 18, 2007. The remains of two former transformer pads uncovered along the northern edge of the excavation were tested and excavated soils revealed the presence of PCBs.

ES 1.4 Chemical Fate in Groundwater

ES 1.4.1 Evidence of Ground Water Discharge in the Wetlands

The hydrogeologic investigations at the Facility have demonstrated that the ground water beneath the Facility naturally flows to the east and ultimately discharges into the low-lying areas and wetlands east of Route 152 and south and east of the drive-in property.[11] Evidence of this discharge has included the historic presence of seeps or springs along the boundary between the upland areas and the wetland immediately east of the Facility, and the presence of CVOCs in surface water and sediment in the wetlands. This natural discharge process is the result of the location and relative elevation differences between the principal source of water (Turnpike Lake) and the wetlands. Because Turnpike Lake is perennial, and always contains some amount of surface water, this discharge process will persist to a greater or less degree throughout the year and during period of both high rain (and water table) and drought.

The historical ground water quality data also supports a conclusion that the wetlands form an effective sink that prevents the migration of CVOCs farther to the east towards Lake Mirimichi, even in the deeper bedrock zones. A number of years of monitoring data from sentinel bedrock monitoring wells, and recent data collected from two new very deep monitoring wells located east (MW43D) and northeast (MW33D) of the wetlands show no detection of CVOCs beyond the principal discharge area south and east of the drive-in property.

Building 9 prior to the construction of Building 9.

10 As previously described, this dry well may be what has historically been described as AOC 22. This dry well and surrounding soils were excavated in 2007.

11 As shown in Figure 11, this area is designated as a Zone A surface water protection area.

ES 1.4.2 Evidence of Biological and Chemical Degradation

An evaluation of natural attenuation was undertaken from 1999 to 2005, and the results have been summarized in two reports (ECS, 2004; LFR, 2005). Based on data presented in the two reports, and the more extensive ground water monitoring record over the past nearly 20 years, there is evidence that a moderate level of natural degradation of PCE, TCE and TCA in ground water is occurring at the Site and in the downgradient plume east of Route 152.

PCE, TCE and TCA will biodegrade in a low oxygen environment by reductive dechlorination, forming TCE, cis-1,2-DCE and 1,1-DCA respectively as the principal degradation byproducts. However, interpretation of the presence of TCE is complicated by its use as a degreasing agent at the facility between the late 1950s and early 1970s. TCA will also chemically degrade (hydrolyze) in water to form 1,1-DCE. All of these byproducts, as well as ethene and ethane, have been found in ground water downgradient of the Site, demonstrating that some level of degradation is in fact occurring[12].

Data analysis suggests that there is extensive conversion of PCE and/or TCE to cis-1,2-DCE at the edges of the overburden plume, most notably along the southern edge of the plume; however, biodegradation is less extensive in the shallow bedrock zone and along the centerline of the plume (MW40A/B, MW41A/B), east of Route 152. Relative concentrations of 1,1-DCE and 1,1-DCA to TCA suggest that chemical and biological degradation of TCA is a significant loss pathway primarily at the southern edge of the TCA plume in both the overburden and shallow bedrock zones. Thus, while natural degradation is causing some reduction of TCA and PCE/TCE in ground water, significant effects appear to be limited to the edge of the plume and where it reaches the natural discharge zone east of Route 152.

ES 1.5 Ecological Risk Assessment

An ecological risk assessment (ERA) of the Site and surrounding area was performed based on data collected during RFI Phases I and II and the Supplemental RFI field investigations in 2005 and 2010. The ERA addresses EPA's draft comments issued in December 2008 on the Draft RFI Report submitted in April, 2007. The objective of the ERA is to characterize the potential risks to ecological resources from constituents present in environmental media at the Site and in adjacent areas including Turnpike Lake, Sawmill Brook (including the private impoundment) and Turtle Brook, and the forested wetlands east of the Site. The ERA is consistent with national and regional EPA guidance for conducting ERAs including:

- Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (EPA, 1997);
- Guidelines for Ecological Risk Assessment (EPA, 1998);
- ECO-Update: Role of Screening-level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments (EPA, 2001);
- Assessing Risks To Populations At Superfund and RCRA Sites - Characterizing Effects On Populations (EPA, 2006);
- Framework for Metals Risk Assessment (EPA, 2007); and
- Risk Updates #5, (EPA, Region 1, 1999).

12 It should be noted that the assumed degradation byproducts cis-1,2-DCE, 1,1-DCA and 1,1-DCE may also occur as impurities in PCE, TCE and TCA.

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The ERA follows EPA's eight-step process that is comprised of two tiers: a screening-level ecological risk assessment (SLERA) followed by a baseline ecological risk assessment (BERA). The SLERA is a conservative assessment intended to rapidly screen out those Sites, portions of Sites, receptors, chemicals, and/or pathways that clearly do not pose unacceptable risks to ecological receptors. The purpose of the BERA is to determine whether concentrations of constituents of potential ecological concern (COPECs) currently existing in soil, sediment, surface water, or biota have the potential to adversely affect ecological receptors that may forage within the area.

Data considered in the ERA included:

- Constituent concentrations in surface soil samples collected at the Facility and along the floodplain of Sawmill Brook;
- Constituent concentrations in surface water, sediment, and fish samples collected from Turnpike Lake and the private impoundment;
- Constituent concentrations in surface water and sediment samples collected from Sawmill Brook and Turtle Brook;
- Benthic macroinvertebrate community assessments of Turnpike Lake and Sawmill Brook sediments conducted in 2005 and 2010; and
- Toxicity testing of sediments collected from Turnpike Lake and Sawmill Brook.

Numerous chemicals identified in the SLERA were retained and evaluated in the BERA. The assessment endpoints evaluated in the BERA are:

- Aquatic and sediment dwelling invertebrate community structure, survival and growth;
- Survival and reproduction of fish populations;
- Terrestrial plant and invertebrate community structure, survival and growth;
- Survival and reproduction of bird populations; and
- Survival and reproduction of mammal populations.

One or more lines of evidence were used to evaluate each line of assessment endpoints identified above. The detailed approach and results from the evaluation of exposures, effects, and the characterization of risks is provided in the BERA. An evaluation of uncertainties associated with each component of the BERA is also provided. The BERA identifies the following findings:

- Potential risks to sediment dwelling invertebrates in limited areas in the South Embayment cannot be ruled out because there is some uncertainty and conflicting information among the multiple lines of evidence. Future monitoring of the biological community using statistically robust measures is recommended because the uncertainty in the lines of evidence suggests that the biological community may be robust and tolerant of residual chemicals.
- Conditions in Turnpike Lake and Sawmill Brook do not pose an unacceptable risk to fish populations or the fish community.

- There are no unacceptable risks to the terrestrial plant and invertebrate community, with the possible exception of AOC B on-Site. Within AOC B, a relatively small area within the property boundaries, potential risks to the terrestrial plant and invertebrate community due to chemical or physical disturbances cannot be ruled out. There are no unacceptable risks to the invertebrate community in Sawmill Brook and associated wetlands, although some uncertainties exist related to acetone.
- The food web modeling shows that the Site does not pose an unacceptable risk to mammal and bird populations, even if no action is taken for AOC B.

ES 1.6 Evaluation of Stabilization Measures

As part of the Consent Order, BASF was required to design and implement four specific Stabilization Measures for the Site. The Stabilization Measure designs were presented in the *Stabilization Plan for the Engelhard Corporation Facility in Plainville, Massachusetts*, dated August 17, 1994 and submitted to USEPA (ENVIRON, 1994b) and include: roof drain runoff affecting AOC 13; access restrictions along the south embayment of Turnpike Lake; stabilization of soils at AOC B; and ground water stabilization.

In December 1995, BASF improved access restrictions along the south embayment of Turnpike Lake by extending the security fencing that already enclosed much of AOC B to the lake shoreline and posting “No Trespassing” signs on the fence at 100-foot intervals. These access restrictions continue to be maintained by BASF today, thereby ensuring continued achievement of the performance standard for this Stabilization Measure. In addition, in 1996 and 1997, all of the buildings discharging roof runoff into the south embayment were demolished. In the process, the source of runoff conveying metals to the Lake (AOC 13) was removed, thereby permanently achieving the performance standard for this Stabilization Measure.

ES 1.6.1 Soil Stabilization at AOC B

The specific objective for the stabilization of soils at AOC B is to remove, treat and/or isolate impacted soils located in AOC B/7, and sediments which have been impacted by AOC B/7 or other Site areas, and which would be determined after the completion of the final ERA discussed in ES 1.5, to require remediation. Soils and sediments requiring remediation would be those which could pose a threat to current or future maintenance workers at the Site or pose a threat to human health or the environment via migration of contaminated soils and/or sediments into off-site areas. It is noted that the Consent Order specifically refers to the stabilization of soils in AOC B, not AOC 7. However, investigations during the RFI have revealed that there is a continuum of soil contamination in this area that extends beyond the original northern boundary of AOC B (an arbitrary line drawn between the southern-most corners of Buildings 2 and 6) which is related to the former use of this area for equipment storage and external operations of air pollution control devices. It is anticipated, therefore, that the stabilization of soils in AOC B would also be extended to include the adjoining areas of AOC 7, and as needed, adjacent surface waters, which exhibit the same contaminant characteristics as are found in AOC B.

Specific Stabilization measures and concentration-specific Stabilization performance standards for these soils were originally proposed in the *Stabilization Plan for the Engelhard Corporation Facility* (ENVIRON 1994b). Subsequent to submittal of the Stabilization Plan, BASF conducted evaluations of the potential options for the stabilization of soils in this AOC and adjoining areas of the south embayment of Turnpike Lake, and also to address the

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presence of radionuclides in these soils and sediments (see *Preliminary Design Report for Soil Remediation Project*, Marin Environmental, 2001)[13]. This additional work was undertaken to:

1) quantify the type and extent of impacted soils and sediments, and support the design of an on-site, above-grade soil cell which would contain both low-level RCRA-regulated soils and <50 ppm PCB TSCA-regulated soils, and potentially also low-level (below human health risk exposure standards) radiologically impacted soils, excavated from AOC B/7;
2) provide revisions to earlier work plans, to meet new USEPA waste cell closure requirements, such as providing a bottom liner with leak detection capability, in addition to a top liner;
3) incorporate separate plans submitted separately to the appropriate agencies responsible for regulating radionuclides; and
4) provide necessary details demonstrating conformance to state and federal closure and/or decommissioning rules for RCRA, TSCA and former nuclear manufacturing facilities.

More specifically, the Preliminary Design described the construction of an on-site cell within which impacted soils, which would be physically-chemically stabilized as needed to immobilize COCs, would be permanently entombed. The Design detailed options for removal of a more narrow range of highly contaminated soils for off-site treatment/ disposal. BASF also completed additional field investigations on the Upper Courtyard Area of AOC 7 (in its northernmost “courtyard” area, bounded by former Buildings 1, 2, 6, 9, and 12), which are documented in the *Supplemental Design Investigation Courtyard Area* (ECS, 2004). This report also determined the geotechnical suitability of this area for construction of the on-site cell and to determine what, if any, additional remedial measures would need to be implemented to address contamination prior to cell construction.

In late 2007 – early 2008, an interim remedial measure involving excavation of a former drywell and surrounding soils from an area (approximately 65 feet long by 30 feet wide) down to the bedrock surface (approximately 20 feet bgs) was carried out in the Upper Courtyard area. The excavation uncovered the remains of a former transformer pad and testing of excavated soils revealed the presence of PCBs. In total, approximately 1,695 tons (57 truck loads) of soil were transported off-site to appropriate waste management facilities based on the levels of PCBs in the soil. Currently the final stabilization of soils in AOC B is not complete, pending a final decision by BASF and subsequently regulatory agencies, on the most appropriate plan for this area. Two options are currently under consideration: a) placement of low-level, impacted soils/sediments in a lined on-site cell constructed in the Courtyard area of AOC 7 and removal and disposal of high-level, impacted soils off-site at a licensed facility; or b) removal of all impacted soils/sediments for off-site disposal. BASF anticipates presenting a final recommendation for the stabilization of this area soon after completion of the HHRA and submittal of a Media Protection Standards Proposal for the Site.

13 Radionuclides were addressed in a series of separate work plans and cleanup activities issued beginning in 1989, due to their regulation by a different federal agency, the US Nuclear Regulatory Agency. After 1997, the MA Department of Public Health assumed responsibility for addressing radionuclides.

ES 1.6.2 Groundwater Stabilization Measure

The fourth Stabilization Measure was an on-site ground water control system to reduce migration of contaminated ground water into off-site areas via containment and attempting to cause a reversal of the natural hydraulic gradient in the bedrock and overburden aquifers. Operation of the Groundwater Stabilization Measure (GSM) began in January 1998. The GSM consists of six (6) extraction wells extending up to 300 feet into bedrock and pumping up to 60 gpm, plus a vertical HDPE barrier keyed into shallow bedrock at approximately 20-30 feet below ground surface (bgs). When the GSM initially began operations, concentrations of CVOCs increased in some nearby monitoring wells (e.g. MW15/17). This is likely the result of an initial flushing of contaminants that were previously trapped in poorly flushed portions of the bedrock zone upon the commencement of pumping. Over time these concentrations have gradually declined and are currently somewhat below the levels that existed prior to the startup of the GSM. The most significant improvement in this regard is in the overburden zone downgradient of the GSM, likely resulting from the cutoff of any continued supply of CVOCs by the HDPE barrier, and the natural flushing of the overburden zone by local infiltration on the greenspace bordering Route 152 and on the unpaved properties east of Route 152.

In general, the quality of water in the bedrock zone downgradient of the GSM has shown less improvement, with total CVOC concentrations east of Route 152 still well in excess of 1 mg/L. This deeper bedrock zone may be more poorly flushed by natural infiltration as compared to the overburden, but also might be continuing to be effected by migration from upgradient areas that are not fully controlled by the GSM extraction wells, and by downward migration of VOCs from overburden groundwater to bedrock groundwater. The effectiveness of the pump and treat system was evaluated in 2003 and 2004 and a detailed report was prepared in June 2004 (ECS, 2004a). Based on an analysis of hydraulic and concentration data, it appears that the northern portion of the wall and extraction wells EW04 through EW06 are effectively containing ground water and a reversal of the ground water gradient is evident in this area. However, the report concluded that the southern end of the GSM was not sufficiently preventing the off-site migration of contaminated groundwater. Following additional investigation in August-November 2004, a GSM Upgrade Report containing design recommendations to improve the effectiveness of the GSM was prepared in 2005 (ECS, 2005).

Based on these recommendations, all pumps and risers were removed from the extraction wells and cleaned, all active discharge lines were cleaned, and more appropriately sized pumps were fitted to wells EW02 and EW06. The pump replacements resulted in an increase in the rate of groundwater extraction at EW02 from about 5 to 18 gpm, and a decrease in the groundwater extraction rate at EW06 from about 30 to 15 gpm. The remaining four extraction wells continued to pump at 5 gpm resulting in a combined total pumping rate of 50 gpm, similar to the flow rate achieved under the prior configuration.

Additional geophysical investigations were conducted from June through September, 2008 in order to further characterize the bedrock zones in the vicinity of the GSM and provide necessary information to further improve GSM capture efficiency. Based on results of the geophysical testing, the open hole interval in extraction well EW02 was extended in late 2010 from the existing depth of 200 feet bgs to approximately 302 feet bgs and the pumping rate in this well was increased to about 28 gpm. Also, an upgrade in conveyance piping diameter from EW02 to the groundwater treatment plant was undertaken during this time.

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BASF is currently in the process of optimizing groundwater extraction rates from this well; however, preliminary data indicates that hydraulic capture in the bedrock around the GSM has improved significantly with complete capture occurring along the entire 540 foot length of the GSM.

ES 1.6.3 Additional Stabilization Measures

Two additional Stabilization Measures have been recommended in light of the findings of the RFI. One Stabilization Measure, the removal of the source of CVOCs in the overburden zone around the drywell discovered in AOC 7, has already been completed, as described under ES 1.6.1. A second Stabilization Measure, installation of a subslab ventilation system for recovery/treatment of CVOCs in soil gas beneath Building 8, or removal of Building 8, is currently under consideration. As described under ES 1.3.4, the investigation of CVOCs in soil gas beneath Building 8 identified two predominant areas of CVOC contamination in the vicinity of AOC 5 and AOC 14. While no significant concentrations of CVOCs were found in soil samples collected from these AOCs, and no DNAPL was observed in soil or the underlying ground water, both areas are viewed as a potential source of CVOCs migrating via soil gas into Buildings 8 and 10. CVOCs have been detected at low concentrations in indoor air samples collected from Buildings 8 and 10, and at the conclusion of four quarterly rounds of indoor air sampling (anticipated in April 2011), an indoor air risk characterization will be prepared and a determination will be made as to whether this potential Stabilization Measure is required to address the migration of CVOCs into Buildings 8 and 10 via soil gas. Alternatively, if the buildings were demolished, then the concern with CVOC migration indoors would be removed.

1 Introduction

This *Revised Draft RCRA Facility Investigation (RFI) Report* is prepared on behalf of BASF Corporation (formerly BASF Catalysts, LLC, and prior to that, Engelhard Corporation; hereafter referred to as BASF) pursuant to the Administrative Consent Order (ACO) [RCRA Docket No. I-92-1051] entered into by the then Engelhard Corporation and the United States Environmental Protection Agency (USEPA), Region I. The ACO delineates the investigation of the BASF Facility located on Route 152 in Plainville, Massachusetts, referred to herein as the Facility or Site.

The BASF facility is a former metal fabrication and finishing plant located on approximately 22 acres in Plainville, Massachusetts. Initially, Facility operations primarily consisted of rolling and fabricating steel and titanium, and fabricating uranium fuel elements under license from the U.S. Atomic Energy Commission (AEC). Later, operations were expanded to include fabrication and finishing of gold and silver into wire and flatstock for the jewelry and electronics industries. Fabrication of uranium fuel elements ceased in 1962 and all nuclear materials and equipment were removed from the Facility and sold. Later operations ceased in 1993. After a five-year shutdown period, during which many of the original buildings were demolished, a smaller specialty wire manufacturer commenced operations in Buildings 8 and 10 at the Facility along with a second tenant who used the building for storage of industrial equipment and packaging materials. The wire manufacturer now only uses the building for warehousing goods, and the second tenant has vacated the premises. A more detailed site history is found in Section 2.

1.1 Prior Environmental Investigations/Remedial Actions

In March 1986, the USEPA issued a RCRA 3007 letter to the then Engelhard Corporation requesting information about solid waste management units (SWMUs) and releases of hazardous constituents to the environment. In response to this request, between 1986 and 1992, the Company voluntarily conducted a series of environmental investigations to establish the nature and extent of chemical constituents in soil, ground water, surface water and sediments beneath and downgradient of the Facility. The results of these investigations (referred to herein as pre-RFI Phases I, II, and III) were reported to the USEPA, the Massachusetts Department of Environmental Protection (MADEP) and the Town of Plainville Board of Health in various reports (ENVIRON, 1989; 1990).

In 1989, the Company surveyed existing private water wells near the Site. Bedrock wells from the 94 homes identified in the survey were sampled and analyzed for volatile organic compounds (VOCs). No pattern of contamination potentially attributable to the Site was found. Indoor air in six homes located east of the Facility and immediately across Route 152, was also sampled for certain chlorinated VOCs (CVOCs)[14] that had been detected in on-site ground water. These tests established that CVOCs were migrating from the underlying water table via soil gas into five of the overlying homes. Initially, sub-slab ventilation systems were installed to reduce this migration; subsequently, the five affected homes were purchased and later demolished. A residence located at 31 Taunton Street, is outside the primary area of ground water contamination, and is currently occupied.

14 The CVOCs included tetrachloroethene (PCE); trichloroethene (TCE); 1,1,1-trichloroethane (TCA); cis-1,2-dichlorethene (cis-1,2-DCE); 1,1-dichloroethene (1,1-DCE) and 1,1-dichloroethane (1,1-DCA).

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In 1993, USEPA and the then Engelhard Corporation signed a RCRA 3008(h) Administrative Consent Order (ACO) in which the Company agreed to conduct a RCRA Facility Investigation (RFI) to assess potential human health and ecological risks associated with the Facility, and to implement the following four Stabilization Measures:

1) removal, treatment, and/or capping of contaminated soils at the south side of the Facility (AOC B) in an area bordering the south embayment of Turnpike Lake;
2) reduction or elimination of roof drain runoff to Turnpike Lake;
3) installation of a groundwater pump and treat system to significantly reduce the mass of contaminated groundwater migrating from the Facility via reversal of the groundwater gradient along a 540 foot line (from pumping wells EW01 to EW06, see Figure 3.1); and
4) installation of a fence at Turnpike Lake to restrict access to the Facility property by recreational users of the lake.

The RFI was conducted in two phases (RFI Phase I and RFI Phase II) and provided a comprehensive evaluation of on-site and off-site media including soil, ground water, surface water, sediment, and fish. The Draft Final RFI Report was completed in September 1999. EPA completed its review of the Draft Final RFI Report in February 2002, providing a number of comments related to the human health and ecological risk assessments, contaminant fate and transport in groundwater, and potential effects of the ground water Stabilization Measure (GSM) on contaminant flow. In response to these comments, a Supplemental RFI Work Plan was submitted in March 2004, and upon receiving further EPA comments, was revised and re-submitted in March 2005. Investigation activities began in May 2005 and were completed in April 2006. The Draft Final RFI Report was re-submitted in April 2007 to address EPA's comments and to include results of additional investigation activities conducted since submittal of the 1999 draft report. As agreed to by USEPA, the baseline human health risk assessment was not included in the 2007 DRAFT RFI Report and was to be submitted as a separate document following acceptance of a Future Land Use Proposal Application (FLUPA) for the Site.

EPA issued draft comments on the 2007 DRAFT RFI Report in December 2008. Many of the comments related to the ecological risk assessment and application of the three-dimensional groundwater model for the Site. Discussions with USEPA continued through December 2009 and resulted in collection of additional surface water and sediment samples from Turnpike Lake, Sawmill Brook and the low-lying wetlands east of Route 152 in 2010. To date, three of the four Stabilization Measures have been successfully completed, including:

- re-location of a chain link fence;
- demolition of former Buildings 1, 2, 3, 4, 5, 6, 7, 9, and 12 (many of which were fitted with roof drains discharging to Turnpike Lake. All runoff from the remaining roof surfaces on Buildings 8 and 10 is discharged onto the ground or contained in an on-site storm water seepage pond); and
- installation of a groundwater pump and treat system meeting the ACO requirements.

The pump and treat system (also referred to as the "Groundwater Stabilization Measure" or GSM) began operation in early 1998 and consists of a 540 foot long, vertical high density polyethylene (HDPE) barrier membrane installed through the overburden into the top of bedrock (approximately 20 – 30 feet deep) and six groundwater extraction wells installed in bedrock to a depth of up to 200 feet below ground surface (bgs). The treatment system includes a metals removal system, an aqueous phase air stripper, a liquid phase carbon adsorption unit, a vapor phase carbon adsorption unit and pH adjustment. The treatment system currently discharges treated ground water into Turnpike Lake under a USEPA Remediation General Permit (RGP). Performance of the GSM has been documented in two reports (ECS, 2004a; ECS, 2005) and a number of upgrade design recommendations were implemented and completed in 2006 and again in 2010 after additional geophysical investigations were conducted to further characterize the bedrock zones in the vicinity of the GSM (LFR Inc., 2009b).

A Conceptual Design for the stabilization of contaminated soils and sediments in AOC B and the South Embayment of Turnpike Lake, respectively, was initially submitted for EPA review in 1997 (at the same time a separate submittal was made to the NRC which was later transferred to Massachusetts Department of Public Health - MADPH). The design involved construction of an on-site disposal cell in the courtyard area, which includes portions of AOC 7 and AOC B. This was followed by submission of a Preliminary Design in 2001 to USEPA and the MADPH, which now oversees the radiological component of the site investigation and cleanup (Marin Environmental, 2001). In response to agency comments, a Supplemental Design Investigation (SDI) work plan was prepared in December 2002 (ECS, 2002) and a report presenting the findings of these additional field investigations was prepared in July 2004 (ECS, 2004b). Further engineering evaluations of the potential issues associated with use of the courtyard area as a repository for on-site soils are ongoing.

1.2 Report Outline

This *Revised Draft RFI Report* is divided into the following sections. After this brief introduction, a Conceptual Site Model (CSM) is presented in Section 2. Results of the pre-RFI field investigations (Phases I, II and III) are presented in Section 3. Sections 4, 5 and 6 contain a summary of the results of the Phase I, Phase II and Supplemental RFI field investigations. Descriptions of the environmental setting, waste characterization, and contaminant characterization, as specified in the Consent Order, are presented in Sections 7, 8 and 9, respectively.

A human health risk assessment is planned for Section 10. As agreed to by USEPA, this chapter will be submitted as a separate document soon after submittal of the Revised Draft RFI Report. An ecological risk assessment for the Site and surrounding area is provided in Section 11.

The results of the RFI field investigations and the human health and ecological risk assessments will be used to develop Media Protection Standards (MPSs) for the Site. The MPSs will be presented in the *Media Protection Standards Proposal,* which will be submitted concurrently with the human health risk assessment. The MPSs will be used as guidelines for measuring the necessity for and/or the degree of protection afforded by any future corrective measures. A comparison of RFI data with MPSs will be prepared and submitted as Section 12 of this report along with the human health risk assessment (Section 10) and the *Media Protection Standards Proposal*. Section 12 will be used to identify areas where

constituent concentrations exceed the MPSs and may present a potential risk to human health or the environment in the absence of any engineering or institutional controls,.

Finally, a summary of Stabilization Measures implemented to date is provided in Section 13. Any recommendations for additional investigations are discussed in this section.

The RFI Report is comprised of three volumes consisting of the following:

Volume 1	Executive Summary	
	Section 1	Introduction
	Section 2	Conceptual Site Model
	Section 3	Pre-RFI Field Investigation
	Section 4	RFI Phase I Field Investigation
	Section 5	RFI Phase II Field Investigation
	Section 6	Supplemental RFI Field Investigation
	Section 7	Environmental Setting
	Section 8	Waste Characterization
	Section 9	Contaminant Characterization
	Section 10	Human Health Risk Assessment (to be completed)
	Section 11	Ecological Risk Assessment
	Section 12	Comparison to Media Protection Standards (to be completed)
	Section 13	Stabilization Measures and Future Investigations
	Section 14	References
	Tables	
	Figures	
Volume 2	Appendix A:	Pre-RFI Field Investigation Results
	Appendix B:	Soil Boring Logs
	Appendix C:	RFI Phase I and Phase II Field Investigation
	Appendix D:	RFI Phase I Soil Gas Testing Report
	Appendix E:	Soil Vapor Extraction Pilot Test Report
	Appendix F:	Supplemental RFI Soil Gas Testing Report
	Appendix G:	Supplemental RFI Data Validation Reports (on CD)
	Appendix H:	Ground Water Flow Model
	Appendix I:	Indoor Air Sampling Report
Volume 3	Appendix J:	Ecological Data (Now Included in Appendix K)
	Appendix K:	Ecological Screening Benchmark Documentation
	Appendix L:	Fate and Toxicity Profiles for the ECOCs
	Appendix M:	Section 13 Figures (Part a)
	Appendix N:	Section 13 Figures (Part b)
	Appendix O:	Berlin and Dugan Figures
	Appendix P:	Photo log of Excavation at AOC 30
	Appendix Q:	Ground Water VOC Summary Tables
	Appendix R:	Lake Mirimichi Well Field Interbasin Transfer Application Decision
	Appendix S:	Electronic Copies of Laboratory Reports (on CD)

Appendix T:	ASTM Phase II ESA of the Drive-In Property (selected tables and figures)
Appendix U:	Geophysical Investigation Report (selected tables and figures)
Appendix V:	Drywell Excavation Summary (selected tables and figures)
Appendix W:	GSM O&M Quarterly Reports, Fourth Quarter 2009 – Third Quarter 2010

2 Conceptual Site Model

2.1 Operating History

The BASF Facility is a former metal fabrication and finishing plant located at 32 Taunton Street in Plainville, Massachusetts. The Facility was constructed in 1957 and initially consisted of two buildings (Nos. 1 and 2) where operations primarily involved rolling and fabricating steel and titanium, and fabricating uranium fuel elements under license from the U.S. Atomic Energy Commission (AEC). Wastewaters from the uranium fabrication operations were discharged after treatment into leach fields located on the southeastern side of Building 2[15]. In 1962, fabrication of uranium fuel elements ceased and all nuclear materials and equipment were removed from the Facility and sold. In the fall of 1963, the licenses were terminated based on recommendations from the AEC Compliance Division.

Over the subsequent years until operations ceased in 1993, the Facility was expanded by the construction of additional adjoining buildings, eventually covering a contiguous area of approximately 300,000 square feet.[16] During this time, operations primarily consisted of fabrication and finishing of gold and silver into wire and flatstock for the jewelry and electronics industries. The Facility was also involved in the production of coin blanks under contract with the U.S. Mint. Processes included melting raw materials, mixing metals to make alloys, shaping the metal, and heat-treating and finishing products. The Facility generated various aqueous, airborne and solid process waste streams, which may have contained cyanides, metals (including cadmium and chromium), acids, metal hydroxide sludges, and metal-containing dusts. The Facility also operated several degreasers using chlorinated solvents for metal cleaning operations.

Historically, wastewater generated at the Facility was discharged on-site in various disposal ponds (e.g. AOC A-1, AOC 5), leach fields (e.g. AOC 14, AOC 16), and dry wells (e.g. AOC 7, AOC 16, AOC 22) (see Figures 2.1 and 2.2). Beginning in 1973, the Facility operated a wastewater treatment plant (WTP) consisting of an ion exchange system designed to remove metals from the metal processing wastes and to return treated wastewater to the manufacturing process for re-use. Due to insufficient capacity and operational inefficiencies, some treated and untreated wastewaters were historically released to neutralization pits and to the ground surface (AOC A-1 and AOC A-12). The wastewater treatment plant was replaced in 1981 with a pretreatment plant where wastewater was treated by pH adjustment and solids settling and then discharged to a municipal sewer. Selected waste streams were pretreated for reduction of hexavalent chromium and cyanide destruction before being combined with the main waste stream.

After a five-year shutdown period, during which many of the original buildings were demolished, a smaller specialty wire manufacturer commenced small-scale wire-making and warehousing operations in Buildings 8 and 10 at the Facility, along with a second tenant who was using the building for storage of industrial equipment and packaging materials. The wire making operations were subsequently sold to a third party (FSP) who now only uses the building for warehousing goods. The second tenant (Wolverine Corporation) has since vacated the premises. Building 11 is used to house the on-site ground water treatment plant (GWTP) and environmental equipment associated with Site investigation activities, but is otherwise unoccupied. Low level radioactive waste generated during site characterization

15 Former and current buildings onsite are identified in Figure 2.1.
16 A 1978 building floor plan is provided in Figure 2.9.

and building demolition activities, which were being temporarily stored in Building 11 pending final disposal, were removed and disposed off-site in October 2010 under MADPH approved plans.

2.2 Areas and Chemicals of Potential Concern

In 1986, the USEPA issued a RCRA 3007 letter requesting information about solid waste management units (SWMUs) and releases of hazardous constituents to the environment. Following several years of voluntary (pre-RFI) investigations by the then Engelhard Corporation (now BASF Corporation), an Administrative Consent Order (ACO) was signed in 1993 to conduct a more formal RCRA Facility Investigation (RFI) under USEPA supervision. The ACO initially identified 46 potential Areas of Concern (AOCs). The list of AOCs requiring further investigation was subsequently reduced to 20 AOCs following the submission of additional information on historic operations and after further negotiations. These 20 AOCs included land areas formerly receiving storm water runoff and wastewater discharge; areas affected by emissions from air pollution control devices; locations of former dry wells and degreaser pits; and waste storage areas.

Site-related chemicals detected during the pre-RFI and subsequent RFI investigations include chlorinated volatile organic compounds (CVOCs), metals, polychlorinated biphenyls (PCBs) and radionuclides (uranium compounds and certain degradation products). The metals, PCBs and radionuclides are primarily found in surface and subsurface soils located in the Courtyard Area (AOC 7) and adjoining soils bordering Turnpike Lake to the south (AOC B), as depicted in Figure 2.2. Because these compounds tend to sorb strongly to soils, migration off-site has been limited, and is primarily related to surface water runoff through the south embayment of Turnpike Lake, and potentially by windborne transport of dust from surface soils. The Courtyard and adjoining areas bordering Turnpike Lake are the focus of a soil Stabilization Measure, which is being coordinated with the completion of the radiological decommissioning, to address impacted soil and sediments in this area.

The historic discharge of wastewater into “frog ponds” in the area of the current on-site wastewater plant (see Figure 2.2) has also resulted in the elevated concentrations of certain metals (e.g. cadmium) in subsurface soils in the rear (west) of Building 10. These soils are causing a moderate increase in the concentrations of metals in local ground water in this area. However, because this area was covered by the subsequent construction of the wastewater storage tank and its spill containment basin, the soils likely do not represent a current source of metals in surface runoff or as wind-blown dust.

Storm water runoff from the Facility historically affected a localized area (the South Embayment) of Turnpike Lake, which received discharges from roof drains from former Buildings 1, 2, 5, 6, 7 and 9, where metal melting operations were conducted, and overland runoff from the Courtyard Area. This has resulted in the accumulation of metals, and to a lesser degree radionuclides and PCBs, in sediments in this area of the Lake. There is also evidence that some metals have migrated from Turnpike Lake via the southern spillway into Sawmill Brook, and have accumulated in a low-lying, seasonally impounded area to the south of the former drive-in property. Radionuclides have also been detected in subsurface soils in the vicinity of the former leach field (AOC 16), a residue from wastewater discharged from former nuclear operation in Buildings 1 and 2.

The principal CVOCs detected at the Facility are perchloroethylene (PCE) and 1,1,1-trichlorothane (TCA). Both PCE and TCA are moderately soluble in water with TCA about ten times more soluble than PCE (1,500 mg/L compared to 150 mg/L). TCA is also about ten times more volatile than PCE but Henry's Law constants for the two chemicals are similar, indicating both have the potential to volatilize from ground water and migrate in soil gas. Neither chemical sorbs strongly to soils. Both of these chemicals along with TCE were historically used as degreasing agents and may have been spilled, leaked or disposed at the Facility. Consequently, the highest concentrations of CVOCs have been detected near and downgradient of AOCs associated with the historical vapor degreasing operations including AOCs 5 and 29 in Building 8, AOC 22 and the dry well discovered in early 2004 in the Upper Courtyard area of AOC 7 (see Figures 2.1 and 2.2).[17] Concentrations of PCE and TCA detected in these areas suggest that dense non-aqueous phase liquids (DNAPL) deriving from these chemicals may have been released into soil and ground water in these areas.

Elevated concentrations of CVOCs have been detected in fractured bedrock beneath and downgradient of Buildings 1 and 2 and AOC 7, which contained several AOCs associated with degreasing operations. These CVOCs have migrated off-site to the east of Route 152 via local ground water flow. A geophysical investigation conducted in 2008 verified earlier Site work which had suggested the presence of an approximately east-west oriented fracture zone in the underlying bedrock in the area between EW01 and EW02 (see Figure 2.2). This zone is likely functioning as a preferential migration pathway for bedrock ground water across the Groundwater Stabilization Measure (GSM). This fracture zone was originally inferred from extraction well pumping-test groundwater elevation data and was further substantiated from the correlation and trend of anomalies observed in surface geophysical data. The geophysical data determined that the fracture zone is relatively high angle intersecting the bedrock surface, and trends roughly west-southwest to east-northeast; it most likely intersects the former major VOC ground water source area at the Upper Courtyard in AOC 7 (see Figure 2.1). Bedrock cores recovered from P16c immediately across Route 152 and downhole geophysical data in extraction well EW02 has confirmed that the bedrock in these locations is highly fractured, further substantiating the presence of a bedrock fracture zone in this area (LFR, Inc., 2009b).

CVOCs have also been detected in soil gas samples collected from beneath Buildings 8 and 10 and below former building slabs near AOC 22. Beneath Building 8, the highest concentrations of CVOCs in soil gas have been observed near AOC 5, which is associated with former degreaser operations, and in the vicinity of AOC 14. Historical information indicates that AOC 14 was used for the disposal of metal-bearing wastewater and was not associated with vapor degreasing operations. These same CVOCs have been detected at low concentrations in indoor air samples collected from Building 8. At the conclusion of four (4) quarterly rounds of indoor air sampling (anticipated in April 2011), an indoor air risk characterization will be prepared and a determination will be made as to whether an additional Stabilization Measure is required to address the migration of CVOCs into Buildings 8 and 10 via soil gas.

2.3 Environmental Setting and Surrounding Land Use

The Facility, which includes approximately 22 acres of upland area, is zoned industrial and is located in an area of mixed commercial, residential, and natural resource preservation land

17 Note that this dry well discovered in AOC 7 may be what has historically been referred to as AOC 22.

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uses. BASF also owns approximately 10 acres adjacent to the Facility to the west beneath Turnpike Lake, as well as 20.5 acres of land located immediately east of the Facility across Route 152, including five (5) former residential properties (approximately 2.2 acres) and a former drive-in theater (18.3 acres).

The Facility is bordered by Turnpike Lake to the west and south, and a forested and wetland area owned by the Natural Resources Trust of Plainville to the north. The facility is bordered to the east by the above mentioned former residential lots and a former drive-in theater (owned by BASF) as well as a private residence located to the southeast. A site location map is provided in Figure 2.3 and an aerial photograph of the Site and surrounding area, taken in April 2005, is provided in Figure 2.4.[18]

2.3.1 Surface Water Features

Turnpike Lake forms a natural source of ground water recharge in the areas west of and beneath the Facility, with the subsequent flow of both ground water and surface water to the east. Turnpike Lake has two surface outlets, one from the embayment immediately south of the Facility, and one approximately 0.13 miles to the north. The surface outlet to the north empties into Turtle Brook and the surface outlet to the south empties into Sawmill Brook, which eventually merges with Turtle Brook to the northeast of the former drive-in. The low-lying wetlands surrounding Sawmill Brook also receive drainage from the south and east, and Turtle Brook receives drainage from the north. Drainage from the low-lying areas eventually enters Lake Mirimichi, approximately 0.5 miles to the northeast of the confluence of Turtle Brook with Sawmill Brook. A three-dimensional representation of the topography surrounding the BASF Facility, and the direction of surface water flow to Lake Mirimichi to the north, is shown in Figure 2.5.

Turnpike Lake along with Turtle Brook and Sawmill Brook are classified by MassDEP as Zone A surface water protection areas. As indicated in Figure 2.6, the Zone A protection area extends to Lake Mirimichi and the Wading River.

Three municipal wells are located approximately 0.3 miles to the southwest of the Facility, on the opposite side of Turnpike Lake, and hydraulically upgradient. Due to the shallow depth of these wells and the close proximity to Turnpike Lake, it is likely that the primary source of water to these wells is local recharge to the glacial till and water indirectly drawn from Turnpike Lake through the glacial till by ground water extraction.

In addition, the Lake Mirimichi well field, located on the southwest shore of Lake Mirimichi approximately 0.8 miles northeast of the facility, was brought online in May 2007, and typically pumps at rates ranging from 50,000 to of 225,000 gallons per day based on information provided by the Town of Plainville Water Department. The well field, consisting of three overburden wells and equipped with tertiary treatment technology, and present at the border of Lake Mirimichi, was approved by the MassDEP for a combined withdrawal rate of 0.4 million gallons per day (Massachusetts Water Resources Commission, 2004). The location of the well field is depicted in Figure 2.6.

Lake Mirimichi serves to recharge two downstream water supply wells along the Wading River more than one mile southeast of the Facility, and these two wells provide

18 The aerial photograph was obtained from the MassGIS website at http://www.mass.gov/mgis/colororthos2005.htm

approximately one million gallons per day of drinking water to the City of Attleboro (LFR, 2005).

2.3.2 Hydrogeology

The Site is located within the Taunton River Drainage Basin, a small sub-area of the Narragansett Basin. The principal aquifer system in the basin is the Middle Wading River aquifer, which is composed of stratified, unconsolidated glacial drift. In general, the overburden soil consists of poorly sorted and poorly stratified, gravelly sand, with occasional lenses of gray silty sand found near the base of the overburden just above bedrock. Bedrock at the Site is primarily a black to dark gray shale and a gray to green, medium to coarse grained feldspathic sandstone (graywacke).

The MassDEP has classified the majority of the area surrounding the Facility and the low-lying areas east of the Facility as a potentially productive high yield aquifer. An underlying bedrock zone also serves as an aquifer in some parts of the basin, and is used as a source of water supply for private wells approximately 0.7 miles northeast of the Facility near Lake Mirimichi.

In general, the local ground water flow pattern is dominated by the recharge of overburden and bedrock zones beneath and west of the Facility by Turnpike Lake and subsequent movement of ground water to the east into the low-lying area east of Route 152 (see Figure 2.2). This area east of Route 152 serves as a discharge zone for local surface and ground water flow from the west, south and east. The principal areas of ground water discharge occur immediately east of the Facility along the channel of Sawmill Brook and in areas characterized by low-lying streams and seasonally inundated wetlands.

2.4 Chemical Concentration Trends in Ground Water

Off-site migration of PCE, trichloroethene (TCE) and TCA and their degradation by-products [primarily cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene (1,1-DCE) and 1,1-dichlorethane (1,1-DCA)] has occurred in ground water, and these chemicals have been detected in both the overburden and bedrock aquifers east of the Facility, consistent with local groundwater flow patterns.

An on-site pump and treat Groundwater Stabilization Measure (GSM) was installed and began operation in early 1998 to control off-site migration of CVOCs in ground water. The GSM consists of a 540-foot long, vertical high-density polyethylene (HDPE) barrier membrane installed through the overburden into the top of bedrock (approximately 25 – 30 feet deep) and six groundwater extraction wells (EW-1 through EW-6) installed in bedrock to depths ranging from approximately 200 to 300 feet below ground surface. After an initial rise in CVOC concentrations upon startup of the GSM in 1998, groundwater concentrations in monitoring wells downgradient of the GSM have steadily declined. In general, since 1995, total CVOCs in overburden ground water east of Route 152 have declined by approximately an order of magnitude, and total CVOCs in shallow bedrock ground water east of Route 152 have decreased by approximately 50% or more since their highest observed concentrations. However, concentrations of CVOCs remain well above applicable ground water quality standards, particularly in the bedrock zone.

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Recent improvements in 2010 to the design and operation of the GSM, specifically temporary larger conveyance piping and the deepening of extraction well EW-2 from 200 to 302 feet bgs, have resulted in full groundwater control across the GSM.

PCE, TCE and TCA will biodegrade in a low oxygen environment by reductive dechlorination, forming TCE, cis-1,2 DCE and 1,1 DCA as the principal degradation byproducts of PCE, TCE and TCA, respectively. TCA will also chemically degrade (hydrolyze) in water to form 1,1 DCE. All of these byproducts, as well as ethene and ethane, have been found in ground water downgradient of the Site, demonstrating that some level of degradation is in fact occurring.[19] However, the potential significance of this degradation in limiting the downgradient movement of CVOCs must be evaluated with respect to the rate of flow in ground water and the proximity to downgradient receptors.

An evaluation of natural attenuation was initiated at the Site in 1999 and the results were summarized in two reports (ECS, 2004; LFR, 2005). Based on data presented in these two reports, and the more extensive ground water monitoring record over the past nearly 20 years, there is evidence that a moderate level of natural degradation of PCE, TCE and TCA in ground water is occurring at the Site at the fringes of the plume; however, significant natural degradation does not appear to be occurring along the plume interior, which is located along the axis of MW40A/B and MW41A/B.

2.5 Potential Exposure Pathways

2.5.1 Current Land Use

Potential exposure pathways under current land use scenarios are presented in Figure 2.7. Current land use at the facility is industrial and workers at the site could be exposed to site-related chemicals via several pathways. Workers inside Building 8 could be exposed to CVOCs via soil gas infiltration into indoor air. CVOCs have been detected in both soil gas and Building 8 indoor air; and an additional Stabilization Measure to address the migration of CVOCs into Buildings via soil gas is currently being considered. Workers involved in subsurface excavation activities could be exposed to metals, PCBs and radionuclides in sediments and soils in AOC B as well as the Courtyard Area (AOC 7) and the south embayment of Turnpike Lake (AOC 13) via ingestion, dermal absorption and inhalation of fugitive dusts. There is also a potential for worker exposure to surface water in Turnpike Lake. The area including AOC B and portions of AOC 7 and AOC 13 is slated for a Stabilization Measure to address sediments and soils.

Although the low-lying wetlands east of Route 152 are currently undeveloped, children playing in these wetlands (including residents and recreational visitors) could be exposed to low levels of CVOCs in surface water and sediments via ingestion, inhalation and dermal exposure pathways. Groundwater seeps have also been observed in several locations along the edge of the wetlands and represent a potential direct exposure pathway to chemicals in ground water in these areas. A number of groundwater monitoring wells have been installed downgradient of this discharge area and confirm that the CVOC plume does not appear to extend beyond this natural groundwater discharge area. Ingestion of fish from Turnpike Lake is also a potentially complete exposure pathway for both current and future residents and recreational visitors.

19 It should be noted that the assumed degradation byproducts TCE, cis-1,2-DCE, 1,1-DCA and 1,1-DCE may also occur as impurities in PCE and TCA.

Currently, the entire area in the immediate vicinity of the Facility is serviced by municipal water from the Town of Plainville. This fact, along with the limited downgradient migration of contaminants due to the natural discharge in the wetlands east of Route 152, indicates that there is no current exposure to contaminants via the off-site use of ground water for domestic supply, although future exposure cannot be ruled out if a domestic supply well were constructed in this area. Although, it is noted that current Town of Plainville ordinances and Board of Health policy prohibit the installation of homeowner wells in areas downgradient of the Facility. Also, current use of groundwater for irrigation purposes remains a potentially complete exposure pathway (via incidental ingestion, dermal absorption and inhalation while watering). Potential current and future exposure to contaminants in garden soils and homegrown produce will also be considered for on-site and off-site residents.

The Town of Plainville has two municipal well fields within 1 mile of the Facility, as shown on Figure 2.6. Three municipal wells are located approximately 0.3 miles to the southwest of the Facility on the opposite side of Turnpike Lake. These wells, which principally draw water from the shallow surficial aquifer and indirectly from Turnpike Lake, are located upgradient from the Facility.

A second municipal well field is located approximately 0.8 miles northeast of the Facility, bordering Lake Mirimichi. These wells, which principally draw water from the shallow surficial aquifer and indirectly from Lake Mirimichi, are located cross gradient from the areas where contamination from the Facility discharge into the wetlands east of Route 152. Therefore, it is unlikely that any contaminants from the Facility will affect the use of this municipal well field in the future; although, as a contingency, the Lake Mirimichi well field was equipped with a tertiary ground water treatment system capable of removing VOCs, if necessary.

2.5.2 Future Land Use

Potential exposure pathways under reasonably foreseeable future use scenarios are presented in Figure 2.8. Although BASF intends to continue to maintain the property for non-residential use in the future, and a non-residential Future Land Use Proposal Application ((FLUPA) for the Site has been submitted to the USEPA,[20] future residential use of the property, including future residential use of groundwater, will be considered in the Human Health Risk Assessment (HHRA). As indicated in Figure 2.8, potential future groundwater exposure pathways include ingestion, dermal absorption and inhalation (while showering). Future use of groundwater for commercial/industrial use of the property will also be evaluated. BASF also maintains perimeter site security fencing and No Trespassing warning signs to limit public exposure to on-site areas. However, these institutional controls will not be considered in the HHRA.

20 Ultimately, an Activity and Use Limitation under the Massachusetts Contingency Plan is anticipated for portions of the property.

3 Pre-RFI Field Investigations

In response to an EPA RCRA 3007 letter requesting information about solid waste management units (SWMUs) and releases of hazardous constituents to the environment, between 1986 and 1992, BASF voluntarily conducted a series of environmental investigations to establish the nature and extent of chemical constituents in soil, ground water, surface water and sediments beneath and downgradient of the Facility. The results of these investigations (herein referred to as pre-RFI Phases I, II, and III) were reported to the USEPA, the Massachusetts Department of Environmental Protection (MassDEP) and the Town of Plainville Board of Health in various reports including ENVIRON, 1989 and ENVIRON, 1990. The results of these investigations are summarized in this section.

3.1 Pre-RFI Field Investigations (Phases I and II)

Phase I of the pre-RFI site investigation was completed in 1987, and Phase II was conducted in August and September 1988. The results of these investigations were summarized in a report "Results of Phase I and Phase II Field Investigations, Engelhard Corporation, Plainville Massachusetts" (ENVIRON, 1989).

3.1.1 Surface and Subsurface Soil Sampling

Surface Soils. Fifteen shallow surface soil samples (SB-1, SB-2, SB-5 – SB-7, and SB-16 – SB-25) were collected from the top six inches of soil at locations along the southern border of the Facility with Turnpike Lake. Samples SB-1 and SB-2 were collected in August 1987 and analyzed for priority pollutant metals, volatile organic compounds (VOCs), cyanide and gross alpha and beta radiation. Based on the results of these first two samples, later samples were collected in August 1988 and analyzed for a subset of these analytes including silver, cadmium, chromium, lead, zinc, copper, and gross alpha and gross beta. Surface soil sampling locations are shown in Figure A-1. Surface soil analytical results are provided in Tables A-1a and A-1b in Appendix A.

Subsurface Soils. Nine subsurface soil borings (SB-3 – SB-4 and SB-8 – SB-14) were advanced in the same area along the southern border with Turnpike Lake to collect geologic and chemical data at depth. Soil borings SB-3 and SB-4 were drilled into bedrock (to a depth of about 35 feet bgs) and split spoon samples were collected every five feet for lithologic description. Boring logs are provided in Appendix B. Soils collected from the top four feet were composited and analyzed for priority pollutant metals, VOCs (SB-3 only) and gross alpha and beta. Soil borings SB-8 to SB-14 were advanced to the water table and the top two feet of soils were analyzed for silver, chromium, cadmium, lead, zinc, copper, gross alpha and beta and VOCs. In all borings except SB-9, the next deepest sample and sample collected from immediately above the water table were also analyzed. At location SB-9, samples were collected at 0-2 and 2-4 feet bgs. At two locations (SB-9 and SB-14) where potentially elevated gross alpha and beta readings were recorded, an adjacent surface soil sample was collected and analyzed for isotopes of uranium, plutonium, thorium, radium and potassium. In addition, one sediment sample (SB-15) collected from the bottom of an existing dry well associated with AOC 16, and one surface soil sample collected from SB-5 were analyzed for the same suite of radioisotopes. Subsurface soil sampling locations are shown in Figure A-1. Subsurface soil analytical results are provided in Tables A-1a and A-1b in Appendix A. Isotope data are provided in Table A-1c.

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The only VOCs detected in surface and subsurface soil samples described above were tetrachloroethylene (PCE) detected at a maximum concentration of 620 µg/kg in SB-6 (located near the southern edge of former Building 6); toluene detected at a maximum concentration of 200 µg/kg in SB-13 (located near the former wastewater disposal system associated with AOC 16); and methylene chloride, which was detected at low levels (6 – 25 µg/kg) in several samples.

The highest concentrations of cadmium, copper, silver and zinc (43,000; 2,800; 250 and 6,600 mg/kg, respectively) were detected in soil samples SB-20 through SB-22 collected near the bag house in the southwest corner of the property (sub-AOC B-4). The highest gross alpha and beta measurements were observed in soil samples SB-13 through SB-15 collected near the dry well in the southeast corner of the property. A more complete assessment of soil sampling results is provided in Section 9.1.

3.1.2 Ground Water Sampling

Thirteen groundwater monitoring wells (MW01 through MW09, MW12 through MW15)21 were installed or utilized at the Site during Phases I and II of the pre-RFI site investigation activities. Monitoring well locations are shown in Figure 3.1. Wells MW01 through MW09 (installed in August 1987) and MW12 (installed in August 1988)22 are shallow monitoring wells designed to sample the overburden aquifer. Wells MW13 through MW15 are shallow bedrock monitoring wells constructed in August 1988.

The overburden wells were constructed of two-inch stainless steel casing and screen using techniques to prevent migration of chemicals down the borehole during drilling. Construction details for all monitoring wells are provided in Table 3.1. Split spoon samples were collected at five-foot intervals during drilling for the purpose of lithologic logging.

The shallow bedrock monitoring wells were constructed of four-inch stainless steel casing grouted into 5 – 10 feet of bedrock, to a total depth of approximately 30 – 35 feet below ground surface (bgs). Open borehole intervals are noted in Table 3.1.

Initial ground water sampling was conducted in September 1987. Samples collected from MW1 through MW09 were analyzed for priority pollutant metals, VOCs, semi-volatile organic compounds (SVOCs), PCBs, total cyanide and gross alpha and beta. The sample collected from MW05 was first analyzed for radioisotopes only due to concerns for water quality in this well and any impact on options for development water disposal. This well was then analyzed for the complete suite of chemicals in November 1987.

A second round of sampling involving all thirteen monitoring wells was conducted in August and September 1988. All samples were analyzed for VOCs, priority pollutant metals, and gross alpha and beta. A summary of ground water monitoring results is provided in Tables A-2a and A-2b. Analytical interpretation is provided in Section 9.2.

As indicated in Table A-2a, the highest VOC concentrations detected in the overburden aquifer were of tetrachloroethene (PCE) at 43,000 µg/L in MW04, and 1,1,1-trichloroethane

21 Monitoring wells MW10 and MW11 were assigned to two privately owned non-potable wells on the east side of Route 152. According to the owner, MW10 is a shallow steel-cased well used for watering a tree farm and MW11 is a hand-dug, field stone well that has not been used since the 1940s.

22 Note that monitoring well MW12 was abandoned in place on February 7, 2006 and has since been replaced by the monitoring well pair MW12A/B located in the same area.

(TCA) at 13,000 µg/L in MW12. In the shallow bedrock zone, VOCs were detected in MW14 and MW15, but not in well MW13, which is upgradient of manufacturing areas.

Antimony, cadmium, lead and copper were detected in several overburden wells at concentrations exceeding levels detected in MW07 (the background well); however, results were variable between the two sampling rounds. In addition, the initial samples collected from wells MW05, MW10 and MW11 were not filtered prior to analysis, and are not considered to be representative of dissolved levels in ground water. The highest concentration of gross alpha and beta were detected in well MW05 at 155 and 72 picocuries per liter (pCi/L) respectively. Further assessment of ground water sampling results is provided in Section 9.2.

3.1.3 Surface Water and Sediment Sampling

Two sediment samples (SW-1 and SW2) were collected from the south embayment of Turnpike Lake, one sediment sample (SW3) was collected from Turnpike Lake west of Building 7, and one sediment sample (SW4) was collected from a background location along the northeast shore of Turnpike Lake between August 1986 and September 1988. All four sediment samples were analyzed for VOCs, priority pollutant metals, cyanide, and gross alpha and beta. Sediment sampling locations are depicted in Figure A-1. Analytical data are provided in Tables A-3a and A-3b.

The only VOC detected in Turnpike Lake sediment was PCE at the detection limit. Concentrations of silver, cadmium, lead, zinc and copper were detected in sediments located at SW-01 and SW-02 (near outfalls from plant roof drains) at concentrations higher than levels detected in sediments at stations SW3 and SW4, which were initially targeted as background locations. The highest gross alpha and gross beta concentrations were detected at SW-1 at 126 and 27.5 pCi/g, respectively.

Twenty-two surface water samples (SW-01 – SW22) were collected from Turnpike Lake, the northern and southern spillways from Turnpike Lake, Sawmill Brook, Turtle Brook and the inlet to Lake Mirimichi. Surface water sampling locations are shown in Figure A-2. Analytical data are provided in Tables A-4a and A-4b.

The highest concentrations of VOCs were detected at SW-05, located in Sawmill Brook in the primary ground water discharge area east of Route 152. Other surface water samples collected in Sawmill Brook downgradient of SW-05 (at SW-06, SW-07, SW-08 and SW-13) had detectable amounts of VOCs; however, concentrations decreased with increasing distance from the Facility. No VOCs were detected in the Lake Mirimichi or Turnpike Lake surface water samples.

Cadmium and zinc concentrations were detected above background levels at locations SW-01, SW-11, SW-18 and SW-22 (near roof drain outfalls) at concentrations ranging from 120 – 350 µg/L and 180 – 910 µg/L, respectively.

Potential contributions of chemicals from stormwater runoff to Turnpike Lake were investigated through a program of time-series surface water sampling during two storm events over the period August 25 – 31, 1988. Outflows from each of three stormwater outfalls (at locations SW-11, SW-18 and SW-22) were sampled during rainfall, and surface water samples were collected daily from locations SW-10, SW-19, SW-20 and SW-21 following the first rainfall event on August 25. A second rainfall event occurred on August

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30. All samples were analyzed for total cadmium, total zinc and gross alpha. These data are included in Table A-4b. Locations SW-19 and SW20 showed an immediate increase in cadmium and zinc concentrations following a rainfall; whereas, a delayed response was observed at locations SW-10 and SW21, most likely due to their greater distance from the roof drain outfalls.

In addition, staff gauges were installed in Turnpike Lake and along Sawmill Brook at the northeast corner of the former drive-in property to monitor water levels at these locations.

3.1.4 Soil Gas Sampling

A soil gas investigation was conducted at the Facility and at the former drive-in property in August 1988. Temporary probes were installed to a depth of approximately 2.5 feet bgs and soil gas samples were collected via syringe and analyzed for PCE, TCE, TCA and trans-1,2-dichlorethylene (trans-1,2-DCE) using a portable GC. Seventy-eight soil gas samples were collected. Soil gas sampling results are provided in Table A-5. Sampling Locations are indicated in Figure A-3.

As indicated in Figure A-3, most of the on-site soil gas sampling points were located in the open area between the eastern edge of Buildings 1, 2 and 8 and Taunton Street (Route 152). In addition, four samples were collected near AOC 6 and a background location was sampled behind Building 11. The highest PCE concentrations were detected near AOC 6 and east of AOC 22. In contrast, the highest TCA concentrations were detected northeast of Building 8 near the edge of Taunton Street; but no TCA was detected on the drive-in property. Only low levels (2 – 14 ppbv) of trans-1,2-DCE were detected at the drive-in property along with one hit of PCE at 1,100 ppbv. A comprehensive assessment of soil gas sampling results is provided in Section 9.3.

3.2 Pre-RFI Field Investigation (Phase III)

Phase III of pre-RFI site investigation activities was completed in 1989 and summarized in a Phase III Summary Report (ENVIRON, 1990). Additional activities conducted in Phase III included drilling additional pilot borings, constructing additional monitoring wells, collecting soil, ground water, surface water and roof drain samples for chemical analysis, completing a soil gas investigation and conducting hydraulic testing of aquifer units. In addition, in March 1989, BASF conducted a comprehensive survey of private wells located north and east of the facility.

3.2.1 Surface Soil Sampling

Eleven additional surface soil samples (SB-100 – SB-110) were collected in November 1989 along the southern portion of the facility adjoining Turnpike Lake in order to provide further information regarding the distribution of Cadmium in soils near the two then existing bag houses and along surface drainage pathways. All samples were analyzed for cadmium only. Surface soil sampling locations are shown in Figure A-1. Results are reported in Table A-6.

Cadmium concentrations exceeded 1,000 mg/kg in soil samples collected from six of the eleven sampling locations. The highest concentrations were detected in samples collected in areas that receive runoff from the vicinity of the dust collectors located on the south side of the Facility. Additional characterization of soil sampling results in this area is provided in Section 9.1.

3.2.2 Ground Water Sampling

Five additional overburden monitoring wells (MW20A through MW24A) were installed in the low-lying area east of Route 152. These wells are constructed of 4-inch schedule 40 PVC riser and 5 feet of schedule 40 PVC #10 slot well screen. The wells range in depth from 6 to 12 feet bgs. Additional well construction details are provided in Table 3.1.

Nine shallow bedrock monitoring wells were also installed during Phase III. Three wells (MW16 through MW18) were installed along the eastern boundary of the Facility and six wells (MW19 and MW20B through MW24B) were installed in the low-lying area east of Route 152. Well locations are provided in Figure 3.1. The three on-site wells are constructed of 4-inch diameter stainless steel casing and the six off-site wells are constructed of 4-inch diameter schedule 40 PVC. With the exception of MW16 and MW17, the casing in the wells extends 2 – 5 feet into bedrock. The well casings for MW16 and MW17 extend approximately 30 feet into bedrock. Open borehole intervals for each of the wells are presented in Table 3.1.

Two rounds of ground water sampling were completed during Phase III. Thirteen on-site wells were sampled in the first round of sampling, which was completed during February 1989 (Table A-7); and all 27 on-site and off-site wells were sampled during the second round of sampling, which was completed in September 1989 (Table A-8). All ground water samples were analyzed for filtered priority pollutant metals and VOCs. In addition, during the second round, samples collected from MW01 through MW19 were also tested for gross alpha and beta emissions and wells MW13 through MW15 and MW18 were analyzed for acid and base/neutral extractable organic compounds (ABNs). A summary of ground water monitoring results is provided in Tables A-7 and A-8. A comprehensive evaluation of ground water quality at the Site is presented in Section 9.2

3.2.2.1 Residential Well Survey

A survey of residential wells located north and east of the Facility was conducted in March 1989. A total of 78 private wells were sampled. Sampling locations are shown in Figure 7.4.14. All samples were analyzed for VOCs with a detection limit of 5 µg/L. The only chemicals detected were methylene chloride at 9 µg/L (at residential well 9);[23] chloroform at 5 – 7 µg/L in three wells (wells 24, 90 and 94); toluene at 9 µg/L in well 71; and 1,1,1-TCA at 6 µg/L at residential well 1, located about 3,000 feet north of the Facility. Because no other residential wells in this area contained 1,1,1-TCA, including wells located closer to the Facility, it is unlikely this result is associated with the Site.

3.2.3 Surface Water Sampling

Surface water samples were collected from five locations on Turnpike Lake (LK01 – LK05) and eight locations in the low-lying area east of the facility on August 1, 1989. Sampling locations are shown in Figure A-2. All lake samples were analyzed for unfiltered priority pollutant metals and gross alpha and beta. East of the facility, water samples were collected directly from two apparent ground water seeps at locations SW-25 and SW-26. Water samples were also collected from small stream channels, which appear to receive primarily ground water discharge at locations SW-24, SW-27 and SW-05. Two water samples (SW-06 and SW-08) were also collected from a larger stream channel, which receives both

23 Methylene chloride was also detected in the blank at a concentration of 10 µg/L. No VOCs were detected in a duplicate sample collected at well 9.

surface water from Turnpike Lake and ground water; and one water sample (SW-23) was collected from a small stream channel that appeared to be standing water. All surface water samples collected east of the Facility were analyzed for VOCs and unfiltered priority pollutant metals. Pre-RFI Phase III surface water analytical data are presented in Table A-9.

Low levels of zinc (21 – 84 µg/L) and lead (6 – 13 µg/L) were detected in all lake water samples including the sample collected from the background station (LK01). Trace levels of mercury (0.2 µg/L) were also detected at four of the five sampling locations, including the background sample. Cadmium (at 5 and 12 µg/L) and copper (at 12 and 18 µg/L) were the only metals detected in the lake that were not also detected at the background location.

In the low-lying area east of Route 152, total VOC concentrations ranged as high as 3,610 µg/L. The two samples collected from the apparent ground water seeps (SW-25 and SW-26) contained 734 and 3,610 µg/L total VOCs. PCE and 1,2-DCE (total) were the primary VOCs detected. The surface water samples collected from streams receiving primarily ground water inflow also contained significant levels of VOCs. At SW-24, PCE was the primary VOC detected (1,500 µg/L); while further downstream at SW-05, both PCE and TCA were detected at similar levels (990 and 850 µg/L, respectively). PCE and TCA concentrations detected at the furthest downstream sampling location (SW-08) were much lower at 15 and 18 µg/L, presumably due to dilution and volatilization effects. A comprehensive assessment of surface water sampling results is provided in Section 9.4.

In addition to the 13 surface water samples, storm water samples were collected from each of the four major roof drain outfalls at the Site immediately following a short, intense rainfall event. Three roof drain samples (RD02 – RD04) were collected at outfalls to Turnpike Lake, and one roof drain sample (RD01) was collected at the outfall to a storm water management basin located southeast of Building 11. The roof drain sample locations are depicted in Figure A-2; analytical data are presented in Table A-10.

Cadmium, copper, lead and zinc were detected at maximum concentrations of 1930, 445, 780 and 2567 µg/L in roof drain samples collected at the three outfalls to Turnpike Lake.

3.2.4 Fish Sampling

Fish samples were collected from Turnpike Lake and a private impoundment east of Route 152 from August 14-16, 1989. These fish samples were analyzed for priority pollutant metals and radionuclides (gross alpha and gross beta) to determine the impact, if any, of discharges from the Facility on the edible portion of fish collected from these areas. Two categories of fish, bottom feeders and predator species, were collected and both fish muscle tissue and liver were analyzed. Fish were collected from three areas:

- a background station located in the northeastern portion of Turnpike Lake, immediately downstream from Shepard Street and U.S. Route 1;
- approximately 200 feet north and west of the south embayment and immediately west of the southwest corner of the Facility; and
- a private impoundment located across Route 152, immediately downstream from the spillway on the south embayment of Turnpike Lake.

A summary report of the sampling and analysis is provided in Appendix A.

Three principal metals (lead, mercury and zinc) were detected in fish muscle tissue. Concentrations of lead in muscle tissue of fish collected from the background station varied from 0.24 to 1.21 mg/kg; however, no lead was detected in fish collected near the south embayment. In muscle tissue sampled from fish collected from the private impoundment, lead concentrations ranged from 0.58 to 2.61 mg/kg.

Concentrations of zinc in fish muscle tissue ranged from 1.67 to 11 mg/kg with the highest concentration detected in fish collected near the south embayment; although, concentrations in all three areas sampled were similar. Mercury was detected at low levels (0.59 to 0.79 mg/kg) in fish collected from all three areas.

Liver samples in fish collected from the background area contained chromium, copper, lead, mercury, selenium, silver and zinc. Except for chromium and silver, the same suite of metals was detected in fish collected from the south embayment. However, cadmium was detected in five of the seven fish collected near the south embayment, but not detected in any fish collected from the background area.

The detection of trace quantities of metals in fish tissue is not unexpected. For example, a report entitled “Trace Metals in Panfish from Rhode Island Freshwater” (ESS, 1988) documented the presence of cadmium, copper, mercury, lead and zinc in fish muscle tissue from a wide cross section of lakes, even in rural areas without identifiable industrial or plant discharges.

Gross alpha was not detected in any of the fish samples analyzed. Gross beta levels ranged from 0.76 to 2.0 pCi/g in fish collected near the south embayment, 2.2 to 4.2 pCi/g in fish collected from the private impoundment, and 0.76 to 2.0 pCi/g in fish collected from the background location (see Appendix A).

3.2.5 Soil Gas Sampling

A shallow soil gas investigation was conducted at the Facility and in an area to the east of the Facility in July 1989. Eight areas were targeted for investigation including four former degreaser areas located at AOCs 5, 22, 29 and 30, two former bulk solvent storage areas near Buildings 10 and 12, two former waste disposal areas (AOCs 5 and 6) and a then active wastewater treatment pit (AOC A). In addition, three transects were sampled to delineate the apparent edge of the plume of contamination to the north and south of the Facility.

A total of 66 samples were collected using 7-foot long, 3/4 inch diameter steel probes driven 2 – 6 feet into the ground with a truck-mounted hydraulic hammer. Soil gas sampling locations are shown in Figure A-4. Based on the results of the pre-RFI Phase I investigation, soil gas samples were analyzed for PCE, TCE, TCA and trans-1,2-DCE.[24] Analytical data are presented in Table A-11.

The highest concentrations of VOCs in soil gas were detected near the former waste disposal pit beneath Building 8 (AOC 5) and the former degreaser pit and trench in the wire department (Building 2; AOCs 22/26). In both of these areas, PCE concentrations were one

24 After the first 15 samples were analyzed, trans-1,2-DCE was dropped from the target compound list because it did not appear to be a significant contaminant and analysis time was significantly longer than for the other target compounds.

to two orders of magnitude higher than concentrations of TCE and TCA. Significant levels of VOC were also detected in the bulk solvent storage area and around the wastewater treatment pit beneath Building 10.

Sampling was also conducted along three north-south oriented transects east of the plant. Twelve samples were collected along a transect running south from MW05 to the property boundary; VOC concentrations decreased from low levels detected near MW05 to levels near the detection limit at the southern end of the transect. Six samples were collected along a transect running north from MW03 to the property boundary; the highest concentrations were detected near the middle of the transect. Only trace levels of TCA were detected in the three samples collected along the north-south transect east of Route 152. Soil gas data are discussed in further detail in Section 9.3.

3.2.6 Radiation Survey

In July 1988, a radiation survey of the building interiors and surrounding yard area at the Facility was conducted. The survey of the exterior areas consisted of measurements of ambient gamma levels at 3 feet above the ground surface. Background gamma readings in the north parking lot and adjacent wooded areas ranged from 18 to 22 microroentgen per hour (µR/hr). Ambient gamma readings in the yard region south of the Facility and along the fence adjacent to Turnpike Lake ranged from 20 to 26 µR/hr. Near the dry well at AOC 16, gamma readings were similar to background levels at 18 to 20 µR/hr; however, in the center of the dry well, 2 to 3 feet from the bottom, a gamma reading of 75 µR/hr was recorded, reflecting the existence of a radiological source in this area. Isotopic analysis of one sediment sample, collected from the bottom of the drywell in August 1988, measured 68 pCi/L total Uranium (Berlin and Duggan, 1995).

4 RFI Phase I Field Investigation

In 1993, USEPA and the then Engelhard Corporation signed a RCRA 3008(h) Consent Order in which BASF agreed to conduct a RCRA Facility Investigation to assess potential human health and ecological risks associated with the Facility, and to implement four defined Stabilization Measures. Phase I of the field investigation was completed in 1995.

4.1 Soil

4.1.1 Soil Boring Program

Soil borings were drilled as part of the Phase I investigation to gather additional data to further characterize the vertical and horizontal distribution of potential releases into soil at selected AOCs. A total of 85 soil samples were collected from 34 soil borings (SB-15 through SB-45) between November 22, 1994 and April 7, 1995, including a second boring at location SB-36 and two borings originally proposed solely for a separate radionuclide investigation under oversight by the NRC (SBRD33 and SBRD33A). With the exception of the three designated background borings (SB-43, SB-44, and SB-45), each boring was located to further investigate either an AOC or sub-AOC. Soil borings were advanced to the water table or bedrock, and selected samples were collected and retained for chemical analysis.

Final boring locations were consistent with the investigation objectives proposed in the RFI Phase I proposal and Phase I sampling and analysis plan (SAP). Boring locations were repositioned in a few instances, however, to maintain safe distances to underground or overhead utilities, when access to indoor locations was restricted by low ceiling clearance and dimensions of the drill rig, or when borings could not be advanced due to underground obstructions (see Section 4.1.3 for explanation). Locations of the soil borings in relation to potential AOCs are shown on Figure 4.1.1. Table 4.1.1 lists the boring numbers and identifies the soil samples collected from each boring and submitted for laboratory analysis. Soil boring logs, including three soil boring logs (for SB-24, SB-35, and SB-36B) which were revised based on EPA comments on the Phase I Interim Report (ENVIRON, 1995), are presented in Appendix B. A discussion of the soil sampling methodology, chemical analytical program, and results are presented in the following sections.

4.1.2 Background Soil Sampling

Three soil borings (SB-43, SB-44, and SB-45) were drilled to collect background soil data. The background sampling program was designed to collect data to allow calculation of the range, mean, standard deviation, 95 percent upper confidence limit of the mean, and the maximum concentration of the distribution of naturally occurring concentrations of metals in soils at the Site. As described in the RFI Proposal (ENVIRON, 1994b), nine soil samples from the three borings were considered adequate for meeting the statistical requirements to characterize background metal concentrations in soil. The locations of the three background soil borings are shown on Figure 4.1.1. Statistical comparison of on-site metals to background metals in subsurface soil is presented in Section 9.1.1. Metals are naturally occurring in soil and, as such, any impact by the Facility can only be evaluated relative to naturally occurring concentrations. Organic compounds of concern (e.g., VOCs, SVOCs, and polychlorinated biphenyls (PCBs), etc.) are not expected to be naturally occurring and background is characterized as “non-detect” for these constituents for the purpose of this report.

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4.1.3 Soil Boring Drilling/Sampling Methodology

Twenty-one borings (SB-16, SB-17, SB-19 through SB-23, SB-26, SB-28 through SB-30, SB-33, and SB-37 through SB-45) were drilled in exterior (outside) areas at the Site between November 22, 1994 and January 20, 1995. All outside borings were drilled using the hollow stem auger drilling method. Ten inside borings (SB-15, SB-18, SB-24, SB-25, SB-27, SB-32, SB-34, SB-35, SB-36, and SB-36B) were drilled between January 20 and February 14, 1995. For borings located inside current and former Facility buildings, either a drive and wash method or a tripod-mounted drive hammer was used.

Several of the interior borings were relocated from the locations proposed in the Phase I RFI Proposal and SAP (Appendix I, Section 4.2; ENVIRON 1994b). Based on the results of the pre-RFI Phase III soil gas investigation conducted in July 1989 (see Section 3.2.5) and the location of former degreaser pits at the east wall in Building 8, boring SB-35 (AOC 29) was moved into the adjacent hallway leading to the loading dock in order to be directly downgradient of the nearby former degreaser pit. Because of the low ceiling height in former Building 9, which precluded the use of a skid-mounted drill rig, boring SB-32 was moved from former Building 9 into adjacent former Building 1 and relocated downgradient of the former degreaser pit and trench that existed adjacent to the east wall in former Building 9. Boring SB-36 (AOC 30) was advanced to refusal (on a concrete sub-floor at a depth of three feet below ground surface (bgs) in the location of a former degreaser pit. Because the rig could not drill through the sub-floor, the rig was relocated ten feet north to the edge of the former degreaser pit and another boring, SB-36B, was drilled to bedrock at this location. At the time, the preferred location downgradient to the east was not accessible due to the clearance in adjacent former Building 5.

Each soil boring was sampled as continuously as possible to provide data to interpret the subsurface stratigraphy and to characterize chemical concentrations. An organic vapor monitor (OVM) was used to conduct health and safety monitoring during the drilling and to screen soil samples. The OVM screening methodology is described in Appendix C. The results of the OVM monitoring are included on the soil boring logs presented in Appendix B. Selected soil samples were retained for later chemical analyses as identified in Table 4.1.1.

Field quality control samples were collected throughout the soil sampling program in accordance with the Data Quality Assurance Plan (DQAP) (RFI Proposal, Appendix J; ENVIRON, 1994b). One duplicate sample was collected per 20 soil samples. One field equipment blank was collected per analytical method, for one out of every 20 samples. On each day that VOC samples were collected, a field trip blank was submitted with the primary samples for analysis. One Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample was conducted for every 20 soil samples collected. Quality control samples are identified in Table 4.1.1.

4.1.4 Chemical Analytical Program

The chemical analytical program presented in the RFI Proposal was developed based on available AOC historical use information and data from previous field investigations. Table 4.1.1 presents the chemical analytical program conducted for each soil sample that was obtained during the drilling program. Samples were primarily analyzed for VOCs and metals. Selected samples were analyzed for SVOCs, PCBs, cyanide, and total petroleum hydrocarbons as diesel (TPHD) based on AOC historical use information and field

investigation data from previous investigations. Lists of analytes for the VOC, SVOC, metal, and PCB analyses are presented in Tables 4.1.2, 4.1.3, 4.1.4, and 4.1.5 respectively.

Soil samples from five borings (SB-19, SB-20, SB-22, SB-23 and SB-27) were also tested for a short list of extractable metals using the Synthetic Precipitation Leaching Procedure (SPLP). The purpose of this sampling was to establish concentrations at which leaching of metals from soil to ground water may be significant. Therefore, samples were selected to represent a range of metal concentrations in soils associated with AOCs or sub-AOCs where discharge of metal-bearing wastewater is suspected. Summary analytical results tables for soil are included as Tables 4.1.6 through 4.1.11.[25] Analytical results are discussed in detail by AOC in Section 9.1.

4.1.4.1 Modifications to the RFI Phase I Chemical Analytical Program

The soil sampling program presented in the RFI Proposal was modified to include analysis for hexavalent chromium in addition to total chromium for several soil samples. This modification was presented in Technical Memorandum No. 2 dated January 11, 1995, which proposed that at least one sample be analyzed for hexavalent chromium from each AOC or sub-AOC where metal releases potentially occurred during past operations (Appendix C). The goal was to create a database of hexavalent chromium information that is comparable to the analyses of soil samples for total chromium.

4.1.5 Sampling Frequency

At each soil boring location, soil samples were collected from just below the ground surface, at an intermediate depth between ground surface and the water table, and at the water table. In some instances, where obstructions were encountered, less than the designated number of samples were collected from a boring. In addition, samples from several borings were collected slightly below the water table. This soil sampling frequency was intended to provide analytical data at depths where concentrations of chemicals would potentially be highest and to provide a measurement of the range of concentrations with depth from the surface to the water table.

4.1.6 Summary of Data

Soil sampling results are summarized by AOC in Section 9.1.

4.2 Ground Water

4.2.1 Monitoring Well Installation Program

Eighteen additional ground water monitoring wells (MW25A/B, MW26 through MW29, MW30A/B through MW33A/B and MW34 through MW37) were constructed in areas both on- and off-site of the Facility between November 30, 1994 and January 19, 1995. These 18 wells were installed to expand the existing 27 well network to a total of 45 wells. The well installation program originally presented in the RFI Proposal was described in Technical Memorandum No. 1, dated November 2, 1994 (Appendix C). Detailed descriptions of the well installation program are presented in Appendix C.

New monitoring wells were located as proposed in the RFI Proposal, with minimal adjustments made where locations fell within unsafe distances of underground or overhead

25 Full analytical tables for both Phase I and Phase II samples were included in the Human and Ecological Risk Assessment (HERA) Second Interim Deliverable (ENVIRON 1997).

utilities, or when borings could not be advanced due to underground obstructions. Monitoring well locations are shown in Figure 3.1.

During drilling, soil samples were collected for lithologic logging at approximately five-foot intervals by driving 2- or 3-inch outside diameter (OD) split-spoon samplers past the augers. The soil lithology was recorded on standard boring log forms. In addition, a Unified Soil Classification System (USCS) description, the percentage of gravel, sand, and fines, and the sample color (according to Munsell soil color charts), consistency, moisture content, and Organic Vapor Monitor (OVM) results were recorded on the boring logs. OVM results were recorded for health and safety purposes only. No soil samples were collected or submitted for chemical testing. The rationale for this was that in the area of the site west of Taunton Street, numerous soil borings were conducted independent of monitoring well installations to characterize source areas. In the areas east of Taunton Street, the objective of the investigations was to characterize the extent of ground water contamination. As there are no suspected sources in this area, it is not expected that there would be areas of soil contamination. Boring and well completion logs are included in Appendix B.

Ten monitoring wells were completed within the unconsolidated overburden, of which seven were drilled and completed to depths ranging from 14 to 24 feet below ground surface (bgs) and three were completed as shallow well points to depths ranging from 6 to 10 feet bgs. Figure 4.2.1 presents typical overburden well construction details. All of the overburden wells, with the exception of the three shallow wellpoints (MW34, MW35, and MW36) were drilled using hollow stem augers. The three wellpoints were constructed using hammer driven casing installed with a portable tripod rig and completed with 2-inch inside diameter (ID) stainless steel prefabricated casing. All other overburden monitoring wells were constructed with 2-inch diameter schedule 40 PVC riser and 0.01-inch slot well screen. The selection of an appropriate well screen slot size was verified based on the physical testing results as described in Section A.1.1 of Appendix C. Well construction specifications for all monitoring wells are presented in Table 3.1.

Eight monitoring wells were installed in the underlying shallow bedrock. Each bedrock well is located adjacent to a well completed in the overburden. Figure 4.2.2 illustrates the general construction specifications for the bedrock monitoring wells. The wells were constructed with 3-inch stainless steel casing set into bedrock and grouted in place to seal off the overburden, after which a 2.75-inch diameter open hole was drilled approximately 15 feet into bedrock, below the base of the stainless steel casing. Following installation, all existing and newly installed monitoring wells were developed and surveyed.

4.2.2 Phase I Monitoring Well Network

The RFI Phase I ground water monitoring program included all existing monitoring wells at the time. The monitoring well network that existed during Phase I consisted of 25 overburden monitoring wells and 20 bedrock monitoring wells including 18 well clusters. Three ground water sampling events were conducted during Phase I: Appendix IX Round (for a subset of the wells, hereafter referred to as Appendix IX Round), Round 1, and Round 2. The monitoring wells performed satisfactorily throughout this period.

High turbidity was noted in several monitoring wells during previous sampling events. The turbidity of all existing monitoring wells was evaluated prior to the Round 1 sampling. Wells with reported turbidity greater than ten Nephelometric Turbidity Units (NTUs) were

redeveloped.[26] Despite these efforts, several Overburden Zone monitoring wells continued to exhibit high turbidity throughout the sampling program. A bent well casing at monitoring well MW02 (noted as damaged in the RFI Proposal - Current Assessment Summary Report, Section 7.2) was repaired prior to the start of the sampling program.

4.2.3 Water Level Monitoring

Water levels were measured in all ground water monitoring wells located on the Facility and in surrounding areas immediately prior to each of the Appendix IX, Round 1, and Round 2 sampling events. The water levels were recorded on January 3 and 4, February 27, and April 26, 1995. Each set of measurements was compiled and added to the historic ground water level database. Table 4.2.1a presents a summary of ground water level measurements recorded at the Facility between September 1987 and February 2006.[27] A comprehensive evaluation of ground water flow direction and vertical ground water flow patterns at the Site is provided in Section 7.4.

4.2.4 Sampling Methodology

Ground Water sampling for the Phase I ground water sampling program was conducted following the methods and procedures described in Appendix I of the RFI Proposal (ENVIRON, 1994b). The original well purging protocol presented in the RFI Proposal was modified with USEPA's concurrence during the early stages of the Appendix IX sampling event to address poor recovery and prolonged purging events. A detailed discussion of this issue and the overall sampling program is presented in Appendix C.

As outlined in an October 21, 1994 letter from USEPA Region I, purging requirements were changed to allow a maximum of five wells volume to be purged prior to sampling. In addition, the purge rate for bedrock wells that exhibited low turbidity trends (<5 NTU) during purging was increased to a flow rate of above 0.5 liters per minute. An additional protocol required that a minimum of one well volume of water within the submerged well screen intervals would be purged prior to sampling. Well purging and sampling data sheets for the Appendix IX, Round 1, and Round 2 sampling events were presented in Appendix A of the Phase I Interim Report (ENVIRON, 1995a).

4.2.5 Chemical Analytical Program

Differing chemical analytical programs were conducted on ground water samples collected during each of the three RFI Phase I sampling events. The programs were essentially conducted as proposed in Section D of the RFI Proposal (ENVIRON, 1994b). Modifications to the original program were detailed in Technical Memorandum No. 2 (TM2), dated January 11, 1995 (provided in Appendix C). Summary descriptions of each of the chemical analytical programs, and any variations from their proposed scope, are presented below.

4.2.5.1 Appendix IX Sampling Event

The Appendix IX sampling event was conducted between January 4 and 19, 1995. The purpose of the Appendix IX program was to test ground water for a broad range of potential Constituents of Concern (COCs), and based on these results, modify the scope of the subsequent rounds of ground water testing. The Appendix IX sampling program is

26 Detailed discussions of well development and field data sheets were included in Appendix A of the Phase I Interim Report. (ENVIRON 1995).

27 Note that water level measurements have also been collected as part of a program to evaluate performance of the GSM. These data are included in Table 4.2.1b.

presented in Table 4.2.2. Four monitoring well clusters that historically had the highest reported levels of VOCs were sampled, including MW01/13, MW03/14, MW04/15, and MW05/18; in addition, monitoring wells MW26 (AOC 6) and MW28 (AOC 7), and the background monitoring well cluster (MW07/37) were sampled. Samples collected from these 12 wells were analyzed prior to the Round 1 sampling event for the analytes listed in Appendix IX to C.F.R. Part 264 ("Appendix IX"), as modified by TM2. The Appendix IX analytes are presented in Table 4.2.3.

To better characterize the natural ground water quality in the vicinity of the Facility, samples from selected well clusters (MW07/37; MW01/13; MW03/14; MW04/15; MW05/18; MW20A/B; MW21A/B; and MW24A/B) were also analyzed during the Appendix IX sampling program for a list of major cations/anions as presented in Table 4.2.4.

The final scope of the Appendix IX sampling program was modified in three ways. First, the contract laboratory mistakenly did not run the Appendix IX list of semi-volatiles for samples collected from monitoring wells MW03 and MW14. To correct this omission, samples were collected from these two wells during Round 1 ground water sampling and analyzed for the Appendix IX semi-volatile compound list. Secondly, Dichlorodifluoromethane (mistakenly listed in TM2 as a semi-volatile) was left out of the volatile list of analyses during the Appendix IX sampling event for all wells sampled. This compound was therefore added to the list of volatile analyses performed during Round 1 for those wells previously sampled during the Appendix IX event. The rationale for these two modifications was presented to the USEPA in Technical Memorandum No. 3 (TM3), dated February 28, 1995 (provided in Appendix C).

Finally, the TM2 volatile analysis list identified two compounds, hexachlorophene and o,m,p-phenylenediamine, that had method detection limits (MDLs) that could not be determined using SW846 protocols. p-Phenylenediamine was not recovered at 200 µg/L in any of the seven extraction replicates analyzed for the laboratory's MDL study. Hexachlorophene was not detected at the method concentration levels during the initial and continuing calibrations or at 200 µg/L in the seven extraction replicates for the MDL study. As a result, the reportable detection limits for these two compounds have been designated as "IND", and the compounds removed from the reporting list.

4.2.5.2 Round 1 Sampling Event

All new and existing monitoring wells were sampled during the Round 1 event between February 28 and March 30, 1995. Samples were analyzed for VOCs, and filtered and unfiltered metals. A summary of ground water samples collected during the Round 1 sampling event is presented as Table 4.2.6. Lists of analyses performed are presented in Tables 4.2.7 and 4.2.8. As described in the RFI Proposal (ENVIRON, 1994b), cyanide was analyzed for in samples from all monitoring wells except wells MW23A/B, MW24A/B, MW33A/B, MW34, MW35 and MW36. As noted in the Appendix IX discussion, samples collected from wells MW03 and MW14 were analyzed for the entire Appendix IX list of semi-volatile compounds, and Dichlorodifluoromethane (Freon 12) was analyzed for in Appendix IX list wells.

PCB compounds were added to the Round 1 analytical program for 12 monitoring wells (MW04, MW05, MW06, MW15, MW17, MW18, MW25A, MW25B, MW27, MW28, MW30A, and MW30B). Samples were analyzed for the Appendix IX list of PCBs. This modification

was the result of the detection of PCB compounds in ground water sampled and analyzed during the Appendix IX sampling event. The rationale for adding PCBs to the analytical program for selected wells was presented to the USEPA in TM3, dated February 28, 1995 (Appendix C).

4.2.5.3 Round 2 Sampling Event

All monitoring wells were sampled during the Round 2 event. Samples were again analyzed for VOCs, and filtered and unfiltered metals, as presented in the RFI Proposal (ENVIRON, 1994b). A summary of ground water samples collected during the Round 2 sampling event is presented as Table 4.2.9. Lists of analyses performed are presented in Tables 4.2.7 and 4.2.8. The Appendix IX list of PCB compounds were again analyzed for during the Round 2 analytical program for 13 monitoring wells (MW04, MW05, MW06, MW12, MW15, MW17, MW18, MW25A, MW25B, MW27, MW28, MW30A, and MW30B). Since no Round 1 samples had reportable concentrations of cyanide, no Round 2 samples were analyzed for cyanide, as described in the RFI Proposal.

4.2.6 Sampling Frequency

As proposed in the RFI Proposal, two full rounds of ground water sampling were conducted during the Phase I field investigation. During each round, all existing monitoring wells were sampled.

4.2.7 Summary of Data

The purpose of the Appendix IX sampling event was to confirm whether or not the analyte list selected for routine ground water monitoring (consisting of VOCs and total and dissolved metals – tables 4.2.7 and 4.2.8) as proposed in the RFI Proposal (ENVIRON, 1994b) was adequate. Following the Appendix IX sampling event, two full rounds of ground water sampling and analysis were completed during the RFI Phase I field investigation. Tables of all analytical results are presented in Appendix D of the Phase I Interim Report (ENVIRON, 1995a). Summaries of these data are presented below and in Section 9.2.

4.2.7.1 Volatile Organic Compounds

Six volatile compounds were detected at least once in samples analyzed during the Appendix IX sampling event: carbon disulfide, 1,1-DCE, 1,1-DCA, TCA, TCE, and PCE). A summary of detected VOC concentrations during Phase I of the RFI is presented in Table 4.2.10. Results of laboratory analyses for VOCs analyzed for during the RFI Phase I investigation are tabulated in Appendix D of the Phase I Interim Report (ENVIRON, 1995a). With the exception of carbon disulfide, which was only detected in one well (MW04) at a concentration of 71 J µg/L, all of the detected compounds were subsequently analyzed for in the two following sampling events.

PCE was also detected in the background monitoring wells MW07 and MW37 in Rounds 1 and 2. These results were determined to be anomalous and, following acceptance by the USEPA, MW07 and MW37 remained suitable as background wells. A further discussion of these anomalous results is presented in Section 9.2.1.

4.2.7.2 Semi-volatile Organic Compounds

No semi-volatile organic compounds (SVOCS) were detected in any of the samples collected and analyzed during the Appendix IX sampling event, or in the samples tested for SVOCs from selected wells during the Round 1 sampling event. As a result, no semi-volatile

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analyses were conducted on samples collected during the Round 2 sampling event. Laboratory analytical data for SVOCs are tabulated in Appendix D of the Phase I Interim Report (ENVIRON, 1995a). Because no SVOCs were detected, no summary table of detected concentrations is presented in the main body of this report.

4.2.7.3 Metals

Total metals were analyzed for in samples collected from each of the three sampling events. Dissolved metals (filtered samples) were also analyzed for during the Round 1 and 2 events. Summaries of metals detected above the laboratory reporting limit are presented in Table 4.2.11. Results of laboratory analyses for metals (both total and dissolved) analyzed for during the Phase I RFI are tabulated in Appendix D of the Phase I Interim Report (ENVIRON, 1995a).

Of the metals (total) detected in wells sampled in the Appendix IX event, only cadmium and antimony were detected at concentrations above their respective Maximum Contaminant Limits (MCLs) for drinking water. Metals (total) were also detected in samples collected during the Rounds 1 and 2 events, with only cadmium, nickel, and lead at concentrations above their respective MCLs or action levels (lead). The only exception to this pattern of metal concentrations was the sample from overburden monitoring well MW30A collected during Round 1, where arsenic, beryllium, lead, and nickel were present at levels above their respective MCL. With the exception of lead, the presence of these metals appeared anomalous, because they were not detected at the same magnitude concentration, or at all, during subsequent sampling events (Rounds 2, 3, and 4).[28] A more comprehensive discussion of the detection of metals in ground water is presented in Section 9.2.

4.2.7.4 Dioxins, Furans, Pesticides, and PCBs

No dioxins or furans were detected in any of the samples collected and analyzed during the Appendix IX sampling event. One pesticide, 4,4'-DDT, was detected at an estimated concentration of 0.03 J µg/L in ground water monitoring well MW28. Summaries of PCBs detected above the laboratory reporting limit are presented in Table 4.2.12. Results of laboratory analyses for PCBs analyzed for during the RFI Phase I are tabulated in Appendix D of the Phase I Interim Report (ENVIRON, 1995a).

Of the 12 wells tested for PCBs during the Appendix IX event, PCBs were detected in samples from MW05, MW18, and MW28 only, with total PCB concentrations of 1.5 J, 1.1 J, and 1.3 J µg/L, respectively. MW28 is located in the Courtyard Area down gradient of the former storage area (AOC 7) and the MW05/MW18 well cluster is located downgradient of the former dry well (AOC 16) near the southeast corner of the Facility. During the Round 1 event, 12 wells were sampled for PCBs and detections were only noted at MW18, MW27, and MW28 at total concentrations of 1.16 J, 0.28 J, and 0.82 J µg/L, respectively. The MW06/27 well cluster is located in the Courtyard Area downgradient of the former storage area. During the Round 2 event, 13 wells were tested for PCBs and detections were reported at MW05, MW18, and MW28 at total concentrations of 0.26 J, 1.3 J, and 0.38 J µg/L, respectively.

28 Ground water sampling Rounds 3 and 4 were collected during the RFI Phase II field investigation described in Section 5.

4.2.7.5 Water Quality Parameters

A summary of water quality parameters and major cation/anion testing conducted during the Appendix IX sampling event are presented in Table 4.2.5. Laboratory reported pH values ranged from 5.54 to 9.27; chloride ranged from <3 to 73.0 mg/L; alkalinity ranged from 8.2 to 68.8 mg/L; and conductivity ranged from 39.4 to 362 µmhos/cm.

4.2.8 Soil Gas Investigation

A soil gas survey was conducted at Sub AOC A-1 and six AOCs (AOC 5, 6, 14, 22, 29, and 30) by Foster Wheeler Environmental Corporation on April 25 to 27, 1995 to further delineate the horizontal extent of VOCs in the subsurface. As discussed in the RFI Proposal, test probe locations were selected based upon a review of previous soil gas testing (described in Sections 3.1.4 and 3.2.5). Adjustments to several proposed test locations during the RFI Phase I soil gas sampling program were presented in Technical Memorandum No. 5, dated April 18, 1995 (Appendix C).

Most of the RFI Phase I soil gas samples were collected within the current and former buildings and were analyzed for TCE and PCE. TCA could not be analyzed quantitatively using the Photovac instrument used in the survey. Six shallow soil gas samples were collected outside the current and former buildings. The locations of the 26 soil gas survey points (SG-67 through SG-93) are presented in Figure 4.3.1. A detailed discussion of the soil gas survey procedures, quality control measures, and results are included in Appendix D. Detectable levels of VOCs were present in nearly all points sampled. A discussion of the soil gas data by AOC is also included in Section 9.3. The survey chemical data are plotted in Figure 4.3.2.

4.3 Surface Water

A surface water level monitoring and sampling program was conducted in accordance with the RFI Phase I proposal. The following sections summarize the program. Details of the field sampling procedures are presented in Appendix C.

4.3.1 Surface Water Sampling Program

Two rounds of surface water sampling were conducted during the RFI Phase I investigation of Turnpike Lake and the stream system east of the Facility. Round 1 was conducted between March 31, 1995 and April 10, 1995; and Round 2 was conducted between May 15 and 18, 1995. The locations of surface water samples are shown on Figure 4.4.1.

During both rounds of sampling, surface water samples were collected in Turnpike Lake just west of AOC A (SW-07), towards the center of the south embayment (SW-06), and near the northern spillway (SW-08). Two background surface water samples were collected in Turnpike Lake: one north of Shepard Street and south of Route 1 (SW-10), and the other near the inlet at the southwest portion of the Lake (SW-09). In addition to the lake samples, surface water samples were collected at four locations in Sawmill Brook and its tributaries located to the east of Route 152 (SW-01 to SW-04), and downstream of the south embayment, just below the spillway at the southeast outlet of Turnpike Lake (SW-05). Surface water samples in Sawmill Brook were collected from the downstream locations first in order to minimize disturbance of stream sediments. A final surface water sample was collected at the inlet to Lake Mirimichi (SW-11).

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4.3.2 Surface Water Level Monitoring

Prior to Round 2 of surface water sampling, a staff gauge was reinstalled at one location in Turnpike Lake. Existing staff gauges were observed at two locations in Sawmill Brook. Elevation and depth measurements were made at the staff gauges located in Sawmill Brook during Round 1 and Round 2 of surface water sampling, and at the staff gauge in Turnpike Lake on June 2, 1995. Table 4.4.1 presents a summary of staff gauge readings and surface water elevations.

4.3.3 Sampling Methodology

Lake surface water samples were collected by lowering a decontaminated Teflon bailer approximately one to two feet below the water surface. In the streams, surface water samples were collected by submerging an unpreserved, decontaminated sample container below the stream surface. Sample containers for VOC analysis were filled in such a manner as to minimize the headspace in the sample container. Before sample collection, field measurements for temperature, pH, conductivity, and dissolved oxygen were recorded at each location. Field measurements are presented in Table 4.4.2.

Prior to the collection of surface water samples in Sawmill Brook and associated streams and at the inlet to Lake Mirimichi, stream depth, width and flow rate measurements were collected and used to calculate stream flow at each sampling location. Table 4.4.3 presents a summary of the stream measurements and calculated stream flow at each location. Stream depth profiles are shown in Figures 4.4.2 and 4.4.3.

4.3.4 Chemical Analytical Program

During both Round 1 and Round 2, a total of 16 surface water samples were collected (11 surface water samples, 1 duplicate sample, 1 field blank, and 3 trip blanks). The surface water samples were analyzed in accordance with the chemical analytical program described in the Phase I RFI Proposal (ENVIRON, 1994b). Lists of surface water samples collected and analyses performed for both sampling rounds are presented in Tables 4.4.4 and 4.4.5. Detected constituents are listed in Tables 4.4.6, 4.4.7, and 4.4.8. Complete analytical results are presented in Appendix C of the Phase I Interim Report (ENVIRON, 1995a).

4.3.5 Summary of Data

4.3.5.1 Volatile Organic Compounds

Surface water samples were collected from four locations in Sawmill Brook, from below the spillway of Turnpike Lake, and at the inlet to Lake Mirimichi during Round 1 and Round 2. All samples were analyzed for VOCs; results are presented in Table 4.4.6 and are summarized briefly below. A more complete analysis of surface water sampling results is provided in Section 9.4.

VOCs were detected in three of five surface water samples collected from the area east of Route 152 (i.e, at SW-01, SW-02 and SW-11). VOCs detected in surface water include TCA, PCE and TCE. VOCs at SW-11 (i.e. at the inlet to Lake Mirimichi) were detected at low concentrations, below the contract required detection limits (CRDL).

4.3.5.2 Metals

All surface water samples collected in Round 1 and Round 2 were analyzed for total metals. A summary of the results of these analyses is presented in Table 4.4.6. Several metals,

including lead and antimony, were detected in many of the surface water samples. In addition, chromium, copper, and silver were detected in background water samples. A number of metals were detected in the south embayment (at SW-06) in Round 1; however, all metals (other than antimony) were "not detect" at this location in Round 2. The Round 1 results may reflect disturbance of sediment during the sediment sampling program in this same area. Cadmium, which was previously detected in roof drain runoff from the Facility and in sediments in the south embayment during the pre-RFI investigation activities (see Section 3), was not detected in the surface water samples. The discharge of cadmium and other metals from the roof surfaces was substantially reduced after Facility operations ceased in 1993. The roof areas that formerly discharged into Turnpike Lake were demolished and removed from the Site in the mid 1990s, after the RFI Phase I investigation activities described herein.

4.3.5.3 Major Cations and Anions

Round 1 and Round 2 surface water samples were analyzed for major cations and anions. Results of these analyses are summarized in Table 4.4.7.

4.3.5.4 Water Quality Parameters

Surface water samples collected in Round 1 and Round 2 were all analyzed for general water quality parameters. Results of these analyses are presented in Table 4.4.8.

4.4 Sediment Sampling

4.4.1 Sediment Sampling Program

Sediment samples were collected at 35 locations in Turnpike Lake, Sawmill Brook and wetland streams east of the Facility in April and May of 1995. One sediment sample was also collected from the storm water retention basin at AOC 44. The sediment sample locations are shown on Figure 4.5.1.

4.4.1.1 Turnpike Lake

Sediment samples were collected in Turnpike Lake from 19 locations in the south embayment, eight locations in the lake west of AOC A, and from one location at the northeast outlet of the lake to evaluate the potential effect of storm water (roof runoff) discharges or other potential releases into Turnpike Lake. In addition, two sediment samples (SD-09 and SD-10) were collected from background locations in Turnpike Lake to provide a basis for evaluation of the analytical testing results.

4.4.1.2 Sawmill Brook

Sediment samples were collected at five locations in Sawmill Brook and the wetland streams east of the Facility in order to further evaluate the nature and extent of releases from the Facility. The sediment samples were collected at one location from below the southeast spillway from Turnpike Lake and at three locations in Sawmill Brook. One sediment sample (SD-03) was collected from a tributary to Sawmill Brook, which is not believed to receive surface water flow from Turnpike Lake or any runoff from the Facility. Surface water flow in this stream is from southeast to northwest, following the direction of ground water flow in this area, and therefore is considered to be representative of background conditions for downstream areas.

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Prior to the initiation of sampling at all of the proposed sediment sampling locations, sediment samples were collected at three near-shore locations (SD-06, SD-20, and SD-21) in the south embayment on April 10, 1995, in order to obtain PCB and SVOC data. These data were used to reevaluate the analytical program for the fish tissue testing program and to confirm the analytical program for the remaining sediment samples. The remaining sediment samples were collected between May 19 and 30, 1995. Table 4.5.1 summarizes the sediment samples collected, sampling dates, quality control samples and analyses performed. Details of the sediment sampling procedures are presented in Appendix C.

4.4.2 Sampling Methodology

4.4.2.1 Turnpike Lake and Storm Water Retention Basin at AOC 44

Before the collection of sediment samples, the thickness of the sediment was measured at 27 locations in Turnpike Lake to determine whether the lake was lined and whether sediments were stratified. The presence of a liner would affect ground water recharge and contaminant transport properties in the lake. At each sampling location, a small boat and two-person crew were used to collect samples. Initially, a plate attached to a rigid pole was lowered until the plate rested on the bottom of the lake, and the depth from the surface of the water to the bottom was recorded. Then a clear plastic rigid tube was advanced through the soft sediment until refusal and the depth of refusal was recorded. The difference between these two measurements is the thickness of the sediment. The tube was withdrawn and inspected for evidence of stratification. A summary of sediment thickness measurement is presented in Table 4.5.2, and an isopach map of sediment thickness is presented in Figure 4.5.2. The sediment layer was less than two feet thick and no stratification was observed at any sampling location; therefore, one vertically consolidated sample was obtained at each sediment sampling location. No evidence of a clay liner was observed at any of the lake sediment sampling locations.

After the sediment thickness measurements were conducted, sediment samples were collected using a stainless steel hand auger. The hand auger was turned into the lake bottom and the contents from the auger were placed into a decontaminated stainless steel bowl. With the exception of samples collected for simultaneously extracted metals/acid volatile sulfide (SEM/AVS) analysis, the auger was reinserted into the sediment until adequate sample volume was obtained and the sample was composited by mixing the material in a stainless steel bowl. The sediment sample was then placed into three eight-ounce glass containers and into a chilled ice chest prior to transport to the analytical testing laboratory. For samples collected for SEM/AVS analysis, care was taken to collect samples with a minimum amount of headspace.

4.4.2.2 Sawmill Brook and Wetland Streams

Sediment samples from Sawmill Brook and the associated streams east of the Facility were collected at the downstream locations first and then the upstream locations. Sediment samples in the stream were collected with either a hand trowel or a stainless steel hand auger depending on specific conditions at each location. For samples collected for VOC analysis, care was taken to collect samples with a minimum amount of headspace. An attempt was made to collect the sediment samples from the finest-grained sediments at each location, as maximum constituent concentrations were expected to preferentially occur in the finest-grained sediments. As conditions allowed, the sediment samples in Sawmill

Brook were collected near the banks, along shallow bars and inlets away from the main flow channel.

4.4.3 Chemical Analytical Program

Sediment samples were submitted for chemical analysis in accordance with the chemical analytical program described in the RFI Proposal. In addition to the chemical analytical program outlined in the RFI Proposal, SEM/AVS analysis was conducted on five sediment samples and one duplicate, and PCB and SVOC analyses were performed on three sediment samples collected in the south embayment. A complete list of sediment samples collected and chemical analyses performed is presented in Table 4.5.1. Results of the analytical tests are summarized in Tables 4.5.3 through 4.5.7. The analytical testing reports are presented in Appendix D of the Phase I Interim Report (ENVIRON, 1995a). A detailed discussion of analytical results is presented in Section 9.5.

4.4.3.1 Turnpike Lake

All sediment samples collected from locations in Turnpike Lake were analyzed for metals, total organic carbon (TOC), cation exchange capacity, pH and moisture content. The three sediment samples collected in the south embayment of Turnpike Lake on April 10, 1995 were also analyzed for SVOCs and PCBs. Samples collected at three locations in the south embayment and two locations west of AOC A (for a total of five samples and one duplicate sample) were also analyzed for SEM/AVS.

4.4.3.2 Sawmill Brook and Tributaries

The five primary sediment samples and one duplicate sediment sample collected in Sawmill Brook and the associated streams were analyzed for VOCs, metals, TOC, cation exchange capacity, pH and moisture content.

4.4.4 Physical Testing Program

Sediment samples were collected for physical testing at 15 locations in Turnpike Lake. Sediment samples were collected by inserting a plastic liner (1.75-inch OD) into the hand auger and advancing the hand auger into the sediments. The liner was then retrieved, fitted with plastic endcaps and transported to GeoTesting Express of Acton, Massachusetts. The sediment samples were tested for grain size (ASTM D422), Atterburg Limits (ASTM D4318), classification (ASTM D2487) and dry density (ASTM D4564). Results of the physical testing program are summarized in Table 4.5.8, and the physical testing report is included in Appendix C of the Phase I Interim Report (ENVIRON, 1995a).

4.4.5 Sampling Frequency

One round of sediment sampling was conducted during Phase I of the RFI on April 10, 1995 and between May 19 and 30, 1995.

4.4.6 Analytical Data Summary

A detailed discussion of analytical results is presented along with results from more recent sampling events in Section 9.5 of this report.

4.5 Fish Tissue Sampling

A fish tissue sampling program was conducted during the RFI Phase I field investigation to update the results of earlier fish tissue testing conducted during the pre-RFI Phase III

investigation in 1989 (see Section 3.2.4). The purpose of the fish tissue sampling program was to evaluate whether releases from the Facility have caused any impact on fish that would present a public health and/or ecological concern. In addition, information from the fish tissue testing program was used in the Ecological Risk Assessment. The following sections summarize the program. Details of the field procedures are presented in Appendix C.

4.5.1 Fish Tissue Sampling Program

The fish tissue sampling program was conducted as originally outlined in the RFI Proposal and as modified in Technical Memorandum No. 4, dated April 4, 1995 (see Appendix C). Fish tissue sampling was conducted by Foster-Wheeler on May 16 and 17, 1995. Fish were collected from the south embayment of Turnpike Lake, from a private impoundment on the east side of Route 152, and in the Old Mill Pond adjacent to Pearl Lake (selected as the "background" area). The Old Mill Pond was selected as the location for background fish samples because it was believed to be representative of, and similar to, the overall conditions in Turnpike Lake. In particular, it is relatively shallow with submerged aquatic vegetation, a mud-organic detritus bottom, and overhanging shrub vegetation and is large enough to have all the target species present in sufficient abundance. This rationale for selecting the Old Mill Pond was presented to USEPA in Technical Memorandum No. 4. Figures 4.6.1 and 4.6.2 show the fish sampling locations.

Three classes of fish (i.e., bottom feeders, prey species and game species) were targeted for sampling at each location. The preferred bottom feeder species to be sampled was bullhead catfish, *Ictalrus spp*., with catfish from the family *Ictaluridae* as an alternative. The preferred prey species was sunfish, *Lepomis spp.,* with minnows, and shiners of the family *Cyprinidae* as an alternative. The largemouth bass, *Micropterus salmoides or dolomiuie,* was the preferred game species with black crappie, *Pomoxis migromacalatus* or pickerel, *Esox spp.,* as alternatives.

The proposed fish sampling program intended to sample five fish of each class from each of the three sampling locations, for a total of 45 fish to be sampled. However, only 13 fish could be collected. All available fish in the private impoundment were collected, including five prey fish (bluegill sunfish) and two bottom feeder species (black bullhead). In addition, five prey fish (bluegill sunfish and red ear sunfish) were collected from the Old Mill Pond and one game fish (pickerel) was collected from the south embayment. The poor fishing success in Turnpike Lake and the Old Mill Pond locations is believed to be due to lower than normal water temperatures during the sampling program. Note also that Turnpike Lake is highly eutrophic, choked with weeds, and a poor habitat for fish. Table 4.6.1 presents a summary of the fish sampling program with respect to planned versus actual numbers of fish collected at each location.

4.5.2 Sampling Methodology

Fish were collected by electroshocking and seine netting. Captured fish were placed into buckets or coolers filled with water until sample processing. The fish were allowed to expire from asphyxiation. Each fish was rinsed with distilled water to remove sediments and body slime. The fish were then weighed and measured for length. After filleting the fish, each fillet and fish carcass (offal) were also weighed individually. The exterior and interior of each fish was inspected for abnormalities or parasites.

Fish tissue was collected from each fish according to its species. For both the bottom feeder and game species, the fish were filleted in the field. The fillet (muscle) portion of these species represents the edible portion of the fish, which might result in human exposure to any chemicals present. The fillet and offal (carcass and skin, including the skin from the fillets, organs, head and backbone) from the bottom feeder and game species were preserved and analyzed separately. Prey species samples were preserved and analyzed as whole body samples only, to provide information as to whether chemicals in the water may be toxic to others in the food chain. Each fish tissue sample was placed into a glass sample jar, labeled, and preserved in a cooler by freezing with dry ice prior to transport to the analytical laboratory. Additional details of the fish sampling program are presented in Appendix C.

4.5.3 Chemical Analytical Program

Fish tissue samples were submitted for analysis of metals and lipid content in accordance with the chemical analytical program described in the RFI Proposal and Technical Memorandum No. 4, which is provided in Appendix C. After review of preliminary results of the analyses on sediment samples, PCBs were added to the chemical analytical program for fish tissue samples. The addition of PCBs to the chemical analytical program for fish tissue samples was confirmed with USEPA in Project Status Report No. 4 - April and May, dated June 14, 1995. Fish tissue samples were submitted to Inchcape Testing Services-Aquatec Laboratories of Colchester, Vermont. A complete list of the fish tissue samples collected and analyses performed is presented in Table 4.6.2.

4.5.4 Summary of Data

Sixteen fish tissue samples and one equipment rinsate blank were analyzed for metals and PCBs. All fish tissue samples were also analyzed for percent lipids. Table 4.6.3 presents concentrations of chemicals that were detected during Phase I and II. Complete analytical testing reports are presented in Appendix G of the Phase I Interim Report (ENVIRON, 1995a) and Appendix F of the HERA Second Interim Report (ENVIRON, 1997). Fish tissue sampling results are summarized below and in Section 9.6.

4.5.4.1 Old Mill Pond (Background) Fish Results

Five prey fish of *Lepomis spp*., including four bluegill sunfish and one red ear sunfish, were collected from the Old Mill Pond. No game fish or bottom feeders were caught. The prey fish ranged from 135 millimeters (mm) to 176 mm in length and from 46 grams (g) to 85 g in weight. One prey fish, sample number EP-FTW-MP-PS-003, was observed to have a white right eye. No other abnormalities or parasites were reported. Table 4.6.4 presents the relevant field measurements of the prey fish collected from the Old Mill Pond.

Barium, chromium, copper, mercury, selenium, vanadium and zinc were detected in all of the prey fish collected from the Old Mill Pond. Aluminum and nickel were detected in two prey fish and cadmium was detected in three prey fish from the Old Mill Pond. Five of the fifteen metals analyzed for (arsenic, beryllium, cobalt, lead, and silver) were not detected in the five whole prey fish collected from the Old Mill Pond.

Two PCBs, Aroclor 1254 and Aroclor 1260, were detected in four of the five whole prey fish collected from the Old Mill Pond. Detected concentrations in the four fish ranged from 7.4 J to 26 J micrograms per kilogram (µg/kg) for Aroclor 1254, and from 6.9 J to 10 J µg/kg for Aroclor 1260. No other Aroclors were detected. No PCBs were detected in one fish.

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4.5.4.2 South Embayment Fish Results

Only one fish of the targeted species was caught in the south embayment of Turnpike Lake. One game fish, a pickerel, *Esox spp.* was collected. No abnormalities or parasites were reported. The results of chemical analyses are presented in Table 4.6.3. Table 4.6.4 presents the relevant field measurements of the fish collected from the south embayment.

Chromium, mercury and selenium were detected in both muscle and offal tissue samples from the one game fish caught in the south embayment. Barium, cadmium, copper, vanadium and zinc were detected in the offal tissue but not the muscle tissue. Seven metals (aluminum, arsenic, beryllium, cobalt, lead, nickel and silver) were not detected in muscle or offal tissue samples collected from the game fish.

Two PCBs, Aroclor 1254 and Aroclor 1260, were also detected in muscle and offal tissue from the one game fish collected from the south embayment. Detected concentrations in the muscle and offal tissue were 32 and 92 µg/kg, respectively, for Aroclor 1254, and 6.8 and 22 µg/kg, respectively, for Aroclor 1260. No other Aroclors were detected.

4.5.4.3 Private Impoundment Fish Results

Five prey fish, bluegill sunfish of *Lepomis spp.*, were collected from the private impoundment. The prey fish ranged from 190 mm to 201 mm in length and from 133 to 163 g in weight. No abnormalities or parasites were reported. In addition, two bottom feeders, black bullhead catfish, *Ictalrus spp.*, were collected from the private impoundment. The bottom feeders ranged from 110 mm to 294 mm in length and from 200 g to approximately 497 g in weight. The larger fish was too heavy to weigh accurately on the scale available. The fillet from the smallest fish was too small to be submitted for analysis. The results of chemical analyses are presented in Table 4.6.3. Table 4.6.4 contains the relevant measurements of the fish collected from the private impoundment.

Prey Fish Results. Barium, cadmium, chromium, copper, mercury, selenium, vanadium and zinc were detected in all of the prey fish collected from the private impoundment. Aluminum and lead were detected in four prey fish, and nickel and silver were each detected in one prey fish from the private impoundment. Three metals (arsenic, beryllium, and cobalt) were not detected in the five whole prey fish collected from the private impoundment.

Two PCBs, Aroclor 1254 and Aroclor 1260, were detected in all five whole prey fish collected from the private impoundment. Detected concentrations in the five fish ranged from 35 to 110 µg/kg for Aroclor 1254, and from 25 to 320 µg/kg for Aroclor 1260. No other Aroclors were detected in prey fish tissue.

Bottom Feeder Species Results. Cadmium, chromium, mercury, selenium and vanadium were detected in all muscle and offal tissue samples from the two bottom feeder fish caught in the private impoundment. Both offal tissue samples from the bottom feeder fish caught in the private impoundment contained aluminum, barium, copper, lead, nickel, silver and zinc. One offal tissue sample contained cobalt, while the other did not. Arsenic and beryllium were not detected in the muscle or offal tissue samples from the two bottom feeder fish collected in the private impoundment. Seven metals (aluminum, barium, cobalt, copper, lead, silver and zinc) were not detected in the muscle tissue sample or duplicate of

the bottom feeder fish caught in the private impoundment. Nickel was not detected in the primary muscle tissue sample, while it was detected in the duplicate muscle tissue sample.

Two PCBs, Aroclor 1254 and Aroclor 1260, were detected in all muscle and offal tissue samples from bottom feeder fish collected from the private impoundment. Detected concentrations of Aroclor 1254 in muscle tissue samples ranged from 110 to 160 µg/kg, and detected concentrations in offal tissue samples ranged from 120 to 370 µg/kg. Detected concentrations of Aroclor 1260 in muscle tissue samples ranged from 36 to 54 µg/kg, and detected concentrations in offal tissue samples ranged from 17 to 110 µg/kg. No other Aroclors were detected in bottom feeder fish tissue samples.

4.6 Radiological Characterization Survey

Based on the results of the initial radiological scoping survey performed during the pre-RFI investigation activities (described in Section 3.0), a detailed site radiological characterization survey was performed from October 1994 to January 1995 to fully define the radioactive constituents and determine the magnitude and extent of radiological contamination (Berlin and Duggan, 1995). The radiochemical methods chosen for the characterization survey were intrinsic, high purity germanium (HPGe) gamma spectroscopy and confirmatory uranium analysis.

HPGe gamma spectroscopy qualitatively and quantitatively identifies specific gamma emitting radionuclides. At this Site, the radioactive contaminants were identified as processed uranium of low isotopic enrichment (LEU). The radionuclides in processed uranium consist of the principal uranium radionuclides U234, U235 and U238 as well as their short-lived daughter radionuclides. The principal uranium radionuclides were found in soils and sediments at levels greater than natural background as reported in Berlin and Duggan (1995). Sampling locations are provided in Figure 4.7.1. Concentrations are reported in Tables 4.7.1a-e. Measurement results are presented as radioactivity concentration in pCi/g for specific radionuclide concentrations; total uranium (total U) is the sum of individual uranium radionuclides (U234 + U235 + U238) also expressed as radioactivity concentration.

4.6.1 Radiological Background Levels

The principal uranium radionuclides and their respective decay chain products are also found as natural background constituents of terrestrial radioactivity. Sampling for natural uranium background was performed at ten locations in the unaffected area at the north end of the site and eight locations in the unaffected area at the west end of the Facility (Samples EP-SSRD64-81). Sample results are provided in Table 4.7.1e. Background concentrations of uranium in unaffected areas averaged 0.59 ± 0.29 pCi/g (U238), 0.05 ± 0.3 pCi/g U235, and 1.0 ±0.6 pCi/g U234. The average total uranium concentration detected in these 18 soil samples from the unaffected areas was 1.64 pCi/g (Berlin and Duggan, 1995).

4.6.2 Soil and Sediment Results for AOC B

Over 400 soil samples were acquired from 77 sampling locations in AOC B at soil depths to a maximum of 20 feet bgs (Figure 4.7.1). The sample area was the land area south of the foundations of Buildings 2, 6, 7, and 12 to Turnpike Lake and extending east to the dry well and leach field area in AOC 16 encompassing a surface area of approximately 10,000 square meters. The sample population included 16 sediment sampling locations in Turnpike Lake at probable runoff areas. Approximately 230 samples (57% of total number of samples) exceeded the total U background concentration; of those samples median,

average, and maximum concentrations for total U results were 9.0, 24.7, and 444 pCi/g, respectively. Seventeen of 23 sediment samples (75% of total sediment samples) from Turnpike Lake exceeded the background concentration; of those samples median, average, and maximum total U concentrations were 6.8, 21.0, and 156 pCi/g, respectively. These data are illustrated in Figure 1 from the subsequent "Decommissioning Work Plan for Soils and Sediments, Engelhard Corporation, Plainville, MA", prepared by Berlin and Associates in June1997 (Berlin and Duggan, 1997). This figure is provided as Figure 4.7.2.

For the sediments, these concentrations are localized in "deltaic" deposits located just below a storm water discharge pipe outlet. The concentrations of U decreased rapidly at the margins of the deltaic deposit, and are not anticipated to have spread beyond this delta. This is due in part to the extremely heavy nature of the U metal, which sinks quickly when introduced to a water column, and does not travel far.

The depth distribution of the sample results greater than site background were: 50% (surface to 4' bgs), 20% (4' to 8' bgs), 15% (8' to 12' bgs), and 15% for depths greater than 12' to a maximum of approximately 20'.

4.6.3 Soil Results for AOC 7

Seventy-six soil samples were acquired from 20 sampling locations in AOC 7, also referred to as the Courtyard Area, at soil depths to a maximum of 8 feet bgs. The sampled area encompassed approximately 3,000 square meters (see Figure 4.7.1). Approximately 46 samples (60% of total number of samples) exceeded the total U background concentration; of those samples, median, average, and maximum total U concentrations were 9.1, 49.5, and1350 pCi/g, respectively.[29] The depth distribution of the sample results greater than site background were: 65% (surface to 4' bgs), and 35% (4' to 8' bgs).

4.6.4 Results for Building 2 Sub-Slab Soil

The former fuel fabrication facility (Building 2) was decommissioned for unrestricted radiological use in 1996 and field confirmed by the U.S. Nuclear Regulatory Commission (NRC) in January 1997 (ORISE, 1997). Soil under the former Building 2 floor slab was not entirely considered during the building decommissioning process and was not a part of the unrestricted radiological release; the sub-slab soil will be evaluated with the remaining site soil in AOC B and AOC 7.

One hundred and thirty-six soil samples were acquired from sampling locations under the Building 2 floor slab (4,000 square meter footprint) at soil depths to a maximum of 2-3 feet bgs. Approximately 70 samples (51% of total number of samples) exceeded the total U background concentration. Median, average, and maximum concentrations for total U results were 3.0, 15.7, and 687 pCi/g, respectively.

4.6.5 Ambient Air sampling

The potential for airborne uranium was evaluated during pre-operational (background) and core boring operations in November 1994. Background and operations air sampling results were not different at the 95% confidence level and were consistently below the Title 10,

29 Sample results for AOC 7 include radiological data acquired more recently in December 2003, and presented in the "Supplemental Design Investigation (SDI) Courtyard Area (AOC 7) Report (ECS, 2004b).

Code of Federal Regulations, Part 20 (10CFR20) limits for allowable concentrations in ambient air over normal background (Berlin and Duggan, 1995).

4.7 Analysis of Data Adequacy

The data collected for the soil and sediment physical characterization program, the migration/dispersal characterization program, and the fish tissue testing program were validated and are judged to be useable. These data will be used for the source and waste characterization study required by Section IX of the ACO and presented in Sections 8.0 and 9.0 of this report, and for the ecological risk assessment provided in Section 11.0.

4.8 Data Validation

The analytical data verification program was presented in the RFI Proposal Appendix J, Data Collection Quality Assurance Plan (DCQAP). Validation of data obtained from field measurements was performed by checking calibration procedures utilized in the field, and by comparing the data to previous measurements, if any, at the specific site. Laboratory analytical data was validated using the criteria specified in the USEPA Region I *Draft Tiered Organic and Inorganic Data Validation Guidelines, July 1, 1993*. Tier II Data Validation was performed for the data collected in this Phase I field investigation. The evaluation was based on:

- data completeness
- holding times
- GC/MS tuning
- calibrations
- blanks
- surrogate recoveries
- MS/MSD results
- field duplicates
- internal standard performance
- instrument performance

The laboratory analytical data summary tables presented in Appendix D, Phase I Interim Report, include data qualifiers, where appropriate, that were the result of the data validation process. The data validation reports presented in Appendix F, Phase I Interim Report, include the rationale for specific data qualifiers.

According to the DCQAP, data generated during this project will be considered adequate if they are 80% complete in accordance with USEPA's *Data Quality Objectives for Remedial Response, March 1987*. The analytical data collected for each media (ground water, surface water, soil, sediment, and fish) were evaluated separately to determine the percent completeness achieved during Phase I by comparing the number of unusable data to the total number of data for each analytical suite (for example, volatiles or semi-volatiles). As shown on Table 4.9.1, the percent completeness achieved in most cases was 100%. The percent completeness for parameters measured in soil and Round 1 ground water ranged from 89% to 97% and in all cases, percent completeness was greater than the required 80%.

5 RFI Phase II Field Investigation

5.1 Surface and Subsurface Soil

5.1.1 Surface Soil Sampling Program

Based on comments received from the USEPA Region I on the Phase I Interim Report completed in 1995, additional surface soil sampling was conducted in a Phase II investigation to provide data to support the Human and Ecological Risk Assessment (HERA). These additional surface soil samples were collected to characterize shallow surface soils (0-1 feet bgs) at the Site and in background areas. Surface soil sampling was conducted previously in AOC B. This area is being addressed as a Stabilization Measure in accordance with the ACO, which ultimately will result in the removal, treatment, or capping of shallow soils containing elevated concentrations of metals. Shallow soils previously sampled in AOC B, therefore, are not expected to remain in the future. Locations of the surface soil samples are shown in Figure 5.1.1. A total of 23 samples were collected on April 16 and 17, 1997. Samples were collected for one of four purposes: two for ecological risk analysis (designated as “SS-E-##”), seven for human health risk analysis (designated as “SS-H-##”), four for a combination of human health and ecological risk analyses (designated as “SS-EH-##”), and ten for background (designated as “SS-B-##”).

All samples were collected at the locations proposed in the Phase II proposal and SAP. A discussion of sampling methodology, chemical analytical program, and results are presented in the following sections. A detailed description of the work conducted for the surface soil sampling program is presented in Appendix C.

5.1.1.1 Background Surface Soil Sampling

Ten surface soil samples (SS-B-01 through SS-B-10) were collected to characterize background metals conditions. The locations of the ten background samples are shown in Figure 5.1.1. The background sampling program was designed to accumulate enough data to allow calculation of the range, mean, standard deviation, and the 95 percent upper confidence limit of the mean of the distribution of naturally occurring metals concentrations in surface soils at the Site. Further discussion of background sample results, and a comparison of on-site samples to background is presented in Section 9.1.

5.1.1.2 Soil Sampling Methodology/Quality Control Samples

All surface soil samples were collected from approximately zero to one foot bgs using a stainless steel hand auger which was thoroughly decontaminated prior to sampling and between each sample collection.

Field quality control samples were collected in accordance with the Data Quality Assurance Plan (DQAP). One duplicate sample was collected for every 20 primary samples or fraction thereof. Two quality control duplicate samples were collected for this sampling event of 23 primary samples. A trip blank was submitted with the cooler containing the surface soil samples, and two equipment rinsate samples were collected at the same frequency as the duplicate soil samples. Quality control samples are identified in Table 5.1.1 and complete analytical results were presented in the HERA Second Interim Deliverable (ENVIRON, 1997).

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5.1.1.3 Chemical Analytical Program

The ten background samples were analyzed for metals, while the remaining samples were analyzed for VOCs, metals, and PCBs. Analyte lists for metals, VOCs, and PCBs are presented in Tables 4.1.2, 4.1.4 and 4.1.5. Analytical results are summarized in Tables 5.1.2 through 5.1.4, and are discussed in detail in Section 9.1.

5.1.2 Subsurface Soil

5.1.2.1 Subsurface Soil Sampling

During Phase I, elevated levels of VOCs were detected in AOC 30 at SB-36 and SB-36B. SB-36 was drilled through the floor of former Building 6 and encountered a subgrade concrete slab. An additional boring, SB-36B, was drilled ten feet north of SB-36 and the buried concrete was not encountered. Based on these results, an additional soil boring, SB-36C was proposed for AOC 30 to be completed during Phase II to further characterize VOC contamination at AOC 30.

Following communications with the USEPA, the proposal was revised to include collecting a soil sample from between the floor slab and the sub-grade slab. Boring SB-36C was first attempted one foot north of SB-36 on July 18, 1997. At this location, soil and standing water was encountered between the floor slab and the sub-grade slab and soil headspace screening with an OVM revealed VOC concentrations up to 64 ppm. The soil and water were analyzed and high concentrations of VOCs (e.g., PCE, TCA, 1,1-DCA and methylene chloride) were detected. This boring was not continued through the sub-grade slab to avoid the potential of introducing contamination beneath the concrete slab. The drill rig was moved four feet to the east (downgradient of SB-36, shown in Figure 5.1.1) and a re-drill soil boring (SB-36CR) was completed to a depth of 12 feet below grade on November 10, 1997. Two samples were collected from beneath the sub-grade slab at depths of 5.5 and 9.0 feet bgs. No VOCs were detected in SB-36CR. The log for soil boring SB-36CR is presented in Appendix B.

5.1.2.2 Subsurface Soil Chemical Analytical Program

The soil samples collected from boring SB-36CR were analyzed for VOCs. The analyte list for VOCs is presented in Table 4.1.2. All VOC results were below detection limits. Analytical results are discussed further in Section 9.1.

5.2 Ground Water

5.2.1 Monitoring Well Network

Since completion of the Phase I field investigation, five additional monitoring wells were installed in late 1995 – 1996 into the deep bedrock east of Route 152 (MW22C, MW24C, MW33C, MW38 and MW39). With the installation of these five wells, the monitoring well network at the start of the Phase II field investigation consisted of 25 overburden monitoring wells, 20 shallow bedrock monitoring wells, and five deep bedrock monitoring wells. Twenty-three of the monitoring wells are located on-site (west of Route 152), and 27 are located east of Route 152. The locations of the monitoring wells are shown on Figure 3.1.

Eleven piezometers and six extraction wells were installed in 1997 at the Facility bordering Route 152 as part of the ground water Stabilization program. These wells were not used for ground water monitoring in the RFI programs discussed in this document. Details of construction and testing of these wells are presented in the Stabilization report for the

Facility prepared by Foster Wheeler Environmental Corporation (1998). Boring logs are included in Appendix B.

Two ground water sampling events (Rounds 3 and 4) were conducted during Phase II. Round 3 was conducted between April 22 and May 16, 1997; and Round 4 was conducted between August 12 and September 9, 1997. In addition to the Round 3 and Round 4 sampling events, two additional sampling events were conducted between the RFI Phase I and Phase II Field Investigations. In particular, the background monitoring wells (MW07 and MW37) were re-sampled for VOCs on July 26, 1996 to assure their validity as background wells, and an initial sampling event for VOCs and total metals was conducted on the deep bedrock wells from October 15 to October 18, 1996. Further discussion of background well re-sampling is presented in Section 9.2.1. In addition, with USEPA's concurrence, overburden monitoring well MW02 was re-sampled on April 20, 1998 for both dissolved and total metals; and bedrock monitoring well MW20B was re-sampled for VOCs, to verify earlier Phase II results, which varied from longer-term water quality trends.

5.2.2 Water Level Monitoring

Water levels were measured in all ground water monitoring wells located at the Facility and in surrounding areas prior to the Round 3 and Round 4 sampling events. The water levels were recorded on April 1, 1997 and August 11, 1997. Each set of measurements was compiled and added to the historic ground water level database. Table 4.2.1a presents a summary of ground water level measurements recorded at the Facility between September 1987 and February 2006.

To resolve historically anomalous water levels at MW06, MW27, and MW28, an inspection of these wells was performed prior to the Round 3 ground water level sampling. No problems were found with the well casing or seals of MW27. The inspection revealed that the building demolition that occurred during the summer of 1996 resulted in damage to MW06 and MW28. The outer box of MW06 was found to be crushed and repairs were made to the inner well casing. However, the expansion plug of MW06 was intact and no indication of leakage to the well was evident. The casing on MW28 was found to be bent just below ground surface. At the conclusion of the Round 3 water level sampling, repairs were made to MW28 by removing the broken portion of the casing and splicing on another section of well casing. As a result, the top of casing elevation changed in the Round 4 ground water sampling event. The investigation did not reveal any explanation for the high water levels that have been historically recorded at MW28. Further investigation of the water level anomaly at MW28 was conducted by LFR in 2005 and 2006. The results of this investigation show that the elevated mounding effect observed at MW28 appears to have tapered off from its discovery in 1995 through March 2004, after which this effect has not been observed (LFR, 2006a)

Measurements obtained during the Round 3 water level sampling on April 17, 1997 indicated that the depths of shallow bedrock wells MW20B and MW33B did not match those depths previously reported for these wells, indicating some caving may have occurred. These wells were re-drilled to the correct depth on May 1, 1997 and sampled on May 5 and 7, 1997.

5.2.3 Sampling Methodology

Ground water sampling for the Phase II ground water sampling program was conducted following the methods and procedures of the Phase I ground water sampling program with

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the following modifications. Only total metals were sampled. The list of wells sampled for PCBs was shortened to: MW05, MW06, MW18, MW27, MW28, MW25A, and MW25B. Wells were not sampled for dioxins, pesticides, or semi-volatile organic compounds. The well purging protocol was modified to reflect changes to the EPA Region 1 well purging protocols as of July 30, 1996. A detailed discussion of this issue and the overall sampling program, is presented in Appendix C.

5.2.4 Chemical Analytical Program

5.2.4.1 Background Well Re-sampling

During Round 1 and Round 2 sampling events, PCE was detected in the background wells. These wells were re-sampled for VOCs on July 26, 1996 to resolve the issue of cross contamination. The results are included in Table 4.2.10. Further discussion of background well re-sampling results is presented in Section 9.2.1. Results of the laboratory analyses for VOCs analyzed for during the re-sampling event were tabulated in the HERA Second Interim Deliverable (ENVIRON, 1997).

5.2.4.2 Deep Bedrock Well Sampling Event

The five deep bedrock wells were sampled for VOCs and total metals between October 15 and 18, 1996 as part of an initial analysis of the deep bedrock. The Deep Bedrock sampling event program is presented as Table 5.2.4. The lists of analytes are presented in Tables 5.2.1 and 5.2.3.

5.2.4.3 Round 3 Sampling Event

All new and existing RFI monitoring wells were sampled during the Round 3 event between April 22 and May 16, 1997. Samples from all wells were analyzed for volatile organic compounds (VOCs) and total metals. In addition, samples from seven wells (MW05, MW06, MW18, MW25A, MW25B, MW27, MW28) were analyzed for PCBs. The Round 3 sampling event program is presented as Table 5.2.5. The lists of analytes are presented in Tables 5.2.1 through 5.2.3.

5.2.4.4 Round 4 Sampling Event

All monitoring wells were sampled during the Round 4 event between August 12 and September 9, 1997. Samples from all wells were again analyzed for VOCs and total metals. PCB compounds were again analyzed for during Round 4 at seven monitoring wells (MW05, MW06, MW18, MW25A, MW25B, MW27, and MW28). The Round 4 sampling event program is presented as Table 5.2.6. The lists of analytes are presented in Tables 5.2.1 through 5.2.3.

5.2.4.5 Re-sampling of MW02 and MW20B

To resolve anomalous results that were reported for total chromium and nickel at MW02 in Rounds 1, 2, 3, and 4, this well was re-sampled for both dissolved and total metals on April 20, 1998. On the same date, MW20B was also re-sampled to verify the unprecedented high levels of 1,1,1-TCA, PCE and TCE that were reported during the Round 4 sampling of this well.

5.2.5 Sampling Frequency

As proposed in the RFI Proposal (ENVIRON, 1994b), two full rounds of ground water sampling were conducted during the Phase II field investigation. During each round, all

existing monitoring wells were sampled for VOCs and total metals. PCBs were sampled for at seven wells (MW05, MW06, MW18, MW27, MW28, MW25A, and MW25B). In addition, background monitoring wells MW07 and MW37 were re-sampled for VOCs.

5.2.6 Summary of Data

5.2.6.1 Volatile Organic Compounds

Based on data from the Phase I and II ground water sampling events, the five principal VOCs consistently detected were: PCE, TCA, TCE, 1,1-DCE and 1,1-DCA. A summary of all detected VOCs is presented in Table 4.2.10. Results of laboratory analyses for VOCs were tabulated in the HERA Second Interim Deliverable (ENVIRON, 1997). The above five principal VOCs were also consistently detected in ground water samples collected from essentially the same wells, at the same approximate concentrations, in both the Round 3 and 4 sampling events.

Of particular concern during Phase I of the RFI was the detection of PCE in samples taken from background wells MW07 and MW37 in Rounds 1 and 2. A review of the field sample logs for that period indicated that contamination might have been introduced into the background well samples since highly contaminated well MW28 was sampled prior to MW07 and MW37. Following communications with the EPA, it was agreed that MW07 and MW37 would be re-sampled to resolve the issue of cross contamination. On July 26, 1996, both wells were purged and sampled for VOCs (EPA Method 8240). Equipment blanks were collected before each well was sampled, and one duplicate sample was collected concurrent with each primary sample. The chemical analytical data was validated according to Region I Tier II guidelines, and PCE was not detected in any of the samples (in fact, no VOCs were detected in these samples). Moreover, no VOCs were detected in these wells during either the Round 3 or Round 4 sampling events. Therefore, without evidence of any contaminant source near the background wells, and with prior (Appendix IX) and subsequent (Re-sampling, Round 3, and Round 4) sampling events showing no VOC detections in these wells, these wells are believed to appropriately represent background. Further discussion of background well re-sampling results is presented in Section 9.2.1.

5.2.6.2 Metals

The analyte list for metals is presented in Table 5.2.3. Total metals were analyzed for in samples collected from each well in both sampling events. Summaries of metals detected above the laboratory reporting limit for each of the two sampling events are presented (together with the Phase I results) in Table 4.2.11. Results of laboratory analyses for metals were tabulated in the HERA Second Interim Deliverable (ENVIRON, 1997).

5.2.6.3 PCBs

PCBs were analyzed for at seven wells (MW05, MW06, MW18, MW25A, MW25B, MW27, and MW28) and the results are shown in Table 4.2.12. Results of laboratory analyses for PCBs were tabulated in the HERA Second Interim Deliverable (ENVIRON, 1997).

5.3 Soil Gas

During the RFI Phase I field investigation, soil test results from borings in the area of former Building 12 identified relatively low concentrations of VOCs in soil. The presence of moderate concentrations of VOCs in downgradient well MW28 and the lack of VOCs in upgradient well MW06 suggest that a potential source may exist in the vicinity of former

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Building 12. The courtyard area around and including former Building 12 was the site of a former outdoor storage area, identified as AOC 7. Also, site plans indicate that two aboveground solvent tanks may have been located immediately adjacent to the former Building 12 footprint. To evaluate whether a source of VOCs exists in the vicinity of former Building 12, soil gas samples were collected from 19 locations near former Building 12 in November 1997. Sample locations and analytical results are presented on Figures 5.3.1 through 5.3.4. Analytical results are also presented in Table 5.3.1 and discussed in Section 9.3 of this report. Additional details of the soil gas investigation are included in Appendix D.

5.4 Surface Water

A surface water level monitoring and sampling program was conducted in accordance with the Phase I Interim Report. The following sections summarize the Phase II surface water program. Details of the field procedures for sample collection are presented in Appendix C.

5.4.1 Surface Water Sampling Program

Two rounds of surface water sampling (Rounds 3 and 4) were conducted in Turnpike Lake, Sawmill Brook and the associated streams east of the Facility in Phase II in order to evaluate potential impacts to water quality by releases, if any, from the Facility. Round 3 of surface water sampling was conducted between May 18 and 20, 1997 and on June 5, 1997. On June 5, 1997, an additional surface water sample was collected for re-analysis of VOCs because the first sample vial was broken at the laboratory. Round 4 of surface water sampling was conducted between September 10 and 11, 1997. The locations of surface water samples are shown on Figure 4.4.1. The chemical analytical program is presented in Section 5.4.4.

During both rounds of sampling, surface water samples were collected in Turnpike Lake just west of AOC A (SW-07), toward the center of the South embayment (SW-06), and near the northern spillway (SW-08). During Phase I, two locations were selected to collect background surface water samples in Turnpike Lake: one north of Shepard Street and south of Route 1 (SW-10), and the other near the inlet at the southwest portion of the Lake (SW-09). Review of the results of the Phase I surface water sampling suggested that these areas had been impacted by off-site sources of contamination (e.g., runoff from road surfaces). To better define background surface water conditions, the Phase I background locations SW-09 and SW-10 were re-located during Phase II and renamed SW-09A and SW-10A. Two additional background surface water samples were collected in the northwestern and southern portions of Turnpike Lake (SW-12 and SW-13, respectively). The new surface water sampling locations are presented on Figure 4.4.1.

In addition to the lake samples, surface water samples were collected at four locations (SW-01 to SW-04) in Sawmill Brook and its tributaries to the east of Route 152 and just below the spillway (SW-05). Stream samples were collected from the downstream locations first in order to minimize disturbance of stream sediments. A final surface water sample was collected at the inlet to Lake Mirimichi (SW-11).

5.4.2 Surface Water Level Monitoring

During Phase I, staff gauges were installed in Turnpike Lake and at two locations in Sawmill Brook. Prior to Round 3 and 4 of surface water sampling, staff gauges were installed at three additional stream sampling locations (SW-03, SW-04, and SW-05). Elevation and depth measurements were made at all of the staff gauges during Round 3 and Round 4 of

surface water sampling. Table 4.4.1 presents a summary of staff gauge readings and surface water elevations.

5.4.3 Sampling Methodology

Lake surface water samples were collected by using the same methodology as that employed in Phase I (see Section 4.4.3 for a discussion of sampling methodology). Field measurements collected prior to sampling (i.e., temperature, pH, conductivity, and dissolved oxygen) are presented on Table 4.4.2.

Prior to the collection of surface water samples in Sawmill Brook and at the inlet to Lake Mirimichi, stream depth, width and flow rate measurements were collected and used to calculate stream flow at each sampling location. Table 4.4.3 presents a summary of the stream measurements and calculated stream flow at each location. Stream depth profiles are shown in Figures 5.4.1 and 5.4.2.

5.4.4 Chemical Analytical Program

During Round 3, a total of 18 surface water samples were collected (13 surface water samples, 1 duplicate sample, 1 field blank, and 3 trip blanks). In addition, one area was re-sampled due to a broken sample jar. During Round 4, a total of 14 surface water samples were collected (10 surface water samples, 1 duplicate, 1 field blank, and 2 trip blanks). Fewer samples were collected in Round 4 than in Round 3 as a result of drought conditions that prevented the collection of surface water samples from the following areas: the tributary to Sawmill Brook (SW-03), below the southern spillway of Turnpike Lake (SW-05), and Turnpike Lake (SW-13). The surface water samples were analyzed in accordance with the chemical analytical program described in the Phase I RFI Proposal as modified by EPA's comments on the Phase I Interim Report. Lists of surface water samples collected and analyses performed for both sampling rounds are presented in Tables 5.4.1 and 5.4.2. Detected constituents and their respective concentrations are presented in Tables 4.4.6 to 4.4.8. Complete analytical results were presented in the HERA Second Interim Deliverable (ENVIRON, 1997).

5.4.5 Summary of Data

5.4.5.1 Volatile Organic Compounds

Surface water samples collected from four locations in the unnamed streams, below the spillway of Turnpike Lake and at the inlet to Lake Mirimichi during Round 3 were analyzed for VOCs. During Round 4, all but two of these areas were analyzed for VOCs. As discussed previously, due to drought conditions, it was not possible to collect surface water samples from the tributary to Sawmill Brook (SW-03), from below the southern spillway (SW-05), and at Turnpike Lake (SW-13). Table 4.4.6 presents the detected VOCs in surface water samples collected during Rounds 3 and 4. Complete analytical results were presented in the HERA Second Interim Deliverable (ENVIRON, 1997).

VOCs were detected in three of six surface water samples collected from the area east of Route 152 (i.e., at SW-01, SW-02, and SW-11). VOCs detected in all three surface water samples were TCA, PCE and TCE. 1,1-DCA and 4-methyl-2-pentanone were detected in two samples at concentrations below or near the laboratory detection limits. Carbon tetrachloride was detected in one sample. VOCs were detected at low concentrations

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(below the CRDL), at the inlet to Lake Mirimichi (SW-11). A discussion of these results is provided in Section 9.4.

5.4.5.2 Metals

All surface water samples collected in Rounds 3 and 4 were analyzed for total metals. A summary of the results of these analyses are presented in Table 4.4.6. Completed analytical results were presented in the HERA Second Interim Deliverable (ENVIRON, 1997). A discussion of the results of these analyses is provided in Section 9.4.

5.4.5.3 Polychlorinated Biphenyls

Rounds 3 and 4 surface water samples were analyzed for PCBs. As shown in Table 4.4.6, PCBs were not detected in any surface water sample.

5.4.5.4 Major Cations and Anions

Round 3 and Round 4 surface water samples were analyzed for major cations and anions. Table 4.4.7 summarizes the results of these analyses. Complete analytical results were presented in the HERA Second Interim Deliverable (ENVIRON, 1997). A discussion of these results is provided in Section 9.4.

5.4.5.5 Water Quality Parameters

Surface water samples collected in Round 3 and Round 4 were all analyzed for water quality parameters. Results of these analyses are presented in Table 4.4.8. Complete analytical results were presented in the HERA Second Interim Deliverable (ENVIRON, 1997). A discussion of these results is provided in Section 9.4.

5.5 Sediment

5.5.1 Sediment Sampling Program

During the RFI Phase II field investigation, a focused sediment sampling program was conducted to confirm the results of the Phase I sampling program. This program was also designed to better delineate metals concentrations in the south embayment of Turnpike Lake and to further delineate metals and VOC concentrations in the impounded area east of the former drive-in movie theater east of Route 152. Four locations sampled during the Phase I RFI were re-sampled to evaluate locations where detection limits were elevated due to blank contamination and correction for moisture content. As shown on Figure 4.5.1, these were collected in the south embayment of Turnpike Lake and along the main channel and tributaries to Sawmill Brook. Furthermore, due to elevated metal concentrations in the two Phase I background samples, both sample locations were moved and re-sampled at alternate locations farther from the shore and stream inlets. Sediment sample locations are shown on Figure 4.5.1.

5.5.1.1 Turnpike Lake - South Embayment

Three Phase I sample locations were re-sampled in the south embayment of Turnpike Lake: SD-14, SD-22, and SD-25. These samples were selected as a result of elevated method detection limits for several metals during the Phase I RFI. One new sediment sample location was also tested in the south embayment (SD-38) southwest of Phase I sediment sample locations SD-25 and SD-37 to further delineate metals concentrations.

5.5.1.2 Turnpike Lake - Background Samples

During the Phase I RFI, elevated detection limits for antimony and mercury were reported in the background sample SD-10. A new sample (designated SD-10A) was collected further off shore for analysis in Phase II. The sediment background sample SD-09 was also collected near the shore in Phase I (20 feet) and contained an elevated concentration of lead. A new location, SD-09A, was selected approximately 100 feet from the shore.

5.5.1.3 Sawmill Brook.

Sample SD-02 was re-sampled due to an elevated detection limit for zinc in the Phase I RFI. Two sediment sample locations (SD-39 and SD-40) were added upstream and downstream from SD-01 in the impounded area associated with the former drive-in movie theater area. These samples were collected to further delineate potential contamination east of the former drive-in movie theater area and to further delineate metal concentrations in an adjacent area of impounded water, which may act as a sediment trap.

5.5.2 Sampling Methodology

Sediment samples were collected following the same procedures outlined in Section 4.5.2, which describes sampling methodology for the Phase I RFI. Sediment thickness was not measured during Phase II.

5.5.3 Chemical Analytical Program

Sediment samples were submitted for analysis in accordance with the RFI Phase II proposal (included as Section 6.0 of the *Phase I Interim Report*; ENVIRON, 1997). Table 5.5.1 summarizes the analytical testing program conducted for each sediment sample. Results of the analytical tests are summarized in Tables 4.5.3 through 4.5.7. Analytical results are discussed in Section 9.5, and the original analytical testing laboratory reports were presented in the HERA Second Interim Deliverable (ENVIRON, 1997).

5.5.3.1 Turnpike Lake - South Embayment

The new sediment sample (SD-38) in the south embayment was analyzed for metals, total organic carbon, cation exchange capacity, pH, and moisture content. The resample locations tested in the south embayment (SD-14, SD-22, and SD-25) were analyzed for metals and moisture content.

5.5.3.2 Turnpike Lake - Background Samples

The two confirmation background samples were analyzed for metals and moisture content. Sample SD-09A was also analyzed for total organic carbon, cation exchange capacity, and pH.

5.5.3.3 Sawmill Brook and Tributaries

All samples collected in Sawmill Brook and the associated stream system were analyzed for metals and moisture content. The additional Phase II samples SD-39 and SD-40 were also analyzed for total organic carbon, cation exchange capacity, and pH.

5.5.4 Physical Testing Program

Sediment samples collected during the RFI Phase II field investigation at sample locations, SD-38, SD-39, SD-40, and background sample SD-09A, were submitted for physical testing. The sediment samples were collected by inserting a plastic liner (1.75-inch OD) into the

hand auger and advancing the hand auger into the sediments. The liner was then retrieved, fitted with plastic endcaps, and transported to GeoTesting Express in Acton, Massachusetts. The sediment samples were tested for grain size (ASTM D422), Atterburg limits (ASTM D4318), and dry density (ASTM D4564). The samples were also classified using USCS classification according to ASTM D2487. Results of physical testing are summarized in Table 4.5.8.

5.6 Fish Tissue Sampling

A fish tissue sampling program was conducted during Phase II to complete the fish sampling program initiated in Phase I. The purpose of the sampling program was to evaluate whether releases from the Facility have caused any impact on fish that would present a public health and/or ecological concern. Information from the fish tissue testing program is further evaluated in the Human and Ecological Risk Assessment. The following sections summarize the Phase II program. Details of the field procedures are presented in Appendix C.

5.6.1 Fish Tissue Sampling Program

The fish tissue sampling program was conducted as originally outlined in the RFI Proposal and as modified in Technical Memorandum No. 4, dated April 4, 1995 (Appendix C) and the Phase I Interim Report (ENVIRON, 1995a). Phase II fish tissue sampling was conducted by Foster-Wheeler on June 18, 1996 through July 3, 1996. Fish were collected from the south embayment of Turnpike Lake, from a private impoundment on the east side of Route 152, and in the Old Mill Pond adjacent to Pearl Lake. Figures 4.6.1 and 4.6.2 show the fish sampling locations.

The Phase I fish sampling program intended to sample five fish from three classes of fish (i.e., bottom feeders, prey species, and game species) at each of the three locations for a total of 45 fish. As described in Section 4.6, only 13 fish were collected during the Phase I sampling event. The proposed Phase II fish sampling program intended to complete the sampling program established in the Phase I event (i.e., five fish of each class from each of the three sample locations, for a total of 45 fish to be sampled). As shown on Table 4.6.1, a complete set of fish was obtained from the south embayment and the Old Mill Pond (i.e., bottom feeders, game, and prey species). During the Phase II sampling program, the complete number of prey species were obtained from the private impoundment; however, only one additional game fish was caught and no bottom feeder fish were caught despite repeated attempts. With the exception of the private impoundment, all planned fish samples for each species were collected, as shown on Table 4.6.1.

5.6.2 Sampling Methodology

Fish were collected using gill nets and trotlines. In one instance, gill nets were used to seine an area. Following sample collection, sample handling and processing was performed in accordance with those followed in the Phase I field investigation.

5.6.3 Chemical Analytical Program

Fish tissue samples were submitted for analysis of metals and lipid content in accordance with the chemical analytical program described in the RFI Proposal and Technical Memorandum No. 4 and Section 6.0 of the Phase I Interim Report (ENVIRON, 1995a). After review of preliminary results of the analyses on sediment samples, PCBs were added to the chemical analytical program for fish tissue samples. The addition of PCBs to the chemical

analytical program for fish tissue samples was confirmed with USEPA in Project Status Report No. 4 - April and May, dated June 14, 1995. Fish tissue samples were submitted to Inchcape Testing Services-Aquatec Laboratories of Colchester, Vermont. A complete list of the fish tissue samples collected and analyses performed is presented on Table 5.6.1.

5.6.4 Summary of Data

Forty-five fish tissue samples, five duplicates, and four equipment rinsate blanks were analyzed for metals and PCBs. The tissue samples including the duplicates were also analyzed for percent lipids, which were present in all the fish analyzed. Equipment blanks, which are comprised of deionized water, were not analyzed for lipids because the analysis would not produce meaningful results. The detected chemicals and their respective concentrations are presented in Table 4.6.3. Complete analytical results were presented in the HERA Second Interim Deliverable (ENVIRON 1997).

5.6.4.1 Old Mill Pond (Background) Fish Results

Five game fish (*i.e.*, largemouth bass and pickerel) and five bottom feeders (*i.e.*, bullheads) were collected from the Old Mill Pond. No prey fish were collected because sufficient numbers were obtained in the Phase I program. The game fish ranged from 255 millimeters (mm) to 360 mm in length and from 219.6 grams (g) to 618 g in weight. The bottom feeders ranged from 240 to 265 mm in length and from 207.9 to 273 g in weight. No abnormalities or parasites were reported for either class of fish. Table 5.6.2 presents the relevant field measurements of the fish collected from the Old Mill Pond. The results of chemical analyses are presented in Table 4.6.3 and are discussed briefly below. Further analysis is provided in Section 9.6.

Bottom Feeder Results. Two of the fifteen metals analyzed for, beryllium and cadmium, were not detected in any of the muscle or offal bottom feeder fish samples. Barium, mercury, and zinc were detected in all of the bottom feeder fish. The remaining metals were sporadically detected in muscle and offal samples.

Three PCB Aroclors were detected in the bottom feeder fish, Aroclor 1242, 1254, and 1260. Detected concentrations in the fish ranged from 1.8 J to 4.2 µg/kg for Aroclor 1242, 2.9 to 29 µg/kg for Aroclor 1254, and from 2.7 J to 28 µg/kg for Aroclor 1260

Game Fish Results. Seven of the fifteen metals analyzed for (aluminum, arsenic, beryllium, cadmium, cobalt, lead, and silver) were not detected in the muscle or offal game fish samples collected from the Old Mill Pond. Only zinc and mercury were detected in all of the fish collected from the Old Mill Pond. The remaining metals were sporadically detected in muscle and offal samples.

Although PCBs were detected in all fish collected from the Old Mill Pond, only three PCB Aroclors were detected: 1242, 1254, and 1260. Detected concentrations in the fish ranged from 2.9 J to 11µg/kg for Aroclor 1242, 3.2 to 60 µg/kg for Aroclor 1254, and from 14 to 42 µg/kg for Aroclor 1260.

5.6.4.2 South Embayment Fish Results

Fourteen fish consisting of four game species (large mouth bass and yellow perch), five prey species (blue gill and red ear gravid) and five bottom feeders (bullhead) were caught in the south embayment of Turnpike Lake. The game fish ranged from 200 mm to 465 mm in

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length and from 109.9 to 1580.4 g in weight. Prey fish were smaller and ranged in length from 165 mm to 192 mm and in weight from 99.6 g to 163.2 g. Bottom feeders ranged in length from 295 mm to 350 mm and in weight from 351.5 g to 605.4 g. One bottom feeder (EP-FTM-SE-BF005) had slight skin lesions as a result of the fish becoming entangled in the gill net. No other abnormalities or parasites were reported. Table 5.6.2 presents the relevant field measurements of the fish collected from the south embayment. The results of chemical analyses are presented in Table 4.6.3 and are discussed briefly below and in more detail in Section 9.6.

Bottom Feeder Results. Beryllium was not detected in any sample. Copper, mercury, and zinc were detected in all muscle and offal tissues analyzed. The remaining metals were sporadically detected.

Aroclor 1242, 1254, and 1260 were the only Aroclors detected. These Aroclors ranged in the following concentrations: 42 to 240 µg/kg, 11 to 1,200 µg/kg and 4.7 to 160 µg/kg, respectively.

Game Fish Results. Aluminum, arsenic, beryllium, cobalt, and lead were not detected in any game fish. Zinc and mercury were detected in all of the samples analyzed. With the exception of chromium, the remaining metals were infrequently detected.

Three PCBs, Aroclor 1242, 1254 and 1260, were detected in muscle and offal tissue from the game fish collected from the south embayment. Detected concentrations of Aroclor 1242 ranged from 3.9J to 240 µg/kg. Concentrations of Aroclor 1254 and Aroclor 1260 ranged from 8.6 to 190 µg/kg and 3.1 to 170 µg/kg, respectively. No other Aroclors were detected.

Prey Fish Results. Aluminum, arsenic, beryllium, cobalt, lead, nickel, and selenium were not detected in any fish. Barium, chromium, copper, mercury, vanadium and zinc were detected in all prey fish. Cadmium and silver were detected in some prey fish.

Aroclor 1242, 1254, and 1260 were the only Aroclors detected. These Aroclors ranged in the following concentrations: 5 to 70 µg/kg, 12 to 260 µg/kg and 15 to 64 µg/kg, respectively.

5.6.4.3 Private Impoundment

One game fish (Pickerel) was caught from the private impoundment. As presented on Table 5.6.2, the fish was 305 mm in length and weighed 180.1 g. No abnormalities were observed. The results of chemical analyses are presented in Table 4.6.3 and are summarized briefly below.

Aluminum, arsenic, beryllium, cobalt, lead, and silver were not detected in either the muscle or offal sample. Metals that were detected include: barium, cadmium, chromium, copper, mercury, nickel, selenium, vanadium, and zinc. Aroclor 1242, 1254, and 1260 were detected in the fish.

5.7 Soil Vapor Extraction Pilot Test

Pilot testing of a soil vapor extraction (SVE) system was conducted to collect data to evaluate SVE as a potential treatment technology for the removal of VOCs from vadose zone soils. AOC 5 was initially chosen for the SVE test because it is fairly accessible to truck-mounted equipment and contained some of the highest concentrations of VOCs

detected in soil gas. However, AOC 26 (located in former Building 1, which was demolished in the spring of 1997) was ultimately chosen for the SVE test because the building demolition program removed access restrictions to this area. Also, high concentrations of VOCs were detected in soil gas in the past in this area and AOC 26 is located upgradient from the area with the highest concentrations of VOCs in ground water.

The SVE pilot test was performed between December 8 and December 17, 1997. Two SVE test wells were installed; one across the vadose zone, and one just beneath the floor slab where Phase I soil boring and soil gas survey programs indicated that VOCs may be present at the highest levels. The two depths were selected to provide information on VOC recovery and system performance across the vadose zone.

Monitoring points were installed to monitor vacuum, flow, and VOC concentration. Seventeen monitoring points were installed at depths corresponding to extraction well depths in two perpendicular lines extending from the extraction wells. During testing, the vacuum distribution was monitored in two directions and at two depths using this configuration. In addition, potential heterogeneities in the subsurface can be better recognized and evaluated with this configuration by comparing vacuum response in the two directions.

Both vacuum step tests and constant rate tests were performed on each extraction well. A radius of influence of approximately 50 feet was observed with relatively low vacuum and flow. Both wells were able to sustain flow rates of up to 100 standard cubic feet per second (scfm) at maximum vacuum of approximately 6 and 12 inches water column (w.c.) in the deep and shallow wells, respectively.

The radius of influence, flow rate and associated vacuum results indicate that SVE may be a viable remedial alternative for VOC impacted vadose zone soil beneath the Facility. Additional details of the test, equipment, and analysis is included in Appendix E.

5.8 Analysis of Data Adequacy

The data collected for the soil and sediment physical characterization program and the migration/dispersal characterization program were validated and are judged to be useable. These data are used for the source and waste characterization study required by Section IX of the Consent Order and presented in Sections 8.0 and 9.0 of this report.

5.9 Data Validation

The analytical data verification program was presented in the RFI Proposal Appendix J, Data Collection Quality Assurance Plan (DCQAP). Validation of data obtained from field measurements was performed by checking calibration procedures utilized in the field, and by comparing the data to previous measurements, if any, at the specific site. Laboratory analytical data was validated using the criteria specified in the USEPA Region I *Draft Tiered Organic and Inorganic Data Validation Guidelines, July 1, 1993* (USEPA 1993). Tier II Data Validation was performed for the data collected in this Phase II field investigation. The laboratory analytical data summary tables (presented in the HERA Second Interim Deliverable (ENVIRON 1997)) include data qualifiers, where appropriate, that were the result of the data validation process. The data validation reports, presented in Appendix G of the HERA Second Interim Deliverable, include the rationale for specific data qualifiers.

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According to the DCQAP, data generated during this project will be considered adequate if they are 80% complete in accordance with USEPA's *Data Quality Objectives for Remedial Response, March 1987*. The analytical data collected for each media (ground water, surface water, soil, sediment, and fish) were evaluated separately to determine the percent completeness achieved during Phase II by comparing the number of unusable data to the total number of data for each analytical suite (for example, volatiles or semi-volatiles). As shown on Table 5.9.1, the percent completeness achieved in all cases was at least 87% for sediment and 94% for all other media.

6 Supplemental RFI Field Investigation

In response to comments received from USEPA Region I in 2002 on the 1999 Draft RFI Report (ENVIRON, 1999) and in 2008 on the 2007 Draft RFI Report (ENVIRON, 2007), additional soil, ground water, surface water and sediment sampling was conducted in 2005 – 2006 and in 2010 to complete delineation of previously identified areas of contamination, to investigate performance of existing RCRA Stabilization measures, and to gather additional information necessary to further characterize sediment toxicity in the wetlands, the delineation of metals in Sawmill Brook, and the concentrations of metals in floodplain soils. The activities performed during these Supplemental RFI field investigations are described in Section 6.0. Laboratory reports for all sample collection activities performed as part of the Supplemental RFI field investigations are provided in electronic format (on CD) in Appendix S.

6.1 Soil

Phases I and II of the RFI field investigation, conducted in 1995 and 1997, respectively, included the installation of shallow and deep soil borings in various AOCs across the site. As described in Sections 4 and 5 of this report, these samples were analyzed for one or more of the following classes of compounds: VOCs, SVOCs, metals, radionuclides, PCBs, cyanide and total petroleum hydrocarbons (TPH). The results of these analyses were presented in the initial Draft RFI Report (ENVIRON, 1999). Based on comments from the USEPA Region I on the initial Draft RFI Report, additional surface and subsurface soil sampling was conducted in 2005 to further delineate the magnitude and extent of constituents of potential concern in selected AOCs. In addition, based on USEPA comments received on the 2007 DRAFT RFI Report, six floodplain soil samples were collected at four locations along Sawmill Brook near sediments with elevated metal concentrations, and at two background locations to evaluate the potential for contamination of soils during flood conditions.

6.1.1 Surface Soil Sampling Program

2005 Sampling Event. Four surface soil samples (SS-A1-01, SS-A1-01dup, SS-A1-02 and SS-A1-03)[30] were collected in the vicinity of SS-EH-03 in AOC A-1, where elevated metals and VOCs were previously detected. The surface soil sampling locations were selected by stepping out approximately 15 feet to the north, south and west of location SS-EH-03 as shown in Figure 5.1.1. One duplicate sample was collected at SS-A1-01. Surface soil samples were collected by using a clean shovel and digging an approximately one-foot wide by one-foot deep hole. Soil samples collected for VOC analysis were obtained using dedicated EnCore-style syringes directly from the most undisturbed soil dug out of the hole. VOC samples were not homogenized prior to placement in containers. Composite soil samples obtained for other parameters were collected from the soil removed from the hole by hand with dedicated nitrile gloves. Between each surface soil location, the shovel was washed using a dilute solution of trisodium phosphate and rinsed with potable water in general conformance with methods outlined in the Supplemental RFI Work Plan (ENVIRON, 2005).

All samples were analyzed for VOCs, total metals and PCBs as indicated in Table 6.1.1. Analyte lists for VOCs, metals, and PCBs are presented in Tables 6.1.2, 6.1.4 and 6.1.5.

30 Note that these three samples are named AOCA-1 SS01, AOCA-1 SS02 and AOCA-1 SS03 (corresponding to SS-A1-01, SS-A1-02 and SS-A1-03, respectively) on the laboratory data sheets.

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2010 Sampling Event. Four additional surface soil samples (FS-SD-01, FS-SD-50, FS-SD-204, and FS-SD-209) were collected from the floodplain along Sawmill Brook near sediments with elevated metal concentrations, and two floodplain soil samples (FS-TRIB-LB and FS-TRIB-RB) were collected from background locations along the left and right banks of a tributary to Sawmill Brook (see Figure 6.1.1). Floodplain soil samples were collected with a metal spade in accordance with the approved QAPP (ENVIRON, 2010).

6.1.2 Soil Boring and Subsurface Soil Sampling Program

Ten additional soil borings were advanced in selected AOCs in 2005 to further delineate the magnitude and extent of COPCs in these areas. Soil boring locations are shown in Figure 4.1.1. In addition, three subsurface soil samples were collected from beneath the concrete pits associated with AOC 30. The subsurface soil sampling program is summarized in Table 6.1.1 and described by AOC below.

6.1.2.1 Sub-AOC A-1

Three soil borings (SB-50, SB-51 and SB-52) were advanced to the water table in sub-AOC A-1. Sub-AOC A-1 consists of a land area located west of Building 10 where wastewater was released to two former surface impoundments (Frog Ponds) during the period from 1973 to 1981. The Frog Ponds were formerly located in an area that is now largely covered by an aboveground storage tank (AST) and lined, emergency containment basin, which was constructed in 1981. Several metals including cadmium, chromium, copper, lead, nickel, silver and zinc were detected above background in soil samples collected from this area during Phase I. VOCs and PCBs were also detected in this sub-AOC.

In order to more fully delineate the soils in this sub-AOC, two borings (SB-50 and SB-51) were drilled to the north and west of the northernmost frog pond to address any potential effects from spillover from this pond. Soil boring SB-52 was installed west of SB-16 and within the footprint of the southern frog pond to further delineate soils in this area.

Continuous split spoon sampling was performed on all three borings and three samples from each boring were submitted for laboratory analysis. Samples were collected at 0-2, 6-8 and 8-10 feet bgs in boring SB-50; 0-2, 4-6 and 8-10 feet bgs in boring SB-51; and 0-2, 6-8 and 8-10 feet bgs in boring SB-52. The water table was encountered at a depth of 10 feet. Note that poor recovery at 2-6 feet in borings SB-50 and SB-52 prevented sample collection from the midpoint of the boring as specified in the QAPP. Therefore samples were collected at the next available interval at 6-8 feet. All samples were analyzed for VOCs, metals and PCBs as indicated in Table 6.1.1.

6.1.2.2 AOC A-12

AOC A-12 was a former waste storage area located beneath what is now the central portion of Building 10. Chromium, silver and zinc were detected above background concentrations in soil boring SB-18, located about 15 feet west of this sub-AOC. In order to further delineate this area, a single boring (SB-53) was advanced within the footprint of AOC A-12 as shown in Figure 4.1.1. Soil samples were collected at 0-2, 4-6 and 8-10 feet bgs and analyzed for VOCs, SVOCs and metals.

6.1.2.3 AOC 5

AOC 5 consists of a land area that consists of a former pit or pond that is now located under the northwest corner of what is now Building 8. Contact and non-contact cooling waters, and

acid cleaning and annealing wastewaters were reportedly discharged directly to the ground in this AOC between 1966 and 1972. In addition, an above-floor degreaser was later operated in Building 8 in this area. As described in Sections 4.3, 5.3 and in Section 6.3 below, chlorinated VOCs have been detected in soil gas in a widely dispersed zone beneath Building 8 with some of the highest concentrations detected in the vicinity of AOC 5. Based on the results of the updated soil gas survey (Section 6.3), an additional soil boring (SB-54) was advanced at the location of the highest soil gas readings and samples were collected at the surface (0-2 feet), mid depth (3-5 feet) and just above the water table (7.5-9.5 feet bgs). A duplicate sample was collected at the 7.5-9.5 feet depth interval. All samples were analyzed for VOCs, SVOCs and metals.

6.1.2.4 AOC 14; AOC 29

Two soil borings (SB-55 and SB-56) were advanced through the concrete floor in Building 8 in the vicinity of AOCs 14 and 29 to characterize soils in this area. As indicated in Figures 9.3.3 and 9.3.4, PCE and TCA have been detected at elevated levels in soil gas beneath Building 8 in the vicinity of AOCs 14 and 29; however, a discrete source of these vapors has yet to be found. AOC 14 is a land area that reportedly received wastewater from metal-cleaning operations and is located under what is now Building 8. AOC 29 is an area in the north central portion of Building 8 where an above-floor degreaser was once located.

The locations of soil borings SB-55 and SB-56 were selected based on the results of the updated soil gas survey described in Section 6.3 and coincide with the highest VOC concentrations detected in this area. However, no VOCs were detected in the top 7 feet of each boring based on PID screening (see Appendix B). Three soil samples were collected from each boring. Samples were collected from below the fill layer at 10 and 16 feet bgs from SB-55 and at 9 and 15 feet bgs from SB-56. Duplicate samples were collected at 10 feet bgs in SB-55 and at 15 feet bgs in SB-56.[31] All samples were analyzed for VOCs and metals.

6.1.2.5 AOC 22; AOC 26

One additional soil boring (SB-57) was advanced near AOCs 22 and 26 to further delineate soils in this area. AOCs 22 and 26 are located in close proximity to each other and in an area where elevated levels of VOCs have been detected in soil gas (see Section 9.3). AOC 22 was a dry well that reportedly received steam condensate from two steam-heated vapor degreasers.[32] AOC 26 was an approximately 22-foot long trench that served as a housing for wastewater piping. The piping was connected to aqueous acid/alkali cleaning tanks used for cleaning operations through the 1990s. Two soil borings previously installed in this area (SB-32 and SB-34) revealed only low levels of VOCs in vadose zone soils (PCE concentrations ranged from 8 to 140 µg/kg).

Soil boring SB-57 was advanced within AOC 22 as shown in Figure 4.1.1. Soil samples were collected at depths of 0.5-2 feet, 2-4 feet, 6-8 feet and 10-11.5 feet bgs and analyzed for VOCs, SVOCs and metals. An additional sample was collected at a depth of 12-14 feet

31 Note that Building 8 required a substantial amount of fill, ranging from approximately 10 feet at the northeast corner to a foot or less at the western end, to bring the floor to the same level as the floors of existing buildings at the time.

32 The location of AOC 22 may be in error. The only description of the location of this dry well is a statement that a sump pump in a degreaser sump in Building 1 discharged into a pipe under the floor of then Building 4, which flowed to a dry well (see Section 8.1.10). This description appears to fit the newly-discovered dry well described in Section 8.1.5.

bgs and analyzed for total organic carbon (TOC). The TOC data will be used to estimate contaminant transport velocity in the overburden aquifer.

6.1.2.6 AOC 30

AOC 30 consists of a former below grade degreaser pit located in the former Building 6. On October 4 2005, the concrete slab covering this pit was removed revealing two adjacent pits separated by an east-west wall. The southern pit was square in shape, approximately seven feet on a side, and 3.5 feet deep. The northern pit was rectangular in shape, approximately 7 by 16 feet in size and 3.5 feet deep with a 2 feet by 2 feet square sump in the northwest corner. Both pits were intact and holding liquid.[33] Headspace readings of the fill material within the pits ranged from 0 to 19.1 ppmv. The highest reading was recorded at the southern edge of the northern pit. After removing the entire contents of both pits, the lower slabs of each pit were removed revealing what appeared to be dry soils beneath the pits. One soil sample was collected from below the center of the slab in the southern pit (AOC30-1) and two samples were collected from below the southern and northern edges of the northern pit (AOC30-2S and AOC30-2N, respectively). All three samples were analyzed for VOCs. After sampling, the excavated areas were backfilled with clean material.

After low levels of PCBs were detected in one of the composite samples used to characterize the excavated material for disposal purposes, two additional soil borings (SB-58 and SB-59) were advanced using a geoprobe type direct push apparatus. The borings were advanced through the clean fill to the native soil layer beneath the two former pits and two additional subsurface soil samples (AOC 30 SB-1-6 and AOC 30 SB-2-5) were collected and analyzed for PCBs.

6.1.3 Soil Boring Drilling/Sampling Methodology

All drilling was conducted by a State of Massachusetts licensed driller (Dragin Drilling, of Wareham, Massachusetts) under the supervision of ENVIRON personnel. Soil borings were advanced in unconsolidated overburden by a geoprobe type direct push apparatus, hollow-stem auger or driven casing. Soil samples were collected for chemical analysis in general conformance with methods outlined in the Supplemental RFI Work Plan (ENVIRON, 2005). Subsurface soil samples were collected using either a split spoon sampler or geoprobe core sampler. Upon recovering and opening the sampling tool, the length of the recovered soil core was scanned with a photoionization detector (PID) to identify any zones of significant VOC concentrations. In the absence of hot spots, a composite of the entire length of recovered soil was collected for headspace screening. Samples collected for headspace screening were agitated in a container covered by aluminum foil, or in a plastic bag, to disaggregate the soil and volatilize any VOCs. After the sample was allowed to equilibrate for approximately five minutes, a PID probe was inserted through the foil cover, or into the plastic bag, and the concentration of total VOCs in the headspace was recorded.

Soil samples collected for VOC analysis were obtained using dedicated EnCore-style syringes. VOC samples were not homogenized prior to placement in containers. Composite soil samples obtained for other parameters were collected from the split spoon by hand with dedicated nitrile gloves. Prior to, and between soil borings and monitoring well installations, all down-hole drilling and non-dedicated soil sampling equipment was cleaned using a high-

33 Excavation photos are provided in Appendix P.

pressure washer. Between sampling intervals in each individual boring, the sampler was washed using a dilute solution of trisodium phosphate and rinsed with potable water in general conformance with methods outlined in the Supplemental RFI Work Plan (ENVIRON, 2005).

6.1.4 Chemical Analytical Program

As indicated in Table 6.1.1, surface and subsurface soil samples collected during the Supplemental RFI were analyzed for VOCs, SVOCs, PCBs and/or metals depending upon the area being investigated. Soil samples collected for analysis of VOCs conformed to EPA Method 5035, which requires the use of different preservatives depending upon the concentration range of VOCs in the sample (i.e. methanol preservation for concentrations > ~200 µg/kg, and sodium bisulfate for concentrations < ~200 µg/kg). This was achieved by collecting two samples from each location in pre-preserved bottles provided by the laboratory, and having the laboratory determine the appropriate analysis by screening an aliquot of the methanol-preserved sample.

6.1.5 Summary of Analytical Data

Soil sampling results for VOCs are provided in Table 6.1.6 (high level) and Table 6.1.7 (low level); SVOC results are provided in Table 6.1.8; metals analyses are reported in Table 6.1.9; and PCB results are shown in Table 6.1.10. Although not included in the original work plan, five additional samples were collected for analysis of total organic carbon (TOC). These samples are identified in Table 6.1.1 and TOC results are reported in Table 6.1.11. Soil boring locations associated with field sample IDs are presented in Figure 4.1.1 and outlined below:

Soil Boring Location	Field ID
SB-50	AOCA1 SB1
SB-51	AOCA1 SB2
SB-52	AOCA1 SB3
SB-53	SB-4
SB-54	SB-3
SB-55	AOC14 SB2
SB-56	AOC14 SB1
SB-57	SB220
SB-58	AOC30 SB1
SB-59	AOC30 SB2

6.1.6 Additional Soil Boring Events

Drive-In Property. In July-August, 2007 LFR Inc. performed an ASTM Phase II Environmental Site Assessment (ESA) on the 21.1 acre former drive-in property located across the street from the main facility at 43 Taunton Street (LFR Inc., 2007). As part of the subsurface investigation of the property, seventeen soil borings (LFR-SB-1 through LFR-SB-13, MW50, MW51A, MW51B and MW52) were drilled; two of these borings were completed as overburden monitoring wells (MW51A and MW52) and two of these borings were completed as bedrock monitoring wells (MW50 and MW51B). Monitoring well construction details are provided in Table 3.1; boring logs are provided in Appendix B.

A total of 16 soil samples (including one duplicate) were collected from each of 13 borings (LFR-SB-1 through LFR-SB-13) and two monitoring wells (MW51A and MW52) and

analyzed for VOCs using EPA Method 8260B, VPH/EPH using the MassDEP Method, RCRA 8 metals and PCBs using EPA Method 8082. Results are provided in Table 1 of Appendix T.

Very Deep Bedrock Boring. A very deep bedrock test boring (P16c) was drilled to a depth of approximately 299 feet bgs in order to evaluate the extent of groundwater contamination in the very deep bedrock. The boring was located east of EW02, just across Taunton Street, because the highest CVOC concentrations detected during packer testing of EW02 (see Figure 3, Appendix M) were found at the deepest interval (180 to 200 feet bgs) and a laterally extensive fracture zone exists in this area. This boring was completed as a 2-inch PVC piezometer screened at a depth of 245 to 270 feet bgs (see Table 3.1). The well location is shown in Figure 3.1.

One sample from the overburden soil and eleven samples from the bedrock zone (approximately every 25 feet) were collected and analyzed for VOCs. Analytical data are provided in Table 6.1.12.

Southern Perimeter Test Boring. Two additional monitoring wells (MW54A/B) were installed in August 2010 to assess the potential for off-site migration of constituents in groundwater south of AOC B. Two soil samples from on-Site overburden test boring MW54A were collected and submitted to Alpha Analytical, Inc., of Westborough, MA for the following laboratory analysis:

- VOCs by EPA Method 8260B;
- Priority Pollutant (PP) 13 Metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc) by EPA Methods 6010B and 7471A (mercury) and polychlorinated biphenyls (PCBs) by EPA Method 8082.

The soil sample collected for metals and PCB analyses was collected from 0-2' bgs. The soil sample for VOC analyses was collected from just above the groundwater table at 8 bgs since there were no obvious signs of contamination or elevated PID readings. Analytical data are presented in Table 6.1.13.

6.2 Ground Water

6.2.1 Monitoring Well Installation Program

Sixteen monitoring wells were completed as part of the Supplemental RFI Field Investigation. All drilling was conducted by a State of Massachusetts licensed driller (Dragin Drilling, of Wareham, Massachusetts) under the supervision of ENVIRON personnel. Six monitoring wells (MW12A, MW44A, MW45A, MW46A, MW48A and MW49A) were completed in the unconsolidated overburden, five wells (MW9B, MW12B, MW43B, MW45B and MW48B) were completed in the underlying shallow bedrock, and five wells (MW9C, MW20C, MW21C, MW42 and MW43C) were completed in deep bedrock, in general conformance with methods outlined in the Supplemental RFI Work Plan (ENVIRON, 2005). Monitoring well locations are shown in Figure 3.1. Monitoring well construction details are presented in Table 3.1 and in boring logs located in Appendix B.

The locations of several monitoring wells [MW50A/B (now called MW09B/C) and MW43B/C] were changed from those specified in the Supplemental RFI Work Plan as described in a September 7, 2005 letter to USEPA (ENVIRON, 2005). The original locations proposed for

these wells were subsequently determined to be unsatisfactory because of drill rig access issues. The original proposed location for MW43B/C would have required some filling of a wetland area and construction of drainage culverts to gain access; and the original proposed location of MW50A/B is in the center of a wetland area, which would have required a significant road-building effort for drill rig access across a wetland. In addition, the discovery of a second stream east of the original proposed location of the MW43 well pair warranted a re-positioning of these wells to ensure that these wells were built beyond the principal ground water discharge zone.

As agreed to by USEPA, the location of monitoring wells MW50A/B was moved to a new location adjacent to the existing overburden monitoring well MW09. Because these two new wells formed a cluster with existing well MW09, the new wells were installed as shallow and deep bedrock wells and re-designated MW09B and MW09C. The MW43B/C well pair was re-located about 250 feet northeast of the original proposed location, in an open area near a bend in the dirt road that runs east from Route 152 (see Figure 3.1).

The location of MW44A was also repositioned slightly relative to the location specified in the Work Plan. This move accommodated the landowner's request to keep the well off his lawn, and in an area where surficial impacts of drilling would be less visible.

6.2.1.1 Overburden Wells

Borings for the six overburden monitoring wells (MW12A, MW44A, MW45A, MW46A, MW48A, and MW49A) were advanced by a hollow-stem auger in unconsolidated overburden to sample soil and monitor groundwater quality in general conformance with methods outlined in the Supplemental RFI Work Plan (ENVIRON, 2005). Soil samples were collected for lithologic description and scanned with a PID continuously over the entire drilled interval using a split spoon sampler (driven by a 140-pound hammer falling approximately 30 inches following ASTM D 1586-24). Sampling for lithologic logging was not conducted at locations or through depth intervals where previous drilling at the same location already resulted in lithologic logging. Samples were logged following the general parameters outlined in the Supplemental RFI Work Plan.

The overburden monitoring wells were constructed of four-inch diameter, schedule 40 PVC riser and 10-slot PVC well screen. A clean sand pack was emplaced in the annulus from the bottom of the boring up to between two and four feet above the top of the well screen. The annulus above the sand pack was sealed with approximately two feet of bentonite pellets, and the annulus above the bentonite seal was bentonite-grouted to the surface with a tremie pipe in most wells. However, in MW46A and MW49A, bentonite pellets were used to seal the well to the surface instead of using bentonite grout because of the limited length of annulus. The wells were completed at the surface with flush-mounted protective casings, with the exception of MW46A, which was completed with a "stick-up" steel pipe that extended above the ground surface approximately two feet. A stick-up was used to maintain the visibility of the well, and prevent burial that could result from its location near a gravel driveway. Boring logs containing well construction specifications and soil lithologies are presented in Appendix B.

No variances to the Supplemental RFI Work Plan occurred during overburden monitoring well installation, except as described below:

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MW49A was completed as a two inch PVC well instead of a four inch well, due to difficult drilling conditions. The compacted fill layer present under Building 8 contains abundant cobbles and boulders, which frequently obstructed drilling operations, and sometimes resulted in refusal. Therefore, as agreed to by USEPA, a smaller augered hole was drilled and a two-inch well was constructed.

6.2.1.2 Shallow Bedrock Wells

Five monitoring wells were installed in shallow bedrock (MW09B, MW12B, MW43B, MW45B, and MW48B) in general conformance with methods outlined in the Supplemental RFI Work Plan. Hollow-stem augers (6 ¼ -inch diameter for shallow bedrock wells) and steel casing were used to advance the borings through the overburden layer down to the bedrock surface. Soil samples were collected for lithologic description continuously over the entire overburden interval (unless a previous boring at the same location has already been logged) using a split spoon sampler (driven by a 140-pound hammer falling approximately 30 inches following ASTM D 1586-24). Samples were logged following the general parameters outlined in the Supplemental RFI Work Plan.

At the locations of shallow bedrock borings, a roller bit was inserted inside the augers to ream a several-foot “socket” into competent bedrock, into which four-inch steel casing was grouted, to isolate groundwater in overburden from the bedrock portion of the aquifer. The grout was generally allowed to set for approximately 48 hours before the commencement of further drilling. HQ coring then continued through the four-inch casing and grout, to the anticipated depth of interest, or to the fractured interval nearest to that depth that was likely to be hydraulically productive. At all but one location, the completed shallow bedrock wells consist of an open bedrock boring with four-inch steel casing extending upward from the top of bedrock to the surface. Variances to the Supplemental RFI Work Plan are described below:

MW48B was converted from a four-inch open bedrock hole with four-inch steel casing to the surface to a two-inch steel well with slotted screen and sandpack in the screened interval. This deviation occurred due to the inability to drive the four-inch steel casing to the appropriate depth and subsequent damage to the original steel casing during attempts to advance to the full depth. This was likely related to the number of cobbles and boulders in the fill located beneath the building footprint.

At refusal of overburden drilling in MW48B, a five-foot HQ core was not collected prior to reaming a five inch “socket” into competent bedrock, into which four-inch steel casing was grouted. Instead, a roller bit was used to ream several feet of bedrock to create the socket into which the casing would be grouted, and to confirm the presence of bedrock. This alternate approach was used because the core bit could not be advanced through heavily-fractured angular rock at this location, which tended to wedge and bind in the core barrel.

6.2.1.3 Deep Bedrock Wells

Five monitoring wells were installed in the deep bedrock zone (MW09C, MW20C, MW21C, MW42, and MW43C) in general conformance with methods outlined in the Supplemental RFI Work Plan. At locations of deep bedrock borings, an approximately five-foot “socket” was completed into competent bedrock using an 8 ¾-inch roller bit, into which six-inch casing was bentonite grouted, in order to isolate overburden groundwater from bedrock. The grout was allowed to set for at least 48 hours before the commencement of further drilling. The

bedrock portion of the boring was generally advanced to the proposed start of the 40-foot interval of HQ or NQ coring (the anticipated screened interval) using a 6-inch air hammer. Drilling continued with NQ (e.g. MW42) or HQ coring equipment, to allow collection of fracture density information from the core. This information was used to select the most highly-fractured 20-foot interval within the 40-foot depth interval where ground water characterization was required.

Once the screen depth was determined, the hole was reamed using a 5 7/8-inch roller bit to provide enough annular space in which to construct a sand pack. Deep bedrock wells were completed with four-inch schedule 40 PVC with a 20-foot well screen at off-site locations, while stainless steel riser and screen were used in deep wells on-site. The deep bedrock wells were constructed in the same manner as the overburden wells, with a sandpack around the screen that extended to a point approximately two to three feet above the top of the screen, above which a minimum two- to four-foot bentonite pellet seal was emplaced, in general conformance with methods outlined in the Supplemental RFI Work Plan. The boring annulus above the seal was either tremie-grouted with bentonite slurry, or bentonite pellets were added to the borehole to a point approximately 20 to 30 feet below grade (*i.e.* into the 6-inch steel casing) at each borehole. The wells were then grouted to the surface. A locking cover was attached to the top of the casing. The wells were completed at the surface with a "stick-up" protective casing that extended above the ground surface approximately two feet. Potable water was used and recirculated during all bedrock core drilling, and the amount of water used during drilling was monitored. An equivalent volume was removed from the completed well during purging. Variances to the Supplemental RFI Work Plan for deep bedrock monitoring wells are described below:

At locations of deep bedrock borings, an approximately five-foot "socket" was completed in competent bedrock using an 8 ¾ inch roller bit, into which six-inch casing was bentonite grouted, in order to isolate overburden groundwater from bedrock. This represents a deviation from the Supplemental RFI Work Plan, which stated that 8-inch casing would be used. This procedure was used because it allowed use of less-expensive casing while still permitting installation of 4-inch wells, as stipulated in the Supplemental RFI Work Plan.

The bedrock portion of the boring was advanced to the proposed start of the 40-foot coring interval (of which the most highly fractured 20 feet was screened) using a 6-inch air hammer. This represents a deviation from the Supplemental RFI Work Plan, which stated that the boring would be advanced to within approximately 30 feet of the anticipated screen interval (based on existing data from other wells in the area) using an eight-inch air hammer. In addition, a six-inch air hammer was used instead of an 8-inch air hammer described in the Supplemental RFI Work Plan. This approach was used because it was more time efficient, yet still permitted installation of 4-inch wells, as stipulated in the Supplemental RFI Work Plan.

Bentonite pellets and/or bentonite slurry were used instead of grout above the bentonite seal in wells MW20C, MW21C, and MW43C, in order to minimize loss into near vertical fractures (see Section 7.4.2.3 for more detail), and to avoid migration of grout into the screened interval of other wells in the cluster adjacent to the newly-installed well. Therefore, bentonite slurry/bentonite pellets were generally used in the borehole until it reached the upper 6-inch steel surface casing.

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Potable water was used and recirculated during all bedrock core drilling, and the amount of water used during drilling was monitored so that a like quantity could be recovered during later well development. However, at MW42, formation water was recirculated due to the remote location of the well and the need to minimize traffic on the access road and across a field on the property where the well was installed.

At MW42, a smaller 2-inch well was installed (compared to the 4-inch well specified in the work plan) because unstable soil conditions prevented access by the larger drill rig required for installation of the 4-inch well. This change was approved by USEPA during a January 12, 2006 site visit.

6.2.1.4 Well Development

All newly-installed monitoring wells were developed by removing approximately 10 casing volumes from the well. At locations where significant drilling water was lost to the formation during advancement of the boring, development included recovery of a volume of water at least equal to what was lost into the formation during drilling activities, in addition to the 10 casing volumes. In a deviation from the Supplemental RFI Work Plan, no water quality field measurements were monitored during well development. Wells were developed, however, until clean, relatively sediment-free water was being removed. A stainless steel submersible pump, operated by Dragin Drilling, was used for well development. All pumps and hosing were decontaminated using a high-pressure rinse before and between use in each well.

6.2.2 Monitoring Well Network

With the installation of these 16 wells and the additional wells described below, the monitoring well network at the Site now consists of 40 overburden monitoring wells, 31 shallow bedrock monitoring wells, and 8 deep bedrock monitoring wells. Forty-six of the monitoring wells are located on-site (west of Route 152), and 33 are located east of Route 152. The locations of the monitoring wells are shown on Figure 3.1. Note that the monitoring well cluster MW24A/B/C and monitoring well MW39 were removed in 2002 due to the planned site development by the owner of the property.

The monitoring well network includes two overburden/shallow bedrock monitoring well pairs (MW40A/B and MW41A/B) installed by Marin Environmental, Inc. in October 2001 to provide additional information regarding natural attenuation of CVOCs along the centerline of the plume, and one deep bedrock monitoring well (MW25C located adjacent to the existing MW25A/B well pair) installed by ECS Marin in June 2003 as part of an investigation into the hydraulic performance of the GSM. Boring logs for these five wells are provided in Appendix B. Construction details are presented in Table 3.1.

The piezometer network surrounding the GSM was also expanded by ECS Marin in 2003 to include ten additional piezometers (consisting of five overburden/shallow bedrock piezometer pairs – P11/11a, P12/12a, P13/13a, P14/14a and P15/15a) bringing the total number of piezometers around the GSM to 30. These piezometers are used for collecting water level information and monitoring performance of the GSM; these data have been presented in a number of reports (ECS, 2004; ECS, 2005; LFR, 2006a).

In addition, several piezometers/wells were installed in December 2003 and March 2004 by ECS as part of the Supplemental Design Investigation for the Courtyard Area (AOC 7; ECS, 2004). Forty-six soil borings were advanced in the courtyard and surrounding area with a

4¼-inch hollow stem auger. Eight of these borings were completed as 2-inch diameter monitoring wells (MW101, MW102, MW103, MW104, MW106, P16, P21 and P23), one boring was completed as a 4-inch diameter monitoring well (P20), and two borings were completed as pairs of 1-inch diameter piezometers (P15-CY/P15a-CY; P17/P17a).

One additional bedrock monitoring well (MW105) was installed in the Upper Courtyard Area by ECS in August 2004 in order to better characterize ground water in the vicinity of the dry well in this area (see Section 8.1.5). The monitoring well was completed as an open borehole (drilled with an NQ core barrel) from 29 – 42 feet bgs and 4-inch steel casing grouted into bedrock, which was encountered at 24 feet bgs.

In September 2005, three additional wells (LFR-1, LFR-2 and LFR-3) were installed as part of the dual-phase vapor extraction system (LFR, 2006a; see Appendix E). These wells are approximately 40 feet deep and are screened through the overburden and bedrock. Well locations for all wells are provided in Figure 3.1 and boring logs for these wells/piezometers are provided in Appendix B.

6.2.2.1 Additional Monitoring Wells Installed After 2006

Drive-In Property Wells. In July-August, 2007 LFR Inc. performed an ASTM Phase II Environmental Site Assessment (ESA) on the 21.1 acre former drive-in property located across the street from the main facility at 43 Taunton Street. Seventeen soil borings were drilled as part of the subsurface investigation of the property and two of these borings were completed as overburden monitoring wells (MW51A and MW52) and two of these borings were completed as bedrock monitoring wells (MW50 and MW51B). Monitoring well construction details are provided in Table 3.1; boring logs are provided in Appendix B.

Courtyard Replacement Wells. Nine existing monitoring wells (P16, P17, P17a, P20, P21, P23, LFR1, MW28 and MW105) were destroyed during the excavation of the former drywell in the Upper Courtyard in late 2007. In order to assess post-remediation concentrations in groundwater, five new monitoring wells were installed downgradient of the former drywell including one shallow overburden well (MW53A), one shallow bedrock well (MW53B), and three deep bedrock wells (MW53C, MW45C and P12b).

The monitoring wells/piezometers were drilled and installed by Geosearch Inc of Fitchburg, MA from April 15 to 30, 2009. At each location, the overburden was drilled using hollow stem augers. At all bedrock monitoring locations, the bedrock was isolated from the overburden by tremie grouting 4-inch diameter steel casing through the overburden and approximately five feet into the bedrock using a 5% bentonite/95%cement grout. The bedrock was then drilled to depth using a 4-inch diameter air hammer (LFR Inc, 2009c).

The shallow overburden well was installed immediately over the surface of the bedrock. The shallow bedrock monitoring well was installed to penetrate 30 feet into the upper bedrock to match the construction of existing shallow bedrock monitoring wells and piezometers. The final installation of the deep bedrock monitoring wells was decided after completion of test borings to a depth of 200 feet bgs based on field headspace screening of rock cuttings and field observations.

The well triplet (MW53A/B/C) was installed through the former Building 1 slab approximately 60 feet east of former P17, and the two deep bedrock wells (MW45C and P12b) were installed adjacent to existing MW45A/B and P12/12a, respectively (see Figure 3.1).

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Monitoring well construction details are summarized in Table 3.1 and boring logs are provided in Appendix B.

In addition, one bedrock monitoring well (MW17) was decommissioned because geophysical testing of the well revealed a break in the steel well casing at approximately 30.7 feet bgs at the location of a well coupling. This well was replaced with a well of similar construction (MW17R, see Table 3.1) approximately ten feet north of the original well.

Two additional overburden piezometers (P16 and P18) and one additional shallow bedrock piezometer (P17a) were installed downgradient of the GSM and HDPE barrier wall to provide additional information related to performance of the GSM. Construction details are provided in Table 3.1. Overburden piezometer P16 was installed as a couplet with the deep bedrock piezometer P16c and overburden piezometer P18 was installed approximately 110 north of P17a, immediately east of Taunton Street (see Figure 3.1). The shallow bedrock piezometer originally planned for P16c was not installed initially due to the presence of VOCs observed in groundwater at a depth of approximately 300 feet bgs. However, this piezometer was installed later in order to be consistent with the other shallow bedrock piezometers surrounding the GSM. Shallow bedrock well P17a was installed approximately 205 feet north of the P16/16a/16c cluster, downgradient of extraction well EW03.

Very Deep Bedrock Wells. In order to evaluate the groundwater quality in deep bedrock east of Sawmill Brook, two deep bedrock sentinel wells were installed by LFR Inc. in August and September 2010 adjacent to existing overburden and shallow bedrock monitoring wells. The wells were installed to 300 feet bgs adjacent to the MW33 triplet (MW33D) and adjacent to the MW43 pair (MW43D), as shown on Figure 3.1. In addition, in order to provide vertical hydraulic gradient data, an overburden well (MW43A) was installed at the MW43 well cluster. Monitoring well construction details are summarized in Table 3.1 and boring logs are provided in Appendix B.

Southern Perimeter Wells. Two additional monitoring wells (MW54A/B) were installed in August 2010 to assess the potential for off-site migration of CVOCs in groundwater south of AOC B. The overburden/shallow bedrock monitoring well pair is located south of AOC 16 and MW05. Monitoring well construction details are summarized in Table 3.1 and boring logs are provided in Appendix B.

All new wells were surveyed by Massachusetts-licensed Hancock Associates of Marlborough, Massachusetts on August 5, 2009 and on September 28, 2010.

6.2.3 Water Level Monitoring

On February 24, 2006 and April 4, 2006, ENVIRON and LFR measured ground water levels in the monitoring wells at the Site to the nearest 0.01 foot using Solinst water level indicators. Water level measurements are reported in Table 4.2.1a. Measurements at each well were made from the highest point on the casing or a marked survey point.

In order to obtain ground water gauging data for all wells on the same date, the winter gauging event did not occur until February 24, 2006, after MW42 had been completed. However, the ground water sampling program began in December (since the other new wells had been completed by that time). Thus, for all wells but MW42, water level gauging was completed after purging and sampling. However, since the two events were separated

by approximately a month, there was ample time for the wells to recover from sampling and re-achieve static conditions.

Of the on-site wells stipulated to be checked for NAPL, only those installed by ENVIRON in 2005 were tested, since past experience with the pre-existing wells has demonstrated that none of these wells contain NAPL. Testing for NAPL was accomplished by lowering a bailer into the water column, and recovering the interval at the water table and from the bottom of the well.

Additional water level measurements have been made during annual groundwater monitoring events on 11/9/06, 11/26/07, 10/24/08, 10/22/09, and 11/10/10. These data are provided in Table 4.2.1a. Water level measurements are also collected from selected wells as part of the GSM monitoring program. These data are provided in Table 4.2.1b. The monitoring frequency was approximately monthly beginning in 1999 and then changed to quarterly beginning in 2006.

6.2.4 Sampling Methodology

6.2.4.1 Well Purging

The work plan called for all wells to be monitored for the presence of non-aqueous phase liquids (NAPL) prior to purging and sampling. Standing water in each well was then purged using a bladder pump and low flow techniques. During purging, the pH, temperature, conductivity, turbidity, oxidation-reduction potential (ORP), and dissolved oxygen (field parameters) of the extracted ground water were measured at a minimum of 5-minute intervals. The purged water was discharged to the ground surface.

No variations from the work plan for the well purging occurred except as described below.

Monitoring the stability of the field parameters varied from what was stipulated in the work plan in that turbidity was considered to be stable if readings were below 5 NTUs. This is because 5 NTUs is at the lower limit of the instrument's capabilities, and the inherent inaccuracy of the instrument near the lower limit resulted in readings from the same sample that varied by more than 20%.

Purging of MW48A and MW49 in the winter sampling event was completed using a peristaltic pump, because no power supply (battery pack) could be obtained for a bladder pump.

Well MW42 could not be purged using a bladder pump because the compressor was apparently unable to generate sufficient pressure to inflate the bladder at the greater depth of this well; a submersible Grundfos pump was used for purging the well.

6.2.4.2 Ground Water Sample Collection

Groundwater samples were collected using low-flow sampling techniques and equipment in an effort to ensure that samples were representative of aquifer conditions. In most instances, groundwater samples were collected with a bladder pump or other type of positive displacement pump. Ground water samples were placed directly into laboratory-prepared containers, labeled, stored on ice in a cooler, and delivered to the laboratory in accordance with standard chain-of-custody procedures.

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No variations from the work plan for the ground water sample collection occurred except as described below:

Sampling of MW42 varied from what was stipulated in the workplan in that the dissolved metals sample was re-collected a day after the initial sample using a disposable bailer. The initial sample could not be filtered and preserved in the field on February 24, 2006 because the well was purged with a submersible Grundfos pump, and samples were collected with a bailer, for which no field filtration equipment was available. Unaware that the sample was unfiltered, the laboratory added preservative to the sample upon receipt, which would bias the results high. Therefore, on February 25, 2006 a new sample for dissolved metals was collected utilizing a disposable bailer.

The sampling of MW48A and MW49A varied from the work plan in that both wells were sampled utilizing a peristaltic pump (in the winter event only) because they were located inside the building, and no power supply was available for the bladder pump, which was intended to be used. In the April sampling event, MW49B was sampled using a bladder pump, however, the bladder pump malfunctioned during sampling of MW48A, and so the peristaltic pump was again utilized.

6.2.4.3 Equipment Decontamination Procedures

All equipment used during groundwater sampling was decontaminated prior to operation using a low-alkaline, low-phosphate detergent solution and rinsed with deionized water. Steam cleaning was not used to decontaminate the pump or external pump lines. This was not determined to be necessary because bladder pumps were being used, in which a new bladder was used on each well, and the pump was disassembled and cleaned with a low phosphate detergent solution and rinsed with deionized water prior to reuse. In addition, external pump lines were dedicated to each well.

6.2.5 Chemical Analytical Program

The Supplemental RFI included a comprehensive ground water sampling event conducted between December 15, 2005 and January 19, 2006. Installation of one deep bedrock monitoring well (MW42) was not completed until February 7, 2006 due to drill rig access issues. This well was sampled on February 24, 2006.

Monitoring wells included in the comprehensive ground water monitoring event are identified in Table 6.2.1. All ground water samples including duplicate QC samples were analyzed for VOCs by USEPA Method 8260B, and filtered and unfiltered (total and dissolved) metals using USEPA Method 6020 and 7470A. In addition, ground water samples from selected wells, as indicated in Table 6.2.1, were analyzed for natural attenuation parameters.[34] The trip blank samples were analyzed for VOCs using USEPA Method 8260B.

All new wells installed as part of the Supplemental RFI were re-sampled in April 2006 to verify initial sampling results. These wells were analyzed for VOCs and total and dissolved metals. In addition, a select number of wells were re-sampled in June 2006 and analyzed for VOCs using EPA Method 8260B to better define the lateral extent of the ground water plume to the north of Building 8, and investigate potential effects from increased pumping at extraction well EW02. The shallow bedrock monitoring well MW29, which is located along

34 Natural attenuation parameters include dissolved gases (ethane, ethene, methane, carbon dioxide), total alkalinity, total organic carbon, and selected anions (nitrate, nitrite, sulfate, sulfide and chloride).

the northern wall of Building 8, and the monitoring well pair MW32A/B which is located approximately 170 feet north of MW29, were last sampled in 1997. Although, ground water flow is to the east in this area, these wells were re-sampled to provide a current assessment of the plume in this area.

Recent improvements in the operation of the Groundwater Stabilization Measure (GSM) have resulted in increased pumping of EW02 from about 5 gallons per minute (gpm) to about 18 gpm beginning in 2005-2006 and to about 28 gpm in 2010. The increased pumping rate could have an effect on source areas previously outside the influence of this pumping well. Monitoring wells MW04, MW15, MW17, P13 and P13a are the nearest wells/piezometers located downgradient of EW2 and were re-sampled in August 2006 to provide a reasonable assessment of any potential effects in this area.

6.2.6 Summary of Data

VOC analytical results are presented in Table 6.2.2. Total and dissolved metals analyses are reported in Table 6.2.3 and selected MNA parameters are reported in Table 6.2.4. A comprehensive evaluation of ground water monitoring data collected to-date is provided in Section 9.2.

6.3 Soil Gas Investigation

An updated soil gas survey of the vadose zone soils beneath Buildings 8 and 10 was performed in July/August 2005 as part of the Supplemental RFI field investigation in order to further characterize the nature and extent of the vapor plume observed in prior soil gas surveys of this area and identify potential VOC source areas. These data will also be used to aid in the design of any engineering controls, which may be implemented to mitigate the migration of VOCs into indoor air. The sampling and analysis was conducted by Pine & Swallow Associates, Inc. (PSA) of Groton, Massachusetts, under the supervision of ENVIRON personnel. The soil gas investigation report is provided in Appendix F. The sampling methodology and analytical results are summarized below.

6.3.1 Soil Gas Sampling Program

The original sampling grid established in the work plan included 85 locations arranged in a grid pattern on 50-foot centers and a finer grid pattern on 25-foot centers surrounding AOCs 5, 6, and 30. Based on the results of the initial samples, eight additional locations were tested for a total of 93 locations sampled. The sampling grid extended from Building 10 to the eastern wall of Building 8 and south of Building 8 to encompass the adjoining building slabs to the vicinity of AOCs 22, 26, and 30. Sampling locations are shown on Figure 6.3.1.

6.3.2 Sampling Methodology

Soil gas samples were collected for chemical analysis in general conformance with methods outlined in the Supplemental RFI Work Plan. Ninety-three soil gas sampling locations were installed by coring through the concrete and driving a half-inch, steam-cleaned, hollow steel probe below grade by hand-held or drill rig-mounted equipment. The probe was fitted with a disposable drive point that was advanced to final depth, and then pulled back 6 inches to create a sampling cavity.

Samples were collected by fitting a tubing adaptor to the top of the sampling probe, and connecting the probe to a monitoring panel and vacuum pump using disposable silicone tubing. In the sampling mode, the silicone tubing was fitted with syringe needles and

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samples were collected in sealed autosampler vials after purging the sampling system and vial with soil gas for approximately 30 seconds. Soil gas samples were delivered immediately to the on-site mobile laboratory for analysis. Duplicate and equipment blank samples were collected in general conformance with the work plan.

Although the work plan stipulated that soil gas probes be advanced to approximately two feet below the concrete slab, actual depths achieved ranged from 15 inches to 44 inches below the concrete slab due to cobbly subsurface conditions that prevented further probe penetration. As indicated in the soil gas testing report, refusal was encountered at 17 inches at SG-G6, 19 inches at SG-E1, 17 inches at SG-E2, 23 inches at SG-G5, 2 inches below slab at SG-B-3W, and 15 inches at SG-D2. Because of poor seal or reduced probe depth, the top of the probe was sealed with bentonite at locations SG-I7, SG-H5, SG-C4, SG-D1, SG-A4, and SG-D2 to obtain a proper seal.

6.3.3 Chemical Analytical Program

Soil gas samples were analyzed using a Hewlett Packard Model 5890 gas chromatograph (GC) fitted with a Tekmar 7000/7050 Autosampler and electron capture detector. The samples were analyzed for a limited suite of CVOCs (PCE; TCE; TCA; cis-1,2-DCE; trans-1,2-DCE; 1,1-DCE; 1,2-DCA; 1,1-DCA and vinyl chloride) including the primary CVOCs previously identified at the site. This reduced the number of standards for which the gas chromatograph field instrument needed to be calibrated and that needed to be periodically re-run, and facilitated collection of “real-time” data needed to make on-site decisions about further sampling. Since the relative soil vapor concentrations were to be used solely as a screening tool, the approach used fulfilled the requirements of the work plan.

Field quality control samples were collected in conformance with the guidelines of the Supplemental RFI Work Plan.

6.3.4 Summary of Data

Soil gas analytical results are presented in Table 6.3.1; and PCE and TCA isoconcentration contours are presented in Figures 9.3.3 and 9.3.4. A comprehensive evaluation of the soil gas testing results in relation to historical data is provided in Section 9.3.

6.4 Surface Water

The Draft RFI Report (ENVIRON, 1999) included an ecological risk assessment (ERA) based on site-specific chemical concentrations in surface water, sediment, soil and fish tissue samples as well as wildlife and habitat surveys of the site and surrounding off-site areas. The results of the ERA indicated that ecological risks were moderate in the south embayment of Turnpike Lake adjoining the Site, largely due to the presence of metals in sediments. In addition, the characterization of ecological impacts in areas east of the Facility was limited by uncertainties in the data. Therefore, additional surface water and sediment sampling was conducted in Turnpike Lake and in Sawmill Brook and its tributaries located in the low-lying area east of the Facility in 2005. These data were incorporated into the 2007 Draft RFI Report. In response to comments received by EPA on the 2007 Draft RFI Report, additional testing was conducted in 2010.

6.4.1 Surface Water Sampling Program

2005 Sampling Event. A total of 29 surface water samples, including three duplicates, were collected in May/June 2005 and April 2006 during the Supplemental RFI

field investigation. Twenty-three surface water samples were collected from Sawmill Brook and the associated stream system located in the low-lying area east of Route 152; and six samples were collected from Turnpike Lake. Surface water sample locations were recorded with a Global Positioning System (GPS) unit and are shown in Figure 6.4.1. The surface water sampling program is described in Table 6.4.1.

Along Sawmill Brook and in the low-lying wetlands east of Route 152, samples of filtered and unfiltered surface water were collected at six previous sampling locations (SW-01, SW-02, SW-03, SW-04, SW-05, and SW-11) and six new locations (SW-14, SW-15, SW-16, SW-17, SW-18, and SW-19). One of these samples (SW-19) was collected from the private impoundment immediately downgradient of the southern spillway, and two pairs of samples (SW-14 and SW-15) were collected in an area suspected to be influenced by ground water seeps. These latter two sample locations were sampled in June 2005 and again in April 2006 under lower flow conditions. Duplicate samples were collected at SW-03 and SW-04. Each of these filtered and unfiltered surface water samples were analyzed for metals; unfiltered samples were also analyzed for VOCs.

In addition to these 12 locations, seven surface water samples (SW-201 through SW-207) were collected in support of the monitored natural attenuation (MNA) program. The purpose of this sampling is to provide supplemental data to support an evaluation of the natural attenuation of chlorinated hydrocarbons in ground water. Unfiltered samples were collected from all seven locations and analyzed for VOCs. Five of these samples (i.e., SW-201, SW-202, SW-204, SW-206, and SW-207) were also analyzed for filtered and unfiltered metals. The surface water sampling locations are presented in Figure 6.4.1.

Six samples (including one duplicate at SW-08) were collected from Turnpike Lake at locations SW-06, SW-07, SW-08, SW-09A and SW-12. As shown in Figure 6.4.1, sample SW-06 was collected from the south embayment, SW-07 was collected along the eastern shoreline due west of the facility, and SW-08 was collected near the northern spillway. Samples SW-09A and SW-12 were collected from background locations south and west of the Facility. All five locations were previously sampled during the Phase II field investigation.

2010 Sampling Event. Five additional surface water samples were collected from Sawmill Brook (SW-SD-47), Turtle Brook (SW-SD-48, SW-SD-60, and SW-SD-61) and an upstream background location (SW-SD-TRIB) in June, 2010 to address EPA's concerns that metals were not fully delineated in the downstream portion of Sawmill Brook and its confluence with Turtle Brook and support a sediment quality triad approach associated with sediment toxicity testing. Surface water sampling locations are shown in Figure 6.4.1.

6.4.2 Sampling Methodology

2005 Sampling Event. Surface water samples were collected using collection methods and instruments consistent with the Supplemental RFI Workplan (ENVIRON, 2005). Surface water grab samples were collected at each location using peristaltic pumps in order to minimize potential volatilization of organics and inclusion of suspended sediments in the sample. Disposable tubing was inserted into the water to a depth of approximately 0.5 feet below the water surface, or halfway between the water surface and the sediment bed, whichever was shallower. Field filtration was performed with the peristaltic pump and an inline 0.45 micron disposable cartridge filter. Used tubing was discarded after each sampling station. Water quality measurements including pH, dissolved oxygen, conductivity,

total dissolved solids, water temperature, turbidity, and oxidation-reduction potential were recorded after collection of water samples. Field measured water quality data are reported in Table 6.4.2 along with stream profile measurements (width, depth and approximate flow rate), where applicable.

2010 Sampling Event. Surface water samples were collected using collection methods and instruments consistent with the Supplemental Surface Water and Sediment Sampling Quality Assurance Project Plan (ENVIRON, 2010). Surface water samples were collected by lowering a laboratory-supplied sample container into the water, and filling it to an appropriate level without the loss of preservative. Additional water samples were collected in unpreserved containers and filtered at the lab to establish dissolved metals concentrations. Field measured water quality data are reported in Table 6.4.2.

6.4.3 Chemical Analytical Program

Surface water samples were analyzed for VOCs using EPA Method 8260B, except for samples SW-14 and SW-15 which were collected in April 2006 and analyzed for a shorter list of VOCs using EPA Method 8260. Total and dissolved metals were analyzed using EPA Methods 6020 except for mercury which was analyzed using Method 7470A. Samples collected in 2010 were also analyzed for hardness using Standard Method 2340B.

6.4.4 Summary of Data

VOC concentrations detected in surface water samples are reported in Table 6.4.3. Total and dissolved metal concentrations are reported in Table 6.4.4 along with hardness data.

6.5 Sediment Sampling

Additional sediment sampling was conducted in Turnpike Lake and Sawmill Brook in 2005 and in 2010 to document any changes in sediment quality conditions that may have occurred since 1997 when these areas were last sampled, and further characterize potential ecological risks from exposure to metals, VOCs, PCBs and radionuclides. Sediment samples were also collected to evaluate the bioavailability of metals in sediments and determine the potential for migration of particulate-bound or dissolved phase contaminants from Turnpike Lake.

6.5.1 Sediment Sampling Program

2005 Sampling Event. A total of 49 sediment samples, including three duplicates, were collected in late May and early June 2005 during the Supplemental RFI field investigation. Forty-two sediment samples were collected from Sawmill Brook and the associated stream system located in the low-lying area east of Route 152; and seven samples were collected from Turnpike Lake. Sample locations were recorded with a Global Positioning System (GPS) unit and are shown in Figure 6.5.1. The sediment sampling program is described in Table 6.5.1.

2010 Sampling Event. A total of 33 samples (including three duplicates) were collected in June and October during the 2010 sampling event. Sixteen samples were collected from Turnpike Lake and seventeen additional samples were collected from Sawmill Brook. Sample locations were recorded with a GPS unit and are shown in Figures 6.5.1 and 6.5.2. The sediment sampling program is described in Table 6.5.1.

6.5.1.1 Turnpike Lake

2005 Sampling Event. Five sediment samples (including one duplicate) were collected from four locations (SD-41, SD-42, SD-43 and SD-44) in the south embayment of Turnpike Lake; and two samples (SD-09A and SD-10A) were collected from background locations in the southwest and northern reaches of the lake (see Figure 6.5.1). All lake samples were analyzed for priority pollutant metals, SEM/AVS, PCBs and TOC. In addition, because hydrocarbons were stored in the courtyard area near AOC 7 and have been detected in soils on the south side of the Facility, additional tests for volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH) were conducted on all Lake samples to determine if hydrocarbons have accumulated in Lake sediments.

2010 Sampling Event. A total of sixteen additional sediment samples (including two duplicates) were collected from Turnpike Lake in 2010. Two sediment samples (SD-43 and SD-44) were collected from the south embayment, and one sediment sample was collected from a background location (SD-09A), and analyzed for VOCs, metals, SEM/AVS and TOC as part of a sediment quality triad analysis to support the ERA for the Site (see Figure 6.5.1). In addition, four samples including one duplicate (SD-308, SD-309, SD-309dup, and SD-310) were collected to further define the extent of radionuclide presence in the south embayment, and nine samples including one duplicate (SD-311, SD-312, SD-313, SD-314, SD-319, SD-319dup, SD-320, SD-321 and SD-322) were collected to further define the extent of PCB and/or cadmium concentrations in the south embayment (see Figure 6.5.2).

6.5.1.2 Sawmill Brook and Related Streams

2005 Sampling Event. Forty-two sediment samples (including two duplicates) were collected from Sawmill Brook and the associated stream system located in the low-lying area east of Route 152. Surface sediment sampling was conducted at five previous sampling locations (SD-01, SD-02, SD-03, SD-04, and SD-05) and at three new locations along the previously sampled reach of Sawmill Brook (SD-49, SD-50, and SD-51). Duplicate samples were collected at locations SD-01 and SD-03. In addition, two surface sediment samples (SD-45 and SD-46) were collected in the wetland area where ground water intrusion is suspected; and two surface sediment samples (SD-47 and SD-48) were collected at downstream locations on Sawmill Brook. SD-47 was collected in the vicinity of SD-40 (sampled during RFI Phase II) and SD-48 was collected approximately 100 to 200 feet downstream in a reach of the stream that appears to be an area of sediment deposition. Sediment samples collected from each of these 12 locations were analyzed for metals, VOCs, PCBs, and TOC. In addition to reporting total metal concentrations, all locations were tested for AVS/SEM to evaluate metal bioavailability.

Twenty-eight sediment samples from 14 other locations were collected in 2005 in support of the monitored natural attenuation (MNA) program. The purpose of that sampling was to provide supplemental data to support the on-going evaluation of the potential occurrence of natural attenuation of chlorinated hydrocarbons in ground water. These 28 sediment samples were collected along Sawmill Brook in and downgradient of the primary ground water discharge area. Sediments were collected from two depth intervals (0 – 0.5, and 1 – 2 feet bgs) to evaluate the vertical distribution of any constituents detected in the sediment. The depth intervals were selected based on previous sampling data indicating a total sediment thickness of approximately two feet. These 28 sediment samples were analyzed for VOCs and TOC. Samples located on the main branch of Sawmill Brook (i.e., SD-201, SD-202, SD-204, SD-206, and SD-207 through SD-214) were also analyzed for metals.

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2010 Sampling Event. Seventeen additional sediment samples (including one duplicate) were collected from Sawmill Brook and the associated stream system located in the low-lying area east of Route 152 in 2010. Four sediment samples (SD-47, SD-48, SD-60 and SD-61) were collected to further delineate the extent of contamination beyond the confluence of Sawmill Brook and Turtle Brook; six samples (SD-46, SD-46 DUP, SD-50, SD-202, SD-214 and SD-TRIB) were collected to support interpretation of the sediment toxicity testing results (Figure 6.5.1); and seven samples (SD-301 through SD-307) were collected to evaluate the potential presence of uranium in Sawmill Brook (Figure 6.5.2).

6.5.2 Sampling Methodology

Sediment samples were collected using collection methods and instruments consistent with the approved RFI Workplan (ENVIRON, 2005) and Supplemental Surface Water and Sediment Sampling Quality Assurance Project Plan (ENVIRON, 2010). Surface sediment grab samples from Sawmill Brook were collected in wadeable waters by scooping sediment from the sediment bed using a large, cleaned, stainless steel serving spoon into stainless steel bowls. Efforts were made to minimize the loss of fine particle size material associated with the bottom of the surface water body when the scoop method was used. Excess water was carefully poured out of the scoop to minimize surface water in the sediment sample. Where sediments were collected from 1 to 2 feet below the sediment surface, a polycarbonate tube (used for collecting subsurface core samples) was inserted into the sediment, and pushed until refusal or two feet deep. The core tube was removed and the sediment sample was collected by slicing the appropriate sections of core tubing, and placing the sampled material in stainless steel bowls. The sampling caused some sediment compression, which was accounted for when samples were collected. Regardless of sampling method, samples for VOC analysis were collected first and then the remainder of the sample was homogenized prior to collection of other samples.

Surface samples from Turnpike Lake were sampled using an Eckman dredge and placed in a stainless steel bowl. Sediment samples collected by Eckman dredge were inspected by the field team leader to make sure the sample was acceptable (not washed out, desired sampling depth achieved, etc.). No lake samples were analyzed for VOCs.

6.5.3 Chemical Analytical Program

Total and dissolved metals were analyzed using EPA Methods 6020 except for mercury which was analyzed using Method 7470A. TOC measurements were determined using the Lloyd Kahn Method. Sediment samples were analyzed for VOCs using EPA Method 8260B and PCB analyses were conducted using EPA Method 8082. Determinations of AVS and SEM were made following EPA's Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment (USEPA, 1991e - EPA-821-R-91-100); VPH/EPH analyses were conducted using MassDEP Methods for Determination of VPH and EPH (revision 1.1).

6.5.4 Summary of Data

Total metal concentrations are reported along with TOC data in Table 6.5.2. VOC analytical results are reported in Table 6.5.3; PCB results are reported in Table 6.5.4; SEM/AVS data are reported in Table 6.5.5, VPH/EPH data are reported in Table 6.5.6, grain size analyses are summarized in Table 6.5.7 and uranium data are reported in Table 6.5.8. Data interpretation is provided in Section 9.5.

6.6 Benthic Macroinvertebrate Surveys

6.6.1 2005 Benthic Survey.

Biological sampling was conducted in 2005 using multi-habitat field sampling procedures appropriate for the habitat in each location (USEPA, 1999e). Standard kick-nets and D-frame dip nets (e.g., 500 micron [µm] opening mesh) were used to systematically collect benthic macroinvertebrates. A total of 20 kicks (riffle habitat), dips (pool, run, and embayment habitat), and jabs (snag habitat) were used to collect the organisms, though some adaptation to available habitat was required. The organisms (and other material such as sand and organic material) were collected and composited into a single sample for each of the sampling locations. Benthic macroinvertebrates were partially field picked and preserved in ethanol (i.e., organisms that could be separated from sand and other material were separated at the time of sampling and preserved for shipment to the lab). Remaining sampling material (e.g., sand and organic material) was packed on ice. Samples were shipped to a taxonomic laboratory (Pennington and Associates, Cookeville, TN) for identification of genus and species. Results and interpretation of the benthic macroinvertebrate study are provided in the Ecological risk Assessment (Section 11.0).

6.6.2 2010 Benthic Survey

Unlike the 2005 benthic survey, the benthic macroinvertebrate sampling conducted in 2010 focused on collection of organisms from within the upper six inches of sediment or at the sediment-water interface. Sediment was collected for toxicity testing in accordance with the the Supplemental Surface Water and Sediment Sampling Quality Assurance Project Plan (ENVIRON, 2010) Sediment samples were collected using a petite ponar dredge in Turnpike Lake and collected with a D-Frame macroinvertebrate sampling net in the wetlands. Three one-foot square samples were collected at the following locations: SD-09A, SD-43, SD-44, SD-46, SD-214, SD-202, and the Sawmill Brook background location. Samples were shipped to a taxonomic laboratory (Pennington and Associates, Cookeville, TN) for identification of genus and species. Results and interpretation of the benthic macroinvertebrate study are provided in the Ecological Risk Assessment (Section 11.0).

6.7 Sediment Toxicity Testing

Sediment was collected for toxicity testing using a petite ponar dredge in accordance with the Supplemental Surface Water and Sediment Sampling Quality Assurance Project Plan (ENVIRON, 2010). Sediment samples were shipped to ENVIRON's toxicity testing laboratory in Nasheville TN. Toxicity testing consisted of 28-day tests measuring both survival and growth of *H. azteca* exposed to 100% sediment collected from the test and background locations, as well as a laboratory-provided standard negative control sediment according to EPA Method 100.4 (USEPA 2000). Eight replicates were performed for each sample. Laboratory supplied, dechlorinated tap water (pH approximately 7.5, hardness approximately 100 mg/L) was used in the analyses. Sediment samples were allowed to equilibrate for a period of at least 24 hours, or when the pH of the overlying water was stable at pH greater than 6.0 prior to testing.

The first round of toxicity testing was completed in September of 2010, and included the following samples: SD-09A, SD-43, SD-44, SD-46, SD-50, SD-202, SD-214, and the reference location SD-TRIB. As planned in the QAPP, initial toxicity testing did not include locations SD-47 and SD-48 because the suite of samples identified for toxicity testing were expected to cover a range of detected metals that would include the range detected at SD-

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47 and SD-48. However, because SD-47 and SD-48 had higher concentrations of metals than most of the other samples in Sawmill Brook that were included in the sediment toxicity testing, these samples were ultimately included in a second round of toxicity testing, which included SD-47, SD-48, and a Sawmill Brook background location. The results from both phases of testing are presented in detail in Appendix K and summarized in Table 11-11.

6.8 Analyzing Data Adequacy

The supplemental data collected for the ground water, surface water, soil and sediment physical characterization program and the migration/dispersal characterization program were validated and are judged to be useable. These data are used for the source and waste characterization study required by Section IX of the Consent Order and presented in Sections 8.0 and 9.0 of this report.

6.9 Data Validation

The analytical data verification program was presented in the Quality Assurance Project Plan (QAPP), Engelhard Corporation (ENVIRON, 2004). Validation of data obtained from field measurements was performed by checking calibration procedures utilized in the field, and by comparing the data to previous measurements, if any, at the specific site. Laboratory analytical data was validated using the criteria specified in the USEPA Region I *Tiered Organic and Inorganic Data Validation Guidelines, July 1, 1993* and EPA New England's *Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996*. Tier II Data Validation was performed for the data collected in this Supplemental RFI field investigation. The laboratory analytical data summary tables include data qualifiers, where appropriate, that were the result of the data validation process. The data validation reports, presented in Appendix G, include the rationale for specific data qualifiers.

According to the QAPP, data generated during this project will be considered adequate if they are 80% complete in accordance with USEPA's *Data Quality Objectives for Remedial Response, March 1987*. The analytical data collected for each media (ground water, surface water, sediment and soil) were evaluated separately to determine the percent completeness achieved during the Supplemental RFI field investigation by comparing the number of unusable data to the total number of data for each analytical suite (for example, volatiles or semi-volatiles). As shown on Table 6.8.1, the percent completeness achieved was 92% for sediment (VOCs only) and 100% for all other media. The less than 100% completeness achieved for the sediment samples was due to the peaty nature of these materials with total organic carbon contents as high as 48.5%. Due to the high organic carbon content, the laboratory encountered some difficulty recovering internal standards from some sediment samples and the corresponding VOC analyses had to be rejected and classified as unusable.

7 Environmental Setting

7.1 Physiography and Topography

BASF Facility is situated on the eastern shore of Turnpike Lake and is located within the Lower New England Physiographic Province (Coastal Hills Subregion). The general topography of this subregion consists of gently rolling hills with generally low relief (USDA, 1989). Within the study area, Turnpike Lake is at an elevation of approximately 196.5 feet (59.9 meters) above mean sea level (msl) and the majority of the Facility is at an elevation of approximately 196.9 feet (60 meters) above msl (USGS, 1987). Elevations drop relatively quickly to about 177 feet (54 meters) east/northeast of the Facility, remain relatively flat in the area occupied by the low-lying wetlands and Sawmill Brook, and rise again to the east of the floodplain. A three-dimensional representation of the topography surrounding the BASF Facility is shown in Figure 2.5.

7.2 Climatic Conditions

The latitude of the Plainville area is in a region of prevailing west to east atmospheric flow. Both polar and tropical air masses influence the region. Eastern Massachusetts is situated on or near several tracks frequently followed by low-pressure storm systems. Coastal storms, or “northeasters”, generally produce the most severe weather. The weather fluctuates regularly from fair to cloudy to stormy. The Site’s proximity to Narragansett Bay and the Atlantic Ocean has a moderating influence on temperature extremes of winter and summer.

7.2.1 Precipitation

The Providence, Rhode Island weather station is located approximately 15 miles southwest of the Facility. Monthly average precipitation data from the Providence, Rhode Island weather station over the thirty-year period of 1971 – 2000 is plotted in Figure 7.2.1. Average monthly precipitation over this time period varies from about 3.2 to 4.5 inches and totals about 46 inches on an annual basis. There is usually no definite dry season, but occasional droughts do occur. May, June and July are typically the driest months when intense, short-duration thunderstorms are responsible for much of the rainfall. The first measurable snowfall of winter usually occurs at the end of November, and the last about mid-March. Most snowfall occurs between January and March. Winters with over 50 inches of snow are uncommon, and the area generally receives less than 25 inches. It is unusual for the ground to remain snow-covered for extended periods of time.

7.2.2 Temperature

Monthly average temperatures recorded at the Providence, Rhode Island weather station over the thirty-year period from 1971 – 2000 are plotted in Figure 7.2.1. The mean annual temperature is 51 degrees Fahrenheit (°F). In the summer months, temperatures can average near 80 °F in warmer years and 60 °F in cooler years. Few days (5 – 20 days) experience temperatures exceeding 90 °F. On average, temperatures reach 32 °F or lower for 150 days out of the year.

7.2.3 Wind Patterns

Prevailing winds are from the north/northwest during the winter months (December through March), and mostly south/southwest for the remainder of the year. The average wind speed for the ten-year period from 1981 to 1990 was 10.4 miles per hour. The wind rose for the

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period of 1981 to 1990 is presented in Figure 7.2.2 and was constructed using hourly wind records from the Providence, Rhode Island weather station.

7.3 Surface Water and Sediments

This section includes a discussion of the major rivers, streams, drainage patterns, and sources of infiltration.

7.3.1 Hydrologic Setting

The Facility is located in an area that is characterized by flat to gently rolling or hummocky terrain with a number of small lakes, ponds and wooded wetland areas. Turnpike Lake, which is man-made, borders the Facility on the west and south. Sawmill Brook and low-lying wetland areas are located to the east across Taunton Street (Route 152) and Turtle Brook runs west to east, north of the Site. Turnpike Lake has two surface outlets, one from the embayment immediately south of the Facility, and one approximately 0.13 miles to the north of the Facility. The surface outlet to the north empties into Turtle Brook, and the surface outlet to the south empties into Sawmill Brook, which eventually merges with Turtle Brook to the northeast of the former drive-in. The low-lying wetlands surrounding Sawmill Brook also receive drainage from the south and east, and Turtle Brook receives drainage from the north. Drainage from the low-lying areas enters Lake Mirimichi, via Turtle Brook, approximately 0.7 miles to the northeast of the Facility.

Surface elevations in the vicinity of the Facility range from just over 400 feet above msl at the unnamed hill approximately one mile west of Turnpike Lake, to approximately 196 feet above msl at Turnpike Lake, and approximately 160 feet above msl at Lake Mirimichi (*USGS Wrentham, MA Quadrangle*). The surface water features near the Facility, including surface water runoff direction and 100-year flood plains, are shown in Figure 7.3.1.

The Facility is located in the upper watershed of the Three Mile River in the Taunton River Basin (see Figure 7.3.2). The northern portion of the Taunton River Basin is approximately 149 square miles and is bounded by the following cities: West Bridgewater, Easton, Sharon, Stoughton, Norton, Mansfield, Plainville, Foxboro, and Wrentham (Williams and Wiley, 1967). Figure 7.3.2 shows the surface water drainage patterns in the Taunton River Basin. Wading River, a tributary of Three Mile River, receives surface water flowing from Lake Mirimichi. Surface water present in the basin is generally characterized as soft (<60 mg/L hardness), slightly acidic (an average pH of 6.5), and low in dissolved mineral content (Williams et. al. 1973a). Description of the geochemistry of Turnpike Lake and Sawmill Brook are presented in Sections 7.3.3.2 and 7.3.4.2, respectively.

7.3.2 Facility Surface Water Drainage

Surface water runoff across most of the Facility discharges into Turnpike Lake or into two on-site storm water retention ponds.[35] Runoff from the parking lot along the northern portion of the Facility discharges to an unlined retention pond in the northeast corner of the Facility and the roof drain from Building 8 discharges to an unlined retention basin to the northwest of Building 8 (AOC 44). There are no outfall pipes from either retention pond, and discharge from both ponds is via seepage to ground water.

35A small portion of the Facility property immediately bordering Rt. 152 discharges storm water runoff onto the right- of-way for this highway, and subsequently into the low-lying area east of Rt. 152. This portion of the Facility is comprised of landscaped greenbelts bordering the highway and driveway entrances and is not believed to be environmentally significant.

Formerly, the majority of the surface water runoff from roof surfaces, the courtyard area and AOC B entered the south embayment via discrete subsurface drains and direct runoff. Roof drains from former Buildings Nos. 1, 2, 5, 6, 7, and 9 discharged to the south embayment of the Lake via three underground discharge pipes terminating in outfall structures (see Figure 7.3.1). Drainage from other buildings (i.e. 3, 4, 12) discharged via exterior drain piping to adjacently paved areas, depending upon their location, and ultimately discharged via surface overland flow in a westerly direction (Building 4) or southern direction (Buildings 3, 12) to the main body of Turnpike Lake.

BASF demolished Buildings 1, 2, 3, 4, 5, 6, 7, 9 and 12 in 1996-1997, and removed interior roof drains that formerly discharged into Turnpike Lake. Subsurface piping still exists and drains to the outfalls mentioned above, from remaining concrete slabs for former Buildings 1, 2, 5, 6, 7 and 9. Surface overland flow also runs from remaining concrete slabs for former Buildings 1, 2, 3, 4, 7 and 12 either to the south to Turnpike Lake (former Buildings 3, 4, 6, 7, 9 and 12) or to the southeast/east (former Building 2) or northeast (former Building 1) to the retention basin in the northeast portion of the site. Runoff due east of the former Buildings 1 and 2 flows to a drainage ditch immediately west of Rte. 152, and discharges to the headwaters of Sawmill Brook below the Turnpike Lake spillway. This pattern of stormwater flow can be seen from Figure 7.3.1.

Since a large portion of the Site is paved or covered with buildings or the slabs from former buildings, infiltration over much of the Site is minimal. Unpaved areas consist primarily of landscaping along Route 152, wooded land bordering Turnpike Lake, and a gravel fire road bordering former Buildings Nos. 6 and 7 to the south and west.

7.3.3 Turnpike Lake

7.3.3.1 Setting

Turnpike Lake is a shallow artificial lake that is mesotrophic (*i.e.*, having a moderate amount of nutrients). Because of its shallow depth, it is not stratified into thermal zones (*i.e.*, epilimnion, metalimnion, hypolimnion). The lake has an area of 115 acres, a mean depth of 1.5 feet, and volume of 170 acre-feet (*Baseline Water Quality Studies of Selected Lakes and Ponds in the Taunton River Basin Massachusetts Department of Environmental Quality Engineering (MADEQE), 1982*). During the Phase I and Phase II field investigations, lake water elevations were recorded at a staff gauge located in the south embayment and lake water depths were measured at each sediment sampling location. A summary of lake water elevation measurements is presented in Table 4.4.1 and measured water depths are presented in Table 4.5.2.

Seasonal fluctuations were observed in lake water levels with the highest levels measured in the spring and the lowest levels in the fall. The highest lake water elevation of 197.17 feet above the National Geodetic Vertical Datum of 1929 (NGVD) was recorded on April 17, 1997 (Round 3), and the lowest elevation of 194.77 feet above NGVD was recorded on August 11, 1997 (Round 4). In the northern portion of Turnpike Lake, field personnel observed during the Round 4 field investigation that the lake water level had dropped to between 0.5 to 1.0 feet below the culvert under Shepherd Street, restricting flow between the northern and southern portions of the lake.

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The southern outflow from Turnpike Lake is restricted by a rectangular weir and connecting spillway. Elevation of the top of the weir was measured to be 195.52 feet above NGVD, and elevation of the wall of the spillway is 197.40 feet. The freeboard height varies with lake level. During the Phase I and II field investigations, the lake level ranged from 0.15 to 1.65 feet above the top of the weir (water flowing over the spillway), except during Round 4. During Round 4, the lake water level dropped below the top of the weir by 0.75 feet, resulting in no flow other than seepage along the spillway and ground water infiltration exiting the lake

Discharge from Turnpike Lake to Sawmill Brook and the low lying wetlands east of Route 152 was calculated during the Phase I field investigation from measurements of stream profile and flow rate at a location below the spillway (surface water sample location SW-05). As presented in Table 4.4.3, discharge rates below the spillway were 10.41 cubic feet second (cfs) and 4.72 cfs during Rounds 1 and 2, respectively. During Rounds 3 and 4, insufficient water was present at the sample location beneath the spillway to calculate discharge. The discharge rate from the lake through the spillway is dependent, in part, on the manual operation of splash boards in the spillway, and will vary over time. Turnpike Lake also recharges shallow ground water along its eastern boundary adjacent to the Facility at an unknown rate. Ground water infiltrated from the lake flows to the east, beneath the Facility, and upwells into the low-lying areas east of Rt. 152. A ground water model describing this process is presented in Appendix H.

7.3.3.2 General Chemistry

Surface water samples collected from Turnpike Lake during the RFI field investigations were analyzed for a variety of general water quality parameters including major cations and anions, alkalinity, pH, total dissolved solids, and total suspended solids. Results of these analyses are presented in Tables 4.4.7 and 4.4.8. In addition, field readings of pH, temperature, specific conductance, and dissolved oxygen were made prior to sample collection. Summaries of these measurements are presented in Tables 4.4.2 and 6.4.2.

During RFI Phase I and Phase II sampling, Turnpike Lake surface water chemistry was characterized by slightly acidic to neutral pH of 5.0 to 7.26, alkalinity of 3.8 to 36.0 milligrams per liter (mg/L), conductivity of 120 to 311 micromhos per centimeter (µmhos/cm), dissolved oxygen of 6.79 to 12.32 mg/L, and total dissolved solids of 86 to 221 mg/L. With one exception, total suspended solids ranged from less than the laboratory reporting limit of 5.0 to 20 mg/L. One sample collected during Round 4 at location SW-06, located in the south embayment, reported total suspended solids of 340 mg/L. This elevated level of total suspended solids may reflect a disturbance of sediment during sampling and does not appear to be representative of lake surface water conditions at the time. Five additional locations were sampled in May 2005 during the Supplemental RFI sampling event. Conductivity levels in May ranged from 325 to 404 µmhos/cm and pH levels ranged slightly from 6.9 to 7.0. Dissolved oxygen levels ranged from 8.4 to 10.0 mg/L except at one location in the south embayment where a level of 4.3 mg/L was recorded. Total dissolved solids ranged from 210 to 290 mg/L. Conductivity levels were lower, near 250 µmhos/cm, in June 2010 and pH levels ranged from 6.1 to 7.0. Dissolved oxygen levels ranged from 5.6 to 7.2.

Lake temperature variations reflected the season in which the measurements were made, ranging from a low of 5.0 degrees Celsius (SW-10 measured April 5, 1995) to a high of 22.1

degrees Celsius (SW-06 measured August 10, 1997). Chemical analysis results are discussed in Section 9.3.1.

7.3.4 Sawmill Brook and Related Tributaries

Sawmill Brook is classified by the MassDEP as a Zone A surface water protection area (see Figure 2.6). Under the State stream classification system, this stream has been classified as Class B High Quality.[36]

7.3.4.1 Setting

Surface water elevation measurements were recorded at staff gauge locations in 1995 and 1997 just downstream from the spillway from the south embayment of Turnpike Lake (SW-05), at three locations in Sawmill Brook (SW-01, SW-02 and SW-04) and at one location in a tributary to Sawmill Brook (SW-03) during the Phase I and II field investigations. Surface water sampling locations are shown in Figure 4.4.1. Measurements collected from just downstream of the spillway (SW-05) are discussed in Section 7.3.3. Table 4.4.1 presents a summary of surface water elevation measurements.

In general, surface water elevations decrease with distance from Turnpike Lake, confirming that the streams east of the Facility drain water from Turnpike Lake. At each staff gauge, the highest water elevations were reported in the early spring and the lowest elevations were reported in the late summer.

At each surface water sampling location, stream profile measurements were made and discharge rates measured during Rounds 1 through 4 of the Phase I and II field investigations. These measurements were used to calculate an approximate discharge at each sampling location. The measurements and calculated discharges are summarized in Table 4.4.3, and the stream channel cross sections are presented on Figures 4.4.2, 4.4.3, 5.4.1 and 5.4.2. In Rounds 1 and 2, collected in March – May 1995, discharge rate measurements in Sawmill Brook were observed to consistently decrease with distance from Turnpike Lake (SW-05 to SW-04, and SW-04 to SW-02), and then increase between gauges located on either side of the low-lying areas east of Route 152 (SW-02 and SW-01). This pattern of flow suggests that surface water in the stream may be draining into ground water within the reach from the spillway to the low-lying area, beginning just downstream of station SW-04. Downstream of this station, ground water upwells into the surface streams, as is further evident by the occurrence of discrete springs in this area. During Rounds 3 and 4, conducted in April 1997 and August 1997, respectively, the accuracy of the stream profile and flow rate measurements were affected by the low water conditions and low discharge rates that prevailed in the basin at the time. Meaningful interpretations of ground water/surface water interactions from these data are not feasible. The interpretations from earlier Rounds 1 and 2, as presented alone, however, are consistent with the general hydrogeologic conditions in the area and consistent with the ground water model presented in Appendix H. These conditions would be expected to prevail over the vast majority of time.

36 According to the Code of Massachusetts Regulations Part 314, Chapter 4.05 (314 CMR 4.05), Class B waters "are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value."

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The increase in stream flow rates on either side of the low-lying area east of Route 152, combined with observations of ground water and surface water elevations (see Sections 4.2.3, 4.4.2, 5.2.2, and 5.4.2), ground water modeling results (see Appendix H) and surface water chemical test results (presented in Section 9.3) suggest that Sawmill Brook acts as a gaining stream below station SW-04, receiving contribution to flow from ground water. The decrease in stream flow measurements downstream of the spillway (e.g., between stations SW-05 to SW-04) likely reflects a portion of the stream discharging to ground water (losing stream) along this reach.

The staff gauge located at SW-03 is located in a small tributary which feeds into Sawmill Brook from the southeast. The tributary is separated from the main branch of Sawmill Brook by a small topographic ridge (see Figure H-9 in Appendix H), and is therefore considered to drain a different area than the area drained by the main branch. The contribution from this small tributary, when measurable, ranged from 0.07 to 0.28 cubic feet per second (cfs). Discharge could not be measured at this location during Round 4 due to insufficient flow in the area. During the Supplemental RFI field investigation, the estimated flow rate at SW-03 was 0.13 cfs and in the range of previously measured values.[37] However, residential development east of SW-03 has progressed since the RFI Phase I and Phase II field investigations and may have altered drainage patterns and surface water flows in this area since that time.

To evaluate seasonal variations in stream flow, stream flow measurements in the streams east of the Facility were compared to daily mean discharge measurements made at the USGS stream gauging station in the Wading River, located near Norton, Massachusetts. The stream flow measurements for the Wading River near Norton covering the period from 1987 to 1997 are presented in Figure 7.3.3. As shown in this figure, the Round 4 field investigation was performed during a period when stream flow in nearby Norton River was particularly low, reflecting the drought conditions experienced over much of the area during this time.

7.3.4.2 General Chemistry

Surface water samples collected from Sawmill Brook and its tributaries were analyzed for a variety of general water quality parameters including major cations and anions, alkalinity, pH, total dissolved solids, and total suspended solids, during the Phase I and Phase II field investigations, conducted in 1995 and 1997, respectively. Results of these analyses are presented in Tables 4.4.7 and 4.4.8. In addition, field readings of pH, temperature, specific conductance, and dissolved oxygen were made prior to sample collection. A summary of these measurements is presented in Tables 4.4.2 and 6.4.2.

During the Phase I and Phase II field investigations, surface water chemistry in Sawmill Brook was characterized by slightly acidic to neutral pH of 6.0 to 7.55, alkalinity of 8 to 42 mg/L, conductivity of 110 to 261 µmhos/cm, dissolved oxygen of 4.91 to 10.95 mg/L, and total dissolved solids 77 to 254 mg/L. Total suspended solids ranged from less than the laboratory reporting limit of 5.0 to 27 mg/L, and in general, stream temperature variations reflected the season in which the measurements were made, ranging from a low of 9.0 degrees Celsius (SW-02 measured April 3, 1995) to a high of 16.5 degrees Celsius (SW-04 measured September 11, 1997).

37 This flow rate assumes a stream channel cross section similar to the one depicted in Figure 5.4.1.

Similar conditions were observed during more recent sampling conducted during the Supplemental RFI field investigations in May 2005 and June 2010. Dissolved oxygen levels ranged from 4.3 to 10.9 mg/L and pH ranged from 5.8 to 7.4. Total dissolved solids and conductivity levels were somewhat higher ranging from 160 to 340 mg/L and 242 to 530 µmhos/cm, respectively.

7.3.5 Lake Mirimichi

7.3.5.1 Setting

Stream profile measurements were made and flow rates measured at the inlet to Lake Mirimichi (SW-11, at the terminus of Turtle Brook) during Rounds 1 through 4 of the Phase I and II field investigations. These measurements were used to calculate an approximate discharge for this sampling location. The measurements and calculated discharges are summarized on Table 4.4.3, and the stream channel cross sections are presented on Figures 4.4.2, 4.4.3, 5.4.1 and 5.4.2. A portion of the surface water flowing into Lake Mirimichi is comprised of outflows from the north and south spillways of Turnpike Lake and ground water inflows into the low-lying area east of Rte. 152. Other sources of surface water contribute to inflow into Lake Mirimichi but are not relevant to this RFI. Discharge measurements at the inlet to Lake Mirimichi showed a seasonal fluctuation with greater flows observed during the spring (Rounds 2 and 3) and lower flows in the fall (Rounds 1 and 4). The seasonal fluctuations are consistent with the regional pattern observed at the USGS stream gauging station in the Wading River (see Section 7.3.4.1).

7.3.5.2 General Chemistry

Surface water samples collected at the inlet to Lake Mirimichi (SW-11) were analyzed for a variety of general water quality parameters including major cations and anions, alkalinity, pH, total dissolved solids, and total suspended solids, during the Phase I and Phase II field investigations. Results of these analyses are presented in Tables 4.4.7 and 4.4.8. In addition, field readings of pH, temperature, specific conductance, and dissolved oxygen were made prior to sample collection. A summary of these measurements is presented in Table 4.4.2. Surface water chemistry at the inlet to Lake Mirimichi was characterized by slightly acidic to neutral pH of 5.92 to 7.05, alkalinity of 13.8 to 17.0 mg/L, conductivity of 120 to 233 µmhos/cm, dissolved oxygen of 6.91 to 10.21 mg/L, and total dissolved solids 115 to 194 mg/L. Total suspended solids were near the laboratory reporting limit of 5.0 mg/L. Temperature variations reflected the season in which the measurements were made, ranging from a low of 10.0 degrees Celsius (March 31, 1995) to a high of 17.8 degrees Celsius (September 10, 1997).

7.3.5.3 MassDEP Sampling Results

On April 21, 1997, the Massachusetts Department of Environmental Protection (MassDEP) collected samples of sediment and surface water from four locations in Lake Mirimichi and a surface water sample at a location in Turtle Brook, which flows into Lake Mirimichi from the low-lying area east of the Facility. The samples were analyzed for VOCs (by EPA Method 8260), metals, and various water quality parameters. Methyl tertiary butyl ether (MTBE) was detected in all surface water samples collected in Lake Mirimichi and likely reflects the use of motor powered craft in the lake. The surface water sample collected from Turtle Brook, where it flows into Lake Mirimichi, reportedly also contained PCE and 1,1,1-TCA at concentrations of 1.9 µg/L and 1.1 µg/L, respectively. PCE was also detected in one lake surface water sample located closest to where Turtle Brook flows into Lake Mirimichi at a

concentration of 0.55 µg/L. At a second location near where Turtle Brook flows into Lake Mirimichi, PCE was detected in a sediment sample at a concentration of 8.1 µg/kg. These data suggest possible impacts from the Facility on surface water and sediments of Lake Mirimichi.

In addition, 1,4-dichlorobenzene (1,4-DCB) was detected in one sediment sample collected near the northern shore of Lake Mirimichi at a concentration of 70 µg/kg. However, this sample was collected nearly 2,000 feet away from where Turtle Brook flows into Lake Mirimichi and closer to where other sources of surface water drain into Lake Mirimichi. This chemical has never been detected at the Facility and its presence in Lake Mirimichi is more likely related to the Plainville (Laidlaw) Landfill, which is located north of Lake Mirimichi, across Interstate 495. A plume of ground water contamination extends downgradient from the landfill towards Lake Mirimichi, and 1,4-DCB along with 1,1-DCA, methylene chloride, vinyl chloride and 1,4-dioxane are among the list of constituents detected in the plume (Eckenfelder, 1999). Based on hydrogeological evidence and analytical data, the plume appears to discharge to Lake Mirimichi.

7.3.6 Sediments

As discussed in Section 7.3.2, storm water runoff from the operational areas of the Facility has historically entered Turnpike Lake at the south embayment (AOC 13) and west of AOC A. Sediments at these locations were sampled during the Phase I, Phase II and Supplemental RFI field investigations. Storm water runoff also enters unlined storm water retention basins located near Building 11 (AOC 44) and in the northeast corner of the Facility parking lot. Sediments from AOC 44 were sampled during the Phase I field investigation.[38]

7.3.6.1 Sediment Thickness

During Phase I, sediment thickness in the south embayment of Turnpike Lake ranged from 0.03 to 1.97 feet, with the thickest measurements observed at locations toward the center of the south embayment. Sediment thickness in the lake west of AOC A was somewhat less, ranging from less than measurable to 1.05 feet thick. In both areas, sediment thickness increased with distance from the shoreline. The results of the sediment thickness survey in Turnpike Lake are presented in Table 4.5.2 and in Figure 4.5.2. Measurements of sediment thickness were not conducted in Sawmill Brook and wetland areas or in the two storm water retention basins located to the north of the Facility.

7.3.6.2 Deposition Areas and Seasonal Variation in Sediment Transport

Areas of sediment deposition and erosion in Sawmill Brook and its tributaries were evaluated using field observations and data collected during the Phase I and Phase II surface water sampling programs. During the four rounds of testing, velocity measurements were made at each stream sampling location as described in Sections 4.4 and 5.4 and Appendix C. The maximum velocity measured during each round of sampling was then compared to permissible stream flow velocities presented in *Open Channel Hydraulics* (Chow 1959, p.166-7). The permissible velocities were developed to assist civil engineers in designing channels that would not erode for a given channel depth and particle size. For particle sizes between US Sieve No. 200 (clay and silt) and US Sieve No. 20 (gravel), where the measured channel velocities exceeded the permissible velocity (corrected for depth) an area

38 No sediment samples were collected from the basin in the northeast corner of the parking lot because this basin never received roof drain runoff and was not identified as an AOC.

of erosion was interpreted, and where the measured channel velocities were less than the permissible velocity an area of deposition was interpreted. Table 7.3.1 provides a summary of the measured stream velocities, permissible velocities for a given particle size, and the results of this evaluation. These interpretations were confirmed by field observations and approximate boundaries were based on field observations. The approximate areas of sediment deposition and erosion in Sawmill Brook are shown in Figure 7.3.4.

Field observations and flow rate measurements indicate that as water exits the south embayment of Turnpike Lake through the weir and down the spillway, stream flow achieves the maximum velocity in the study area. Stream velocity measurements made below the spillway at surface water sample location SW-05 were the highest measured among the stream test locations during the four rounds of testing. Measured velocities at SW-05 exceeded the permissible velocity for each sampling round. Therefore, this area is interpreted as an area of sediment erosion (shown by the red hatching in Figure 7.3.4).

Downstream of SW-05, the water slows as it moves into an impounded area where a resident has widened and partially dammed a small area of the stream (*i.e.*, private impoundment). Due to the decrease in velocity and corresponding drop in sediment load capacity, this area is interpreted as an area of deposition (shown as yellow hatching in Figure 7.3.4).

Between the impoundment and the former drive-in movie theater, interpreted areas of deposition and erosion in Sawmill Brook vary as a result of a seasonal fluctuations in water velocity. These areas are shown with a red and yellow hatch pattern in Figure 7.3.4. Behind the former drive-in movie theater, the stream slows as it enters an impounded area formed where the stream flow is restricted by a culvert crossing beneath an earthen road (near SW-01). Due to the decrease in stream flow velocity and corresponding drop in load capacity, this area is interpreted as an area of sediment deposition. The approximate boundaries of this area are shown with yellow hatching in Figure 7.3.4.

In the area of the small tributary which feeds into Sawmill Brook, stream flow rate data consistently indicated an area of sediment deposition when compared to the permissible velocities given by Chow. An exception to this is for data collected during Round 4 for which insufficient water was available in the tributary to measure flow rate. The approximate boundaries of this area are shown with yellow hatching in Figure 7.3.4.

Although seasonal variations in stream flow rate were observed during the course of the Phase I and Phase II field investigations (Section 7.3.4.1), with one possible exception, seasonal variations in sediment transport were not observed at the test locations in Sawmill Brook. For surface water sample location SW-02, the comparison with permissible velocities for materials passing US Sieve No. 200 (silt and clay) indicated erosion during Rounds 1 and 2 (both Spring 1995) and deposition during Rounds 3 and 4 (Spring and Summer 1997). For grain sizes passing US Sieve No. 20 (sand and gravel), the measured velocities consistently indicated deposition over all four rounds of sampling. This area was sampled extensively in 2005 (sampling locations are shown in Figure 6.5.1) and at many locations sediments were greater than two feet thick. Thus, although stream velocities at times might indicate areas of sediment erosion, field observations indicate that much of the low lying wetlands beyond SW-04 are characterized by areas of sediment deposition.

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7.4 Physical and Chemical Parameters

Selected sediment samples collected during the Phase I field investigation were analyzed for grain size distribution, bulk density, total organic carbon content, cation exchange capacity, and pH. These results are summarized in Table 4.5.8. Grain size distribution in sediment in the vicinity of the Site is variable, ranging from silty gravel with sand (approximately 50 percent gravel) to silt (approximately 95 percent silt). Bulk density of these sediments varied between 62 pounds per cubic feet to 130.3 pounds per cubic feet. The organic carbon content of these sediments was also variable. Total organic carbon (TOC) content in sediment ranged from 0.36 % to greater than 16 %. Additional TOC analyses were conducted on samples collected during the Supplemental RFI field investigation in May 2005. The TOC content in these samples ranged from 0.5 to 48.5 %, consistent with the peaty nature of this material. The cation exchange capacities of the sediments varied between less than 5.4 to 52.5. The sediment pH values ranged from 5.34 to 7.36.

7.5 Hydrogeology

7.5.1 Regional Geologic Setting

7.5.1.1 Regional Geology

The Site is located near the northwestern margin of the Narragansett Basin Physiographic Province of Massachusetts. This province is characterized by Pennsylvanian age consolidated sedimentary rocks, including conglomerates, greywacke, mudstone, siltstone, shale, and coal deposited in fluvial to deltaic environments. These sedimentary rocks unconformably overlie Proterozoic age crystalline rocks, which include granites, quartz monzonites, and gneiss. The sedimentary rocks are overlain by unconsolidated Quaternary glacial deposits consisting of poorly sorted to stratified sand, gravel, and clay (*Lyons 1977; Zen et al. 1983*). The thickness of the unconsolidated glacial deposits range from 0 to 150 feet across the Narragansett Basin (*Williams et al. 1973b*). The stratigraphy and bedrock geology of the region near the Facility are illustrated in Figures 7.4.1 and 7.4.2.

The consolidated rocks of the Narragansett Basin have experienced episodes of both compressional and tensional deformation resulting in a complex arrangement of folds, high angle normal faults, low angle thrust faults, fractures, and joints. Figure 7.4.2 illustrates the primary geologic structures in the area of Plainville, Massachusetts, and is based on the geologic investigation of Lyons (1977). In general, sedimentary bedding and fold axes strike east to east-northeast. Most fractures, joints and quartz veins are high angle (45° to vertical) and strike either north or east-northeast. The major faults in the area are high angle normal faults trending north to south. Horizontal displacement along these faults may be on the order of 1,000 meters or more. Two major structures, the Mansfield Syncline and the Mirimichi Fault, may influence the local geology and hydrogeology in the vicinity of the Site.

7.5.1.2 Regional Hydrogeology

The Site is located within the Taunton River Drainage Basin, a small sub-area of the Narragansett Basin. The principal aquifer system in the basin is the Middle Wading River aquifer, which is composed of stratified, unconsolidated glacial drift (see Figure 7.4.3a), which lies above the bedrock surface. The Massachusetts Department of Environmental Protection has classified the majority of the area surrounding the Site and the low-lying areas to the east as a potentially productive high yield aquifer (Figure 7.4.3b).[39]

39 http://www.mass.gov/mgis/mapping.htm

An underlying bedrock zone also serves as an aquifer in some parts of the basin, and is used in areas east of the Facility as a source of water supply for private wells near Lake Mirimichi. Water in the bedrock zone is contained almost entirely in fractures that are within the upper 200 feet of the bedrock.

Regional surface water and ground water drainage is generally to the south towards Narragansett Bay; however, local ground water flow patterns can vary significantly and are principally controlled by topography and localized surficial drainage patterns. In the immediate area of the Site, surface and ground water generally flow to the east and northeast from the area of Turnpike Lake towards Lake Mirimichi.

7.5.2 Site Geology

Soil/bedrock borings drilled during pre-RFI, RFI and Supplemental RFI investigations have consistently identified two principal geologic zones underlying the Site and the immediate surrounding area: an unconsolidated (glacial-till) overburden zone and a consolidated, fractured bedrock zone. Within the bedrock zone, field investigations have focused on both the shallow bedrock, just beneath the contact with the overburden zone, and the deeper bedrock zone (up to 300 feet bgs); for the purposes of clarity, these two bedrock zones are referred to in this report as the shallow bedrock zone (generally to depths up to 75 feet bgs) and the deep bedrock zone (generally at depths greater than 75 feet bgs), respectively**.** The overburden zone represents Quaternary glacial deposits and the bedrock zones are comprised of the Rhode Island Formation (Lyons, 1977). The following discussions are based on the geologic logs that have been compiled during prior investigations at the Facility (see Appendix B). Figures 7.4.4, 7.4.5, 7.4.6 and 7.4.7 depict geologic cross-sections constructed from the boring logs. The orientations of the cross-sections are shown on Figure 7.4.8.

7.5.2.1 Surficial Soils

Site-specific information was developed from the soil borings that were advanced on-site. As indicated on the soil boring logs (Appendix B), unconsolidated overburden covers the Site and bedrock does not outcrop at any portion of the Site. Site soils were logged based on the unified soil classification system (USCS) and, in general, tend to be sandy gravel or gravelly sand with occasional interbeds of silt. In low-lying areas and in the wetlands east of Route 152, finer-grained, and more organic rich, silts and clays are present. The soils in the area within the vadose zone are typically permeable and well drained, due to their high sand/gravel content.

During Phase I of the RFI investigation, select soil samples from the Site were analyzed for pH, bulk density, and particle size distribution. In general, the pH of the soil on-site varied between 5.7 and 7.4 and bulk densities varied between 104.9 and 135.8 pounds per cubic foot (see Table 7.4.1). Particle size (sieve) analyses confirm the visual logging that the Site soils are predominantly composed of gravel and sand.

North and south of the Facility, soils are composed of Hinckley sandy loam, which are excessively well drained and are characterized by rapid permeability, low available water capacity, and moderate to extremely high acidity (USDA, 1989). East of the Facility, are areas of Hinckley sandy loam, Sudbury fine sandy loam, Freetown muck and Swansea muck. The two muck soil types are associated with the forested wetland area and are highly

organic, very deep, nearly level, and very poorly drained with extreme acidity, highly available water capacity, and moderate permeability (USDA, 1989).

The soil moisture storage at field capacity ("storage capacity") was determined for a silty loam soil based on values presented in USEPA (1975). The amount of water available to plants for evapotranspiration was determined to be 200 milliliters of water per meter of soil (mm/m). The storage capacity of 125 mm/m was determined by multiplying the available water by the estimated root zone depth (0.625 meters). The infiltration rate is estimated to be approximately 12 inches per year (see Table 7.4.6).

7.5.2.2 Overburden

An unconsolidated overburden zone was encountered at every boring location drilled at the Site and the surrounding area. In general, the overburden consisted of poorly sorted and poorly stratified, brown gravelly sand, with occasional lenses of gray silty sand found near the base of the overburden just above bedrock. The gravel fraction ranged in size from pebbles to large granitic cobbles. The thickness of this unit varied from 18 to 36 feet, with the thickest sections occurring in the low-lying wetlands area immediately east of the Facility. The depth to water in the overburden zone at the Site and surrounding vicinity varies from approximately 13 feet to the west of the Facility to approximately 2 feet in the wetlands to the east of Rte 152 under GSM non-pumping conditions.

A thin, discontinuous layer of fine-grained silt was encountered in several borings beneath the Facility and in the wetlands to the northeast. Due to the sandy nature of the soils that comprise the overburden zone, and the absence of any extensive confining layer at the base of the overburden zone, ground water in the overburden is expected to be readily drained into the underlying bedrock when the natural gradient (or gradient induced by ground water pumping) is downward. This drainage potential was directly observed during the pump testing of on-site extraction wells when the Groundwater Stabilization Measure (GSM) was first constructed and tested.[40]

Five samples of the unconsolidated material were collected for grain size analyses during the prior pre-RFI investigation. Two samples (1017-SS01, 1017-SS02) were collected from surficial material along the southern margin of the Facility near the former guardhouse in AOC B, and three samples were collected from depths between 3.0 to 5.0 feet in the boreholes used to construct monitoring wells MW21A, MW22A, and MW23A. The samples were tested for grain size distribution by Empire Soils Investigations and the results were provided in the *RFI Phase I Interim Deliverable* (ENVIRON, 1995a). The sand fraction of the samples ranged from 50 to 80 percent by weight and the samples generally contained less than ten percent fines (silt or clay).

The porosity of the overburden was calculated by comparing dry density of the soil to the dry mass density of quartz (Freeze and Cherry, 1979). The density value for quartz was obtained from Lambe and Whitman (1969). Based on these calculations, porosity ranges from 18 to 37 percent in the overburden.

7.5.2.3 Bedrock

Bedrock at the Site unconformably underlies the overburden. Two principal lithologies were observed in the bedrock borings: a finely laminated black to dark gray shale and a gray to

40 Mapping of the drawdown in the overburden and bedrock during these pump tests is shown in Appendix M.

green, medium to coarse grained feldspathic sandstone (graywacke). These two lithologies were interbedded on a scale varying from inches to tens of feet. Based on the regional mapping of Lyons (1977), the strike of bedding is probably east-northeast, although available information is not sufficient to confirm this interpretation.

A wide variety of structures were observed in the rock cores collected during the prior drilling programs, including contorted layering, fractures, slickensides, quartz veins, and vugs partially filled with quartz. Localized fractures observed in the rock cores were generally one to two millimeter planes with oxidized surfaces; only minor offsets across the fractures were observed. The dip of the fractures ranged from 45 degrees to near vertical. Occasional, thin one- to two-inch clay seams were also observed. The rock core from MW17, located along Route 152 near the center of the Facility property line, contained a significant amount of graphitic material and appeared to be slightly metamorphosed.

Although on-site bedrock throughout the Site was found to be fractured to some degree, two relatively continuous fracture zones were observed in the on-site ground water drawdown patterns during the pump testing of the extraction wells in the GSM. The largest observed fracture zone crosses the Site from the west (near the waste water treatment system in Building 10) to the east, crossing near or beneath AOCs 7, 22, and 26 (including the former dry well in the upper courtyard area), and between EW01 and EW02 near the eastern boundary of the Site (see Figure 13 in Appendix M). This fracture is believed to be a significant conduit for the migration of on-site ground water and contamination to the east.

A second north-south trending fracture is suggested by the drawdown patterns observed during the pump testing of extraction wells EW03, EW04, and EW05 (see Figures 14 and 15 in Appendix M). Although potentially less important as a conduit for off-site migration, this fracture does potentially influence and improve the collection of ground water within the northern portion of the GSM.

Downhole geophysical logging of extraction wells EW01, EW02 and EW03; monitoring wells MW17 and MW45B; and piezometer P12a were conducted from June through September, 2008 in order to further characterize the bedrock zones in the vicinity of the GSM and provide necessary information to support the proposed placement of an additional extraction well to improve GSM capture efficiency. Fluid temperature and fluid resistivity logs were generated to identify hydraulically active water bearing zones; caliper logs were generated to map borehole diameters and identify fracturing along the borehole wall; acoustic televiewer logs were used to determine the location, strike and dip of fractures; and heat pulse flowmeter logs were used to determine the direction and rate of flow in the vicinity of identified fracture zones. This information was summarized in a report prepared by LFR Inc. (2009b) and summary figures are provided in Appendix U.

MW17. MW17 is located east-southeast of EW03, downgradient of the GSM. Downhole geophysical logging of MW17 indicated a break in the steel well casing at approximately 30.7 feet bgs and open planar features near 68 to 70 feet bgs with upward flow originating in this area. The inferred open fractures dip towards the south and south-southwest at 60 to 70 degrees, striking east to east-southeast, with one fracture dipping toward the east at 20 degrees, striking north. Most of the inflow into the well originated at the well casing break.[41]

41 This well was decommissioned and replaced with MW17R in May 2008.

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***MW45B*.** Downhole geophysical logging of MW45B, located within the footprint of former Building 1 midway between EW02 and EW03, suggests the presence of a hydraulically active bedrock zone at 36 to 38.5 feet bgs with fractures striking east to east-southeast dipping towards the south to south-southwest at 10 to 20 degrees and dipping to the north-northeast at approximately 55 t0 70 degrees, and fractures striking north, dipping west at approximately 70 degrees.

***EW01*.** EW01 is the southernmost GSM pumping well which is screened through the overburden and an open hole through the bedrock interval down to 160 feet. Most of the inflow to the well enters at a depth of 24 to 33 feet bgs. The most hydraulically active bedrock zones occur at approximately 38 to 45 feet bgs, 80 to 85 feet bgs, and from 92 to 96 feet bgs. Most open planar features dip downward toward the south and south-southwest at 60 to 85 degrees, striking east to east-southeast or downward to the southeast at 50 to 85 degrees, striking generally northeast. The density of open planar features from about 38 to 110 feet bgs was about one planar feature every 4.2 feet.

***EW02*.** EW02 is located approximately 100 feet north of EW01 and consists of a steel casing down to 27 feet bgs and open hole bedrock interval from 27 to 200 feet bgs. Downhole geophysical logging suggests EW02 intersects highly fractured bedrock over its entire interval. The most hydraulically active zones are located at 28-33, 60, 77, 87-90, 96, 162-166, 177-179, and 185 feet bgs. The majority of open planar features dip downward to the east from 70 to 80 degrees, striking north; dip downward to the southeast at 35 to 75 degrees, striking northeast; and dip downwards to the south-southwest from 75 to 85 degrees, striking east-southeast. The density of open planar features from about 30 to 180 feet bgs was about one planar feature every 6.3 feet.

***EW03*.** EW03 is located approximately 100 feet north of EW02 and consists of a screened interval through the overburden from 21.5 to 51.5 feet bgs and an open hole bedrock interval from 51.5 to 180 feet bgs. The most hydraulically active bedrock zones are associated with planar features concentrated at 58 to 89 and 133 to 164 feet bgs. Most dip downward toward the east-northeast at 40 to 80 degrees, striking north to southeast. A second group of open planar features dip downward to the south-southwest at 20 to 80 degrees and toward the north-northwest at 25 to 85 degrees. The density of open planar features from about 58 to 164 feet bgs was about one planar feature every 5.9 feet.

Overall, an abundance of high angle fractures was confirmed during the geophysical logging. The open planar features dip at angles ranging from approximately 10 to 90 degrees from horizontal with the majority of open planar features (64%) being high angle, dipping at 60 to 90 degrees. The orientation of the majority of the open planar features cluster in three general groups:

- Dipping towards the east – striking north,
- Dipping towards the south to south-southwest – striking east to east-southeast, and
- Dipping towards the southeast – striking northeast

The downhole geophysical data suggests that the overall fabric of the bedrock changes from EW01 to EW03 with the predominant strike of the fractures rotating from east to east-southeast at EW01 to north to southeast at EW03. This change is consistent with the

previously inferred presence of a hydraulic divide between EW02 and EW03 based on extraction well pump tests conducted as part of the GSM evaluation (LFR, 2006b).

The information generated from the downhole geophysical logging was augmented by surface geophysical testing (including seismic refraction profiling, two-dimensional (2D) multi-electrode resistivity profiling, and VLF [very low frequency] profiling) performed from July 17, 2008 through September 5 2008. During seismic refraction profiling, two 750-foot seismic transects were performed parallel to the GSM extraction wells. One transect was located west of Route 152 and one transect was located east of route 152. Seismic data were analyzed using Rimrock Geophysics SIPT2 delay-time software and Optim, LLCs SeisOpt2D software. The 2D multi-electrode resistivity and VLF profiling were conducted along a 750-foot transect parallel to the GSM, east of Route 152. Neither of these techniques was employed west of Route 152 due to potential interferences from monitoring wells and subsurface utilities. The 2D multi-electrode resistivity profiling data were analyzed using Advanced Geosciences RES2DINV software. The VLF profiling data were collected at 20-foot intervals using an ABEM Wadi digital VLF receiver; signals were generated from the VLF transmitting station located in Cutler, Maine. This information was summarized in a report prepared by LFR Inc. (2009b) and summary figures are provided in Appendix U.

The southern fracture zone between EW01 and EW02 that was originally inferred from pumping test groundwater elevation data and was further substantiated from the correlation and trend of anomalies observed in the surface geophysical data, which indicated a relatively high angle fracture zone in the bedrock trending roughly west-southwest to east-northeast. This trend is oriented on an axis through piezometers P12a and P13a and likely extends toward the upper courtyard area in the vicinity of the former drywell.

As illustrated on the four geologic cross-sections (Figures 7.4.4 through 7.4.7) and the bedrock structural contour map presented in Appendix H (Figure H-10), the bedrock surface slopes to the east, towards the low lying areas east of Route 152. The Mirimichi Fault appears to extend into the area east of Sawmill Brook and west of wells MW33C and MW23A. This interpretation is supported by the disparity in thickness of shales and sandstones on either side of the fault. On the west side of the fault, the lithology is dominated by sandstone with interbedded shale units, while on the east side of the fault, the lithology is dominated by shale with interbedded sandstone. The Mansfield Syncline was not confirmed to extend through the Site based on the geologic logs available for this investigation.

The description of bedrock provided above applies equally to the shallow and deep bedrock zones. There were no significant lithologic differences between these two bedrock zones observed in the drilling record for the Site. The deepest borings at the Site (up to 300 feet bgs at P16c) revealed highly fractured metasedimentary rocks derived from interbedded fine to medium grained sandstone, siltstone, and mudstone protolith with the exception of a metaconglomerate encountered from approximately 222 to 254 feet bgs (LFR Inc., 2009c). The fractures observed in the bedrock cores ranged from low to high angle with an abundance of high angle to vertical fractures. Lower angle fractures (< 45°) are also present along the entire test boring. Secondary mineralization has partially healed/filled some fractures (LFR Inc., 2009c). Based on water loss during the drilling, a significant fractured bedrock zone exists at approximately 65 to 70 feet bgs.

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7.5.3 Site Hydrogeology

7.5.3.1 Ground Water Flow Patterns

Water level measurements have been recorded at the Site since the earliest pre-RFI investigations in the late 1980s. The water levels in the overburden and bedrock zones observed during the most-recent Supplemental RFI investigations are consistent with the historic record over the past 20 years, and are mapped in Figures 7.4.9, 7.4.10, and 7.4.11. Although the water table has been observed to seasonally vary by as much as 8 to 9 feet on-site, the general ground water flow patterns in the overburden, shallow bedrock, and deep bedrock zones appear to be primarily topographically controlled; and the direction of ground water flow remains relatively consistent throughout the year.

Ground water beneath the Site is principally recharged from Turnpike Lake, located west of the Facility and, in the absence of any on-site ground water pumping, naturally flows to the east/northeast in a topographically “downhill” direction, eventually upwelling into the low-lying wetlands located east of Route 152. The flow direction becomes more northerly in the overburden and shallow bedrock east of the former drive-in property. Within the deep bedrock beneath the former drive-in property, the flow direction is to the northeast. This gradual turn in the direction of ground water flow to the north is the result of the inflow of additional ground water to the wetlands from the topographically higher land to the east and south of Sawmill Brook.

Beneath the central and southern portions of the Site there is generally a downward hydraulic gradient between the overburden zone and the shallow bedrock zone indicating that ground water is recharged by Turnpike Lake along the Site’s western and southern boundaries (e.g. near well nests MW01/13, MW06/27 and MW05/18), and by local on-site infiltration. Figure 7.4.12 depicts the direction of vertical hydraulic gradients in selected well nests measured between December 2001 and February 2006. More recent data are provided in Table 7.4.7. Along the eastern portion of the Site, the gradient between the overburden and bedrock is typically downward, although this area is highly influenced by the operation of the GSM and the direction of flow will be dependent on the recent history of pumping and rainfall patterns.

Vertical hydraulic gradients between the overburden and bedrock remain downward immediately east of Route 152 and on the former drive-in property (e.g. near well nests, MW40A/B, MW41A/B and MW08/19/38) reflecting continued recharge of the overburden and bedrock from local infiltration, until reaching the border of the low-lying wetlands, where the vertical gradient generally reverses, with higher water levels in the bedrock zone than in the overburden zone. The transition from ground water recharge to discharge across the area is depicted in a cross section extending from the Site to the east, through the wetland area located immediately south of the former drive-in property (see Figure 7.4.13). Bedrock ground water levels in the discharge areas are typically higher than surface water elevations. These results indicate that in the ground water discharge zone, ground water upwells from the bedrock into the overburden, which in turn upwells into the surface water. As shown in Table 7.4.7, consistent upward vertical gradients are seen at the MW09, MW20, MW23, MW31 and MW32 well clusters

Although the bedrock comprises a sequence of shale and sandstone strata that may act as significant barriers to vertical flow, rock cores reveal mostly high angle fractures that dip at

angles of 45 to 90 degrees and facilitate vertical flow. The geophysical investigation conducted on-site in the vicinity of the GSM confirmed the prevalence and abundance of high angle fractures in the bedrock along the GSM (LFR, 2009). The open planar features dip at angles ranging from approximately 10 to 90 degrees from horizontal with the majority of open planar features (64%) being high angle, dipping at 60 to 90 degrees.

In order to confirm the influence of topography and surface water drainage on the interpreted ground water flow patterns, a computer model of the ground water flow system beneath the Site and surrounding areas was developed and evaluated. The model was used to simulate the flow patterns that exist today while the GSM is operating. The model is documented in Appendix H, which also contains depictions of the simulated ground water flow, with the GSM operating. The predominance of the regional topography with Turnpike Lake to the west at a higher elevation, and the lower wetlands to the east, is apparent in controlling the regional pattern of ground water flow. Ground water crossing Route 152 to the east in the overburden zone discharges into the surface streams east of the road and along the southern edge of the former drive-in property. Ground water in both the shallow and deep bedrock zones also flows to the east, and eventually discharges via the overburden zone into the wetland areas that generally lie to the south and east of the former drive-in property. Although the pumping of ground water from the GSM at an approximate rate of 50 gallons per minute along a 540 foot long line just east of the main Facility does influence localized, on-site flow patterns, the regional pattern of recharge to the west, and discharge in the wetlands to the east, are robust regardless of the status/rate of the GSM pumping.

As is discussed more fully in Section 13.0 of this report, the on-site pumping by the GSM is currently intercepting nearly all of the water that flows across the central portion of the Site beneath the former and current buildings. The capture of ground water by the GSM extends to the west edge of Route 152 in the overburden, and to the east of the road in the bedrock zone. When the GSM is fully operational, the groundwater that is bypassing this system and flowing to the east is derived from localized recharge in the northern and northeast portions of the Site and along the shoreline of the south embayment to Turnpike Lake.

7.5.3.2 Ground Water Flow Rates

As described below, estimated ground water flow rates range from about 33 to 75 feet/year in the overburden aquifer and about 76 to 130 feet/year in the bedrock aquifer. Ground water flow rates were derived from aquifer properties and estimates of gradient and hydraulic conductivity, as well as plume characteristics and what is known about the operating history of the Facility.

***Hydraulic Conductivity*.** Initial estimates of the hydraulic conductivity in the overburden and shallow bedrock aquifers were based on slug tests performed on six overburden monitoring wells (MW01, MW03, MW04, MW07, MW08 and MW09) and one shallow bedrock monitoring well (MW13) during the pre-RFI Phase I and Phase II investigations in 1987 and 1988. Slug tests and/or bail tests were also performed during the pre-RFI Phase III investigation in monitoring wells MW03, MW05, MW14 through MW19, MW20A through MW24A and MW20B through MW24B. Slug tests (falling water level tests) were only performed on the bedrock wells where the open section of the well was below the static water level. Bail tests (rising water level tests) were conducted on the remaining overburden wells in which the well screen intersected the water table. The pre-RFI Phase III tests were conducted between November 28 and December 1, 1989.

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As indicated in Table 7.4.2a, estimated hydraulic conductivities in overburden wells are highly variable and ranged from 3.6 x 10^{-5} to 2.2 x 10^{-2} cm/s. Hydraulic conductivities in the shallow bedrock aquifer also are quite variable, and ranged from 2.4 x 10^{-4} to 2.8 x 10^{-2} cm/s in tests conducted during the pre-RFI Phase I, II and III investigations. Rising head slug tests performed in February 2004 on overburden monitoring wells MW101 through MW104 (located in the courtyard area) ranged from 3.0 x 10^{-3} to 6.6 x 10^{-2} cm/s (ECS, 2004b). Duplicate tests were performed for each well. The average of duplicate measurements is recorded in Table 7.4.2.

Falling head and rising head slug testing was also performed on four overburden/bedrock piezometer pairs (P1/P1a, P11/P11a, P12/P12a and P14/P14a) located upgradient and along the southern half of the GSM (ECS, 2005).[42] Low water levels prevented slug testing in P14. Hydraulic conductivities measured in the three overburden piezometers (P1, P11 and P12) were much lower than prior estimates for the overburden aquifer, ranging from 1.89 x 10^{-6} to 3.45 x 10^{-5} cm/s. These lower conductivities are inconsistent with sand and gravel soils and may reflect either the presence of a finer grained material located just above the bedrock surface in this area of the Site, or compaction of soils during building construction activities.

For the four bedrock piezometers, average hydraulic conductivities ranged from 5.2 x 10^{-5} in P11a to 1.9 x 10^{-3} cm/s in P1a. The higher conductivity measured in P1a may be due to the higher fracture density observed in the shallow bedrock and an interpreted fracture zone running east west through EW02 (ECS, 2004b). Hydraulic conductivities estimated from packer testing of the pilot boreholes used to construct the six extraction wells are consistent with a higher fracture density observed in the shallow bedrock. Estimated hydraulic conductivities in the shallow bedrock layer (~ 20 to 60 ft bgs) tested in the six extraction wells ranged from 6.9 x 10^{-2} to 7.8 x 10^{-5} cm/s compared to values ranging from 3.3 x 10^{-3} to 4.7 x 10^{-8} cm/s in deeper areas of the bedrock aquifer (down to 200 ft bgs). Note that some deeper bedrock zones in extraction wells EW04 (140 to 160 and 180 to 200 feet bgs) and EW06 (120 to 200 feet bgs) produced no water during packer testing of the pilot borehole, reflecting very low hydraulic conductivities in these zones. However, in the area of EW01 through EW03, certain deeper bedrock zones exhibited higher hydraulic conductivities reflecting an increased fracture density in these areas.

For the overburden aquifer, the overall geometric mean hydraulic conductivity is 9.2 x 10^{-4} and the median estimate is 1.4 x 10^{-3} cm/s. Hydraulic conductivities in the shallow bedrock are similar with a geometric mean estimate of 1.7 x 10^{-3} cm/s and median estimate of 1.4 x 10^{-3} cm/s based on pre-RFI Phase I, II and III data, Foster Wheeler packer testing of the uppermost bedrock layer (~ 20 to 60 feet bgs), and piezometer data.

Hydraulic conductivity measurements in the bedrock aquifer can vary widely depending upon fracture characteristics. This variability is evident in Foster Wheeler packer testing of the six GSM extraction wells (see Figure 2 in Appendix M). Hydraulic conductivity estimates measured in discrete packer test intervals of the six wells varied from essentially zero (i.e. no water produced) to 6.9 x 10^{-2} cm/s. In general, conductivity estimates decreased with depth in wells EW02, EW04, EW05 and EW06; but wells EW01 and EW03 exhibited more of a pattern of alternating zones of high and low conductivity with depth.

42 Note that multiple estimates of hydraulic conductivity were determined for each piezometer and that average values are presented in Table 7.4.2.

Step-drawdown tests performed on the six GSM extraction wells (EW01 through EW06) in March 2004 suggest that hydraulic conductivities in the bedrock aquifer range from 9.7 x 10^{-3} to 2.7 x 10^{-6} cm/s. The six GSM extraction wells are located west of the barrier membrane and are arranged in order and oriented south to north from EW01 to EW06. Ranges in hydraulic conductivity estimated for each well are shown below (USEPA, 2005b). It is noted that these values represent average estimates for the entire open borehole, and their purpose was to determine long term, sustainable ground water pumping rates. It is likely that specific zones in the bedrock have higher hydraulic conductivity, as indicated by the packer tests described above.

Estimated Hydraulic Conductivity Ranges Based on Step Drawdown Tests Performed on Six GSM Extraction Wells

Extraction Well	Hydraulic Conductivity Range (cm/s)
EW01	2.7 x10^{-6} to 1.6 x10^{-4}
EW02	1.4 x 10^{-4} to 3.5 x 10^{-4}
EW03	7.5 x 10^{-6} to 3.4 x 10^{-5}
EW04	5.1 x 10^{-6} to 1.1 x 10^{-5}
EW05	8.2 x 10^{-6} to 6.2 x 10^{-5}
EW06	3.0 x 10^{-3} to 9.7 x 10^{-3}

The highest conductivity was observed in EW06 at the northern end of the GSM; estimated hydraulic conductivities ranged from 3.0 x 10^{-3} to 9.7 x 10^{-3} cm/s. These estimates are slightly higher than the geometric mean estimate from slug test data reported in Table 7.4.2 (1.9 x 10^{-3}). However, at the five other extraction wells, hydraulic conductivities ranged from 2.7 x 10^{-6} at EW01 to 3.5 x 10^{-4} at EW02. Over all six extraction wells, the geometric mean of the upper end of the range for each well is 1.5 x10^{-4} cm/s and the geometric mean of the lower end of each range is 2.7 x 10^{-5} cm/s. It should be noted that extraction wells EW01, EW03 and EW05 are also screened on the overburden aquifer, but wells EW02, EW04 and EW06 are not.

The step drawdown tests and packer testing of the six extraction wells suggests that hydraulic conductivities in the bedrock aquifer at certain locations along the GSM could be lower by several orders of magnitude than the geometric mean estimate of 1.7 x 10^{-3} cm/s reported in Table 7.4.2a. However, as described below, such low hydraulic conductivities are inconsistent with the horizontal extent of the existing plume.

More recently, hydraulic conductivity estimates in the very deep aquifer (down to 300 feet bgs) were obtained by LFR Inc. in boring P16c. Alternative falling head and rising head hydraulic conductivity tests were conducted at discrete 23.8 foot intervals beginning at the deepest interval (293 feet bgs) and ending at the bottom of the steel well casing at approximately 35 feet bgs in soil boring P16c. Each bedrock interval was isolated from above and below using pneumatic straddle packers to seal the borehole wall. The water level recovery data was analyzed using AQTESOLV Pro Software by Hydrosolve. Raw data are presented in LFR's Technical Memorandum entitled "Summary of Courtyard Well

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Replacement and GSM Field Activities" (LFR Inc., 2009c). Hydraulic conductivity estimates are summarized in Table 7.4.2b.

Hydraulic conductivity estimates ranged from approximately 1.9 x 10^{-4} to 6.2 x 10^{-5} cm/s at depth (approximately 125 to 293 feet bgs) compared to higher values ranging from 6.1 x 10^{-2} to 9.0 x 10^{-4} cm/s in the shallower region from about 35 to 125 feet bgs. The highest hydraulic conductivity (6.1 x 10^{-2} cm/s) was measured at 55 to 79 feet bgs in the highly fractured zone observed during drilling activities. Overall, based on limited hydraulic conductivity measurements in the very deep aquifer, and neglecting effects form significant fracture zones, it appears that groundwater flow generally decreases with depth in the bedrock aquifer.

***Hydraulic Gradients*.** Hydraulic gradients in the overburden and shallow bedrock zones were estimated from measured water table elevations along two flow pathways: a northeast flow pathway originating at the MW03/14/16 well cluster and flowing northeast to the MW20A/B/C well cluster – a distance of about 1250 feet; and an east flow pathway along the centerline of the plume, originating at the MW04/15/17 well cluster and flowing east to the MW21A/B/C well cluster – a distance of about 650 feet. As shown in Table 7.4.3, prior to construction of the GSM, median hydraulic gradients in the overburden aquifer along the east and northeast flow pathways were 0.012 and 0.009 ft/ft, respectively. Post installation of the GSM, hydraulic gradients along the east and northeast flow pathways decreased to 0.008 and 0.007 ft/ft, respectively.

In the shallow bedrock zone, median hydraulic gradients along the east and northeast flow pathways were 0.013 and 0.009 ft/ft prior to construction of the GSM, and 0.008 and 0.003 ft/ft, respectively post GSM construction. Note that on several occasions, estimated gradients along the northeast flow pathway were negative, indicating a gradient reversal reflecting influence of the GSM on water table elevations, particularly in MW14.

***Ground Water Velocity*.** An average groundwater flow velocity in the overburden aquifer can be estimated from a median hydraulic gradient of 0.012 ft/ft (see Table 7.4.3) and the geometric mean hydraulic conductivity estimated from slug test data (9.2 x 10^{-4} cm/s; Table 7.4.2). Assuming an effective porosity of 0.2 – 0.35 for a coarse or gravelly sand (USEPA, 2000a), the average groundwater flow velocity in the region from the GSM to the edge of the wetlands near MW21A is about 33 to 57 feet/year. At this rate, ground water takes about 11 to 20 years to travel from MW4 to MW21A (a distance of about 650 feet). The estimated travel time from the courtyard area, which is a known source of CVOCs in ground water, to MW21 (a distance of about 960 feet) would take about 17 to 29 years.

Groundwater transport in the bedrock zone is more difficult to estimate. The step drawdown tests suggest that groundwater flow in shallow bedrock regions to the northeast of EW6 at the northern end of the GSM is expected to be faster than other regions of the Site. If the fractured bedrock is treated as an equivalent porous medium with an effective porosity of 0.3, then under a typical gradient of 0.013 ft/ft, the average groundwater velocity is 76 feet/year assuming a geometric mean hydraulic conductivity of 1.7 x 10^{-3} cm/s based on slug test data reported in Table 7.4.2. Note that this calculation does not take into effect the influence of individual fractures on travel times. If the hydraulic conductivity in the bedrock aquifer is actually an order of magnitude less than the geometric mean hydraulic conductivity of 1.7 x 10^{-3} cm/s, then the estimated groundwater velocity is 7.6 feet/year and it would take 126 years for contamination originating in the courtyard area to reach MW21B assuming

zero retardation. However, contamination in MW21B was first detected in 1989, within 32 years from the start of facility operations. This suggests that a lower hydraulic conductivity on the order of 10^{-4} does not accurately reflect overall conditions in bedrock at the Site. An alternative estimate of ground water flow rates can be made based on existing monitoring well data and the history of operations at the Facility. Assuming the source of contamination observed in MW21 is the newly-discovered dry well located in the courtyard area, a lower bound groundwater flow velocity can be estimated from the earliest possible release date (1957), the earliest date CVOCs were detected in MW21B (PCE was detected at a concentration of 780 µg/L in September 1989 when the well was first installed), and an assumed retardation coefficient for PCE. The retardation coefficient, *R,* can be calculated using equation (7-1).

$$R = \frac{v_x}{v_c} = 1 + \frac{\rho \, Koc \;\; foc}{n} \qquad (7\text{-}1)$$

where:

v_x	=	average linear groundwater velocity
v_x	=	average velocity of contaminant
ρ	=	bulk density of soil (g/mL)
Koc	=	organic carbon/water partition coefficient (mL/g)
foc	=	fraction of organic carbon in soil
n	=	total porosity in soil

At an assumed total porosity of 40 percent, the soil bulk density for a sandy soil is about 1.6 g/mL. This value is at the low end of the range of values calculated for Site soils (see Section 7.4.2). US EPA (1998) gives a range of *Koc* values for PCE of 209 to 359 mL/g. Assuming the median *Koc* estimate 263 and a *foc* of 0.0014 based on measurements at the Site, the calculated retardation coefficient for PCE is 2.5. Thus, a lower bound estimate of groundwater velocity is 75 feet/year as shown in equation (7-2).

$$v_x = \frac{2.5\,(960 \;\; feet)}{(1989 - 1957 \;\; years)} = 75 \;\; feet / year \qquad (7\text{-}2)$$

Assuming zero retardation, the estimated groundwater velocity is 30 feet/year. Note that this is a conservative lower bound estimate because it assumes an earliest possible release date and because PCE is likely to have reached MW21B prior to September 1989. If the release occurred sometime after the opening of the facility, then the ground water flow rate would be higher than this calculated value. This calculation does not consider potential effects from longitudinal dispersion. If the first detection of PCE in MW21B in 1989 is due to longitudinal dispersion, then the estimated groundwater velocity would be less than 75 feet/year. However, the consistent level of contamination observed in this well between September 1989 and the present, suggests a steady state condition was present in 1989 and potential effects from longitudinal dispersion do not affect the calculation. A similar calculation performed for the northeast flow regime suggests that groundwater velocities in the bedrock average 130 feet/year, with an assumed retardation factor of 2 for TCA, and 65 feet/year assuming zero retardation. This calculation assumes that TCA concentrations originate from

the edge of Building 8 near AOC 14 in 1966 and reach MW 20 in 1989 (a distance of about 1500 feet).

7.5.3.3 Seasonal Variations

Like much of the eastern U.S. coastal areas, southeastern Massachusetts experiences seasonal periods of higher and lower rainfall. Typically the driest period of the year is in the summer and early fall. During this time ground water levels are typically lower, due to the higher rates of evapotranspiration and the lower infiltration of rainfall. Ground water levels typically begin to recover in the later fall through the spring period when evapotranspiration is low do to the absence of a leaf canopy, and when the rainfall and infiltration are typically somewhat higher during this period. A recent example of this seasonal ground water fluctuation occurred at the Site in the Fall of 2005, as can be seen on the water level maps for the overburden zone included in Appendix N. In September 2005 ground water levels were seasonally low, particularly on the northeastern portion of the Site. Following a period of heavy rainfall in mid October, ground water levels in the overburden in this area rose about 8 to 9 feet over a period of only a few weeks. Within this interval, the Site experienced rainfall of approximately 12 inches, which had an obvious direct effect in recharging the water table.

Another significant influence on ground water levels on the Site is the pool level of Turnpike Lake. The water level in the Lake is controlled by overflow from two splash-board spillways. One spillway is located in the south embayment and the other is located to the north adjacent to the land owned by the Natural Resources Trust of Plainville. Although the spillways are typically operated by the Natural Resources Trust of Plainville to maintain a full lake pool (typically at an elevation of about 196 feet MSL, the occasional removal of the spillway splash-boards causes the Lake levels to decrease by up to several feet. This has a direct effect on ground water levels along the Lake shoreline. The elevation of the Lake is approximately 20 feet above the wetlands to the east, however, fluctuations of several feet in Lake level does not affect the long term trend of flow from the Lake to the east.

Ground water levels to the east of Route 152 tend to be more seasonally stable than levels on-site. In this area, the regional discharge of ground water flowing from Turnpike Lake tends to support the local water table; although, ground water level fluctuations of several feet may be experienced between extremely wet and dry periods.

7.5.3.4 Other Man-Made Influences on Groundwater Flow

A number of municipal and private water supply wells are located within a one-mile radius of the Facility; however, based on a review of site-specific hydrogeologic data, the influences of these wells on the local ground water conditions beneath and downstream of the Facility are minimal.

Private and municipal wells are located in the vicinity of the Facility beyond a radius of approximately 2,500 feet. The following information was developed from communications and information supplied by the Town of Plainville Board of Health. In March 1989, approximately 78 private wells were located to the north and east of the Facility, beyond the area where ground water discharges into the wetland east of Route 152. More recent communication with the Town of Plainville Board of Health identified eight additional private wells in the area, installed since October 1998. A list of the private wells is presented on Table 7.4.4 and the approximate locations are shown on Figure 7.4.14. The depths of the

private wells are not known, but the wells are believed to be less than 120 feet in depth and generally produce water from bedrock zones. Information concerning the pumping rates and schedules was not available.

As shown on Figure 7.4.14, three municipal wells are also located to the southwest of the Facility on the opposite side of Turnpike Lake. The wells vary in depth from 30 to 52 feet bgs. According to the Town of Plainville Board of Health, these municipal wells are typically pumped between 7 and 22 hours per day, although during peak demand periods, the wells may be pumped 24 hours per day. The screen intervals, depth, and pumping schedules for these wells are presented on Table 7.4.5. Due to the shallow depth of these wells and the close proximity to Turnpike lake, it is likely that the primary source of water to these wells is local recharge to the glacial till and water indirectly drawn from the Lake through the glacial till by ground water extraction.

In addition the Town of Plainville has constructed a new water supply well field to the east of the Site on the border of Lake Mirimichi (see Figure 7.4.14). The interbasin transfer application decision for the Lake Mirimichi Well Field is provided in Appendix R. The well field consists of three overburden wells located about 20 feet apart from each other and approximately 250 feet from the shoreline of Lake Mirimichi. The wells are constructed in a relatively thin sand layer above bedrock and extend to depths of 22.5 to 26 feet bgs. Similar to the current Town wells, these new wells are designed to draw water from the glacial till and indirectly from the surface water supply (Lake Mirimichi). The well field was brought online in May 2007, and typically pumps at rates ranging from 50,000 to of 225,000 gallons per day based on information provided by the Town of Plainville Water Department. The well field was approved by the MASSDEP for a combined withdrawal of 0.4 million gallons per day (Massachusetts Water Resources Commission, 2004).

The well field is located well beyond the area where ground water from the Site discharges to surface streams and is located hydraulically “cross-gradient” from the regional ground water flow passing beneath the Site. For these reasons the current presence of contamination in ground water east of Route 152 is not believed to pose any direct threat to the quality of water produced by these new wells. It is also known that the Town well treatment plant includes a tertiary treatment system (carbon filtering) to prevent the possibility of impact to water quality of these wells from any VOC source (as described in Section 7.3.5.3, VOCs are entering Lake Mirimichi from the nearby Laidlaw Landfill).

One irrigation well is currently present on the Cacciapaglia property, located east of the Facility on Route 152. This well is not currently in use for irrigation or as a potable water source but has not been abandoned.

In addition to the off-site production wells, BASF is currently operating a series of 6 on-site extraction wells to control the migration of contaminated ground water to the east. Further discussion of the influence of these extraction wells on local ground water flow is presented in Section 13.0 of this report.

8 Waste Characterization

This Source and Waste Characterization section of the draft RFI responds to the requirement of Section IX.B of the Consent Order. Section 8.1 presents a description of the AOCs and sub-AOCs including locations of these areas, design features, operating practices, and methods used to close the area to the extent that the information is available. The information contained in these descriptions is based on information contained in the Administrative Record completed by the USEPA, Region I, and supplemented by any further information identified by Engelhard and ENVIRON during its historical records review (see *RCRA Facility Investigation Proposal*, (ENVIRON, 1994b). A building floor plan is provided in Figure 2.9.

BASF was also asked to determine characteristics of the historical waste placed in the AOCs and Sub-AOCs including hazard classification (if determinable), chemical composition, quantity, and toxicity. Based on the material reviewed, there is very limited information to determine these characteristics for the wastes historically disposed of on-site. However, it is possible to provide most of this information for the primary constituents of concern that were detected at the Site. Section 8.2 presents information on the physical/chemical characteristics and transport and fate properties for those chemicals that were detected in at least five percent of the samples collected during the pre-RFI and RFI field investigations in at least one medium. These chemicals are identified in Table 8.2.1 along with detection frequencies for each medium.

8.1 AOC and Sub-AOC Characteristics

This subsection discusses the waste management practices and any releases of hazardous wastes and/or hazardous constituents at the Facility with respect to the specific AOCs and Sub-AOCs that are the subject of the Consent Order. The locations of these AOCs and Sub-AOCs are shown in Figure 2.1.

The information contained in these descriptions is based on the information contained in the Administrative Record completed by USEPA, Region I and information identified by Engelhard and ENVIRON during the historic records review conducted in 1993. This information was summarized in the RFI Proposal submitted to USEPA on January 7, 1994.

8.1.1 AOC A

AOC A consists of two separate Sub-AOCs, sub-AOC A-1 and sub-AOC A-12. The history and description of each is presented in the following sections.

8.1.1.1 Sub-AOC A-1

Name/Type of Unit	Dates in Use	Waste Type
Land Area containing former leach pits	1973 to 1981	Cyanide, metal-bearing wastewater

Sub-AOC A-1 consists of a land area located west of Building 8 where untreated process wastewater, wastewater processed through the water treatment plant (WTP), regenerate waste (a by-product of the WTP), and cyanide wastewaters were historically released to pits and to the ground surface. Portions of sub-AOC A-1 are located beneath the 100,000-gallon

equalization tank and adjacent lined lagoon and Building 10. The tank and lined lagoon, which provides containment in the case of a spill, were installed in 1981.

Process wastewaters containing acidic wastes, water-soluble oils, cyanide wastes, chromate wastes, contact and non-contact cooling waters, boiler blowdown and cooling tower bleed-off were generated by various metal forming, preparation, and treatment processes. From 1973 until 1981, the WTP consisted of an ion-exchange system designed to remove metals from the metal-processing wastes and return treated wastewater to the manufacturing process for re-use. Limitations in the design of the WTP system appear to have contributed to operation and maintenance difficulties that prevented total reuse of wastewater, and reportedly resulted in releases to the ground.

Two leach pits, also referred to as frog ponds, were located in Sub-AOC A-1 in the area where an aboveground tank and lined, emergency containment lagoon are now located. The leach pits appear to have been created in 1975. They were filled with crushed limestone in 1976, and were taken out of service in 1981. One pit was approximately 20 feet by 40 feet and received contact and non-contact cooling water, bleed-off from cooling towers, and treated and untreated wastewaters. The second leach pit was approximately 30 feet by 60 feet in size and received untreated metal-processing wastes and regenerate waste.

From early 1978 until January 1981, dilute cyanide rinse water from electroplating operations was stored in an aboveground, steel-walled, plastic-lined tank in Sub-AOC A-1. Up to 20,000 gallons of rinse water were reportedly pumped to the 14,000-gallon tank per week. When sufficient quantities of wastes accumulated, a waste disposal firm was called to remove and dispose of the waste. Levels in the tanks were checked and recorded two to three times daily to prevent overfilling. Two spills of cyanide wastes at this tank are reported to have occurred: one spill of unknown quantity on February 2, 1980, and a second spill of approximately 2,000 gallons on January 21, 1981. Soil samples were taken in response to the January 21, 1981 spill and supplied to the Massachusetts Department of Environmental Quality Engineering. Soil samples did not indicate that the waste was migrating from the spill site; therefore, no further monitoring was conducted. As a result of the January 21, 1981 spill, the tank was cleaned and removed from service, and replaced by a smaller tank located indoors.

Regenerate waste was stored in a 5,600-gallon fiberglass tank that was located inside the former WTP building in Sub-AOC A-1. Beginning in 1976, this regenerate waste was pumped to two underground storage tanks located outside the building. These tanks were removed from service in June 1980 and in the spring of 1981. Wastes in these tanks were also removed and disposed off-site by a waste disposal firm.

8.1.1.2 Sub-AOC A-12

Name/Type of Unit	Dates in Use	Waste Type
WASTE STORAGE AREA	1972 to 1980	Spent carbon, resins and filter sand

AOC A-12 is the site of a former waste storage area located beneath what is now the north end of current Building 10. The area was used for above ground storage of containerized

wastes (e.g., spent carbon, spent resins, spent filter sand from the wastewater treatment plant, waste acids and alkalis, and waste oils). The wastes were generated from a wastewater treatment system, which was constructed in 1972 and removed in 1981. One 1,000-gallon aboveground storage tank (AST) was used to store fuel oil in this vicinity, and one 4,000-gallon underground concrete tank was used for storing regenerate wastes from the previous wastewater treatment facility. The location of the underground tank is shown in Figure 4.1.1. The tank was removed prior to construction of a northern addition to Building 10 in 1981. A third addition to the north end of Building 10 was completed in 1983 bringing it to its current dimensions. The location of the former underground tank is now covered by an active above ground wastewater tank.

8.1.2 AOC B

AOC B consists of five separate Sub-AOCs: B-2, B-3, B-4, B-18, and B-35. The history and description of each is presented in the following sections.

8.1.2.1 Sub-AOC B-2

Name/Type of Unit	Dates in Use	Waste Type
Land Area	1973 to 1984	Oil, grease, metal sludge and wastewater

Sub-AOC B-2 consists of a land area located south of former Building 6. This area reportedly received releases containing metal sludge and wastewater associated with a wet scrubber system, bleed-off from an evaporative cooling tower, and releases from a closed wastewater underground storage tank ("UST") (Sub-AOC B-18).

The wet scrubber system was installed in 1973, altered in 1979, and was taken out of service in 1982. The system was designed to remove metal oxides and other small particles from fumes generated during melting and casting of metal alloys. Water was continuously recirculated through the system and collected metal particles in the process. These particles were removed from the liquid and the resulting sludge was placed in drums for reclamation off-site.

From 1973 until 1976, solids were removed from the water by bleeding a side stream off the recirculating loop and passing the stream through a filter to remove the solids. The filtered water was then discharged to the ground surface abutting the scrubber building. Beginning in 1976, the filtered water was diverted to the WTP. During malfunctions of the system, water was carried out with the air stream and water leaked from the blowers to the ground surface. In 1982, the wet scrubber system was replaced by a dry dust collector.

Contact and non-contact cooling water from the melt room and the mill department in former Building 6 was recirculated through a cooling tower in Sub-AOC B-2. To prevent buildup of dissolved solids, a small portion of this water was periodically bled from the system and reportedly was discharged to the ground surface. This water may have contained oil and grease. From 1976 to 1993, this water was directed to the WTP.

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8.1.2.2 Sub-AOC B-3

Name/Type of Unit	Dates in Use	Waste Type
Land Area	1966 to 1976	Oil, grease, metal-bearing wastewater

Sub-AOC B-3 is a land area or leach field located to the south of former Building 6. Wastewater reportedly was released in this area from the melt room and boiler blowdown. These waste streams may have contained oils, greases and metals.

8.1.2.3 Sub-AOC B-4

Name/Type of Unit	Dates in Use	Waste Type
Land Area	1973 to 1984	Metal sludge and wastewater

Sub-AOC B-4 is a land area located south of former Buildings 2 and 3. Wastewater was reportedly released to the ground surface in this Sub-AOC from two wet scrubbers between 1973 and 1978. These wet scrubbers were used to remove metal oxides and other small particulates from fumes generated during melting and casting of metal alloys. Solids were removed from water by bleeding a side stream of the recirculating loop in the system and passing the water through a series of settling tanks. The water was then discharged to a paved surface abutting the scrubber building. In 1976, this water was directed to the WTP. Wastewater was also reportedly released to the ground surface when occasional malfunctions of the scrubber system caused water to be carried out with the air stream, and to leak from the blowers. The wet scrubber system was taken out of service in June 1984 and replaced with dry dust collectors.

8.1.2.4 Sub-AOC B-18

Name/Type of Unit	Dates in Use	Waste Type
WASTEWATER UST	1976 to 1993	Cooling tower/boiler blowdown wastewater

Sub-AOC B-18, is a former underground storage tank (UST) located south of former Building 6. This 1,000-gallon tank was used to collect wastewaters for direct pumping to the WTP. Wastewaters have included cooling tower bleed off, scrubber bleed off, boiler blowdown, and contact cooling water. Quantities varied from 5 to 20,000 gallons per day. The tank was reported to have overflowed in the area identified as Sub-AOC B-2. Pumps and pipes servicing this UST were replaced in 1981 to prevent such releases. The tank was cleaned and filled in place at the time of building demolition and, for the purpose of this report, is considered closed.

8.1.2.5 Sub-AOC B-35

Name/Type of Unit	Dates in Use	Waste Type
Former Dust Collector	Operated intermittently sometime between 1969 to 1990	Metals dust

Sub-AOC B-35 was a former dust collector located outside on a concrete pad at the southwest corner of former Building 7. This equipment was used to collect metal-bearing dust from operations within the adjoining building. There is no information indicating whether any releases occurred from this equipment.

8.1.3 AOC 5

Name/Type of Unit	Dates in Use	Waste Type
Land area and former pit or pond	1966 to 1972	Cooling, annealing, acid cleaning, metal-bearing wastewater

AOC 5 consists of a land area and former pit or pond located under the northwest corner of what is now Building 8, which was constructed in 1972. Contact and non-contact cooling waters, and acid cleaning and annealing wastewaters were reportedly discharged directly to the ground in this AOC. Based on a review of aerial photographs and topographic maps, there is a depression with possible standing liquid in the general area of the former pit. In 1971, this pit reportedly received approximately 20,000 gallons of metal-bearing wastewater per day. Later, an above-floor degreaser was once operated in Building 8 over the area described above.

8.1.4 AOC 6

Name/Type of Unit	Dates in Use	Waste Type
Land Area	1966 to 1972	Metal-bearing wastewater

AOC 6 is an area located under the southwest corner of what is now Building 8. Wastewaters from metal-cleaning operations were reportedly released to the ground in this area, prior to the construction of Building 8.

8.1.5 AOC 7

Name/Type of Unit	Dates in Use	Waste Type
Outdoor Waste Storage	1957 to 1983	Waste oils, chlorinated solvents, corrosive wastes, scrubber and wastewater treatment sludges

AOC 7, also referred to as the Courtyard Area, is the site of a former outdoor waste storage area, which was in operation until 1983, when an indoor storage area was established. This AOC is defined as the area surrounded by former Buildings 1, 2, 5 and 6 and includes the area beneath former Buildings 3, 9 and 12.

In 1960, cooling water from the Nuclear Division was reportedly disposed of in the courtyard area. A trench was reportedly also dug to carry this water across the courtyard to Turnpike Lake.

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At some time during the early 1970's, an oil separator was installed in the storm drain serving the area. Prior to 1972, the area was graded to allow drainage to Turnpike Lake. The grade and drain systems in this area were subsequently redesigned, however, to trap and accumulate any runoff from this area before it reached the Lake, and to pump accumulated runoff to the WTP for treatment.

The courtyard area has been paved since at least 1976. The courtyard area varied in size from 1957, when it was limited to a small storage area behind Building Nos. 1 and 2, to the present, where it now encompasses approximately 40,000 square feet. The former Building 9 and 12 expansions have since covered a portion of the historic courtyard. Wastes were stored in various types of drums, tanks and containers, including a 6,000-gallon tank trailer used to store waste oil. Wastes stored in this AOC included waste oils, chlorinated solvents, corrosive wastes, scrubber sludges, and wastewater treatment plant sludges.

In December 2003, a field evaluation of physical structures (manholes and piping) in the upper courtyard area (located between former Buildings 9 and 12) identified the presence of a catch basin and dry well (ECS, 2004b). The catch basin had a concrete bottom and brick sidewalls and was connected to cast iron drainage pipes, one entering from the north (from the direction of former Building 9) and one exiting to the south. A second structure located east of the catch basin was a dry well with a sand-gravel bottom and permeable brick sidewalls. A 4-inch cast iron pipe enters the dry well from the direction of former Building 9. The pipe appears to have been sheared off during the construction of Building 9 in 1977, which suggests that the dry well was in use prior to this time. Based on the location of this dry well and the concentration of VOCs detected in sediments collected from this well (see Section 9.1.3.8), it appears that this structure is what has historically been described as AOC 22.

An initial one-week limited dual phase vapor extraction (DPVE) pilot testing program was conducted in November 2004 and a follow on three-month pilot program was conducted in the late summer 2005 to evaluate the potential for CVOC remediation in the upper courtyard area (LFR Levine Fricke, 2005b; LFR, 2006a). However, because sufficient drawdown levels could not be achieved due to higher than expected hydraulic conductivity in the bedrock in this area, pilot testing was discontinued. In late 2007 – early 2008 this structure and surrounding soils were removed as an interim remedial measure to limit the migration of CVOCs off-site. This work was summarized in a report prepared by LFR, Inc. in April 2009. Summary tables and figures are provided in Appendix V.

8.1.6 AOC 13

Name/Type of Unit	Dates in Use	Waste Type
Turnpike Lake and Shoreline	Unknown to 1996 - 1997	Metal-bearing wastewater and runoff

AOC 13 consists of the surface waters, near shore sediments and shoreline of Turnpike Lake, which abut the Facility to the south and west. The shoreline south of the Facility reportedly received non-contact cooling water from furnaces and from the metal melting operations. In 1972, the total daily discharge of cooling water to the Lake was reported to be 158,500 gallons per day. This source ended sometime prior to 1993 when Facility operations ceased. In addition, storm runoff containing metals from roof drains from former

Buildings 1, 2, 5, 6, 7 and 9 also discharged to the south embayment of the Lake until these buildings were demolished in 1996-1997.

8.1.7 AOC 14

Name/Type of Unit	Dates in Use	Waste Type
Land Area	1966 to 1972	Metal-bearing wastewater

AOC 14, located under what is now Building 8, is a land area that reportedly received wastewaters from metal-cleaning operations. At the time of operations, wastewater was discharged through a neutralization unit into a leach field. Two former aboveground tanks were also located where Building 8 now exists. Reportedly, the tanks were used for propane, hydrogen, and nitrogen storage. Because the contents of these former aboveground tanks were gaseous in nature, the likelihood of a release impacting subsurface soils and/or ground water is low.

Although there is no historical evidence that AOC 14 ever received chlorinated solvent waste, PCE and TCA have been detected in soil gas samples collected from beneath the concrete slab in Building 8 in this area. It is unclear if AOC 14 represents a source of these constituents or this area merely provides a preferential flow pathway and suitable subsurface environment for accumulation of chlorinated solvent vapors beneath the building slab. A detailed assessment of soil gas sampling results is provided in Section 9.3.

8.1.8 AOC 16

Name/Type of Unit	Dates in Use	Waste Type
Leach Pits	1957 to 1976	Metal, sanitary, laboratory and radioactive wastewater

AOC 16 consists of a wastewater disposal system comprised of two dry wells and an associated leachfield. Based on figures included in the Administrative Record, the dry wells were approximately eight feet deep and twelve feet in diameter. The wastewater discharged to this AOC reportedly included wastewaters from the wire melt room, personnel cleanup wastes from a locker room, wastes from an assay laboratory, and from 1957 until 1962 treated wastewaters generated during the fabrication of uranium fuel elements (which involved the handling of natural, depleted and enriched uranium). During a system malfunction, liquid wastes disposed in this leachfield reportedly may have overflowed to the ground surface in this area.

8.1.9 AOC 19

Name/Type of Unit	Dates in Use	Waste Type
Grease Trap	pre-1977 to 1993	Oil and grease

AOC 19 is a small building adjoining Building 7. The floor of this building was set approximately four feet below ground level and was equipped with concrete walls and floor.

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The building contained a grease trap, which removed oil and grease from the contact cooling water generated by a rolling mill. The grease trap processed approximately 50 gallons of cooling water per minute when in use. Oil accumulated in a tub, and was pumped out periodically and stored in drums. The water was pumped back to a cooling tower. A sump was located in the floor of this room. In the past, failure of the recirculating pump system may have resulted in overflow of wastes into the sump. The sump pump discharged to the ground surface outside the building wall. Water released in this AOC may have contained oil and, potentially, metals.

8.1.10 AOC 22

Name/Type of Unit	Dates in Use	Waste Type
Dry Well	Mid 1960s to 1977	Steam Condensate from Degreasers

AOC 22 is a dry well located under the northeast corner of former Building 9. It reportedly received unknown quantities of steam condensate from a sump containing two steam-heated vapor degreasers. Chlorinated solvent residues may have been present in this condensate. The location of AOC 22 is based on a single reference in a 1977 report describing the presence of a degreaser pit sump pump located in the wire cleaning room (former Building 1), which discharged hot condensate to a floor drain in old Building 4[43] that subsequently drained to an under floor dry well. It is unclear if the recently discovered dry well in the upper courtyard area (AOC 7) is related to this system, although the fact that the single connecting drain line was from the direction of old Building 4 and appeared to have been sheared off when Building 9 was constructed suggests that it may be.

8.1.11 AOC 23

Name/Type of Unit	Dates in Use	Waste Type
Storm Drain and Leach Field	Unknown	Runoff and sump water

AOC 23 consists of a storm drain and a leach field located north of former Building 1. This AOC formerly received runoff from a parking lot, but it is now buried under a berm that was constructed with demolition debris in that area. At one time, it reportedly may have received floor spillage from the lower boiler room in former Building 1. Any floor spillage went through a concrete-lined, subsurface 200-gallon oil separator prior to entering the storm drain. The oil-water separator has since been filled with concrete. There is no information indicating whether any releases occurred from this equipment. No evidence of ground water mounding has been observed in monitoring wells located in the vicinity of AOC 23.

A former 5,000 gallon UST used for the storage of No. 4 fuel oil was located just north of the northwest corner of former Building 1. The tank was installed in 1959 and removed in 1986. This fuel tank was a separately listed SWMU that was not included in the RFI due to lack of evidence of spills or leaks.

43 Old Building 4 was located on the south side of old Building 3, which was in the northeast corner of former Building 9 prior to the construction of Building 9.

8.1.12 AOC 26

Name/Type of Unit	Dates in Use	Waste Type
Concrete Trench	Unknown	50 to 350 gallons/day of acid/alkali wastewaters containing metals

AOC 26 consists of an approximately 22-foot long by 2-foot wide concrete trench, which served as a housing for process piping. The trench was located within former Building 1. In February 1989, it was discovered that wastewaters had apparently leaked from the piping in this trench, which connect aqueous acid/alkali cleaning tanks with a drain that leads to the WTP. These leaking wastewaters had potentially filtered through the concrete trench. At the time of the discovery, the pipes were estimated to be leaking at a rate of approximately 50 to 350 gallons per day. Approximately 7.5 cubic feet of soils and concrete were excavated from this area. Metals were detected in soil samples from the trench. The trench and piping were repaired in 1989.

8.1.13 AOC 29

Name/Type of Unit	Dates in Use	Waste Type
Former Degreaser	1972 to 1993	Chlorinated solvents

AOC 29 consists of a former above-floor degreaser that was located in Building 8 at the north central portion of the Facility. The degreaser was removed between 1990 and 1993 concurrent with the cessation of manufacturing operations at the Site. There is no further information available on the extent or quantity of Hazardous Wastes and/or Hazardous Constituents, if any, that may have been released from this area.

8.1.14 AOC 30

Name/Type of Unit	Dates in Use	Waste Type
Former Degreaser Pit	Unknown	Chlorinated solvents

AOC 30 consists of a former below grade degreaser pit located in former Building 6. At some point, prior to removal of former Building 6 in the mid-1990s, the pit was filled in and covered with concrete. In October 2005, the concrete slab covering this pit was removed revealing two adjacent pits separated by an east-west wall. Both pits were intact and holding liquid. After removing the entire contents of both pits, the lower slabs of each pit were removed revealing what appeared to be dry soils beneath the pits. After sampling subsoils beneath the pits, the excavated areas were backfilled with clean material. Based on the sample analysis, no further remediation is planned for this AOC.

8.1.15 AOC 44

Name/Type of Unit	Dates in Use	Waste Type
Storm Water Retention Basin	1972 to present	Storm water runoff from Building 8

AOC 44 is an unlined storm water retention basin located northwest of Building 10. The basin receives storm water runoff from the roof of Building 8. Metals were detected in previous chemical testing of this runoff.

8.2 Constituent Characteristics

This section presents a discussion of the physical and chemical characteristics and fate and transport properties for the primary constituents detected during the RFI field investigations. These constituents may be grouped into five main classes of chemicals (VOCs, metals, radionuclides, PCBs, and PAHs) along with a few other constituents as indicated in Table 8.2.1. Note that water quality parameters such as dissolved oxygen, chloride ion, nitrate, sulfate etc. are not included in this table.

8.2.1 Physical and Chemical Characteristics

As required in Section IX of the Consent Order, a description of physical and chemical characteristics of the hazardous constituents is presented in Table 8.2.2, which includes the following information: general chemical class, molecular weight, density, boiling point, viscosity, solubility, and vapor pressure. These physical and chemical characteristics are omitted for the metals because these properties depend upon the speciation of the metal (*e.g.* whether the metal is present as a carbonate, sulfate, sulfide, nitrate etc.) and can vary widely. Information on the physical form of the waste (e.g., solid, liquid, and oily sludge), cohesiveness of waste, and pH was not included in this table because they are a function of the media in which the hazardous constituents are present.

8.2.2 Migration and Dispersal Characteristics

A literature review was conducted to collect information on the migration and dispersal characteristics of the chemical constituents that were detected on-site. This information, in conjunction with site-specific parameters, is used in Section 9.0 to assess the fate and transport of contaminants detected on-site. Table 8.2.3 presents the results of the literature search and includes information on the following parameters: soil-water partition coefficient (K_d), organic carbon-water partition coefficient (K_{oc}), octanol-water partition coefficient (K_{ow}), potential for biodegradation and photodegradation, and Henry's Law constants. A brief discussion of each of these parameters is presented below. With the exception of mercury, only soil-water partition coefficients are presented for metals in Table 8.2.3 because the other parameters such as K_{ow} and Henry's Law constants are not meaningful for metals.

Sorption Characteristics

The equilibrium partitioning of a chemical between sediment or soil and the water phase that is in contact with the soil is described by the soil-water partition coefficient, K_d, which is defined in equation (8-1)

$$K_d = \frac{C_s}{C_w} \qquad (8\text{-}1)$$

where:

K_d = soil-water partition coefficient (mL/g)

C_s = concentration of chemical in soil (µg/g)
C_w = concentration of chemical in water (µg/mL)

For a given constituent, the higher the K_d value, the greater the tendency for the constituent to adhere strongly to soil or sediment. For metals, K_d values can vary depending upon the geochemical characteristics of the soil and its porewater as well as the speciation of the metal. Important soil parameters affecting K_d include pH, oxidation-reduction conditions, metal oxide content, organic carbon content and cation exchange capacity. For this reason, K_d values reported in the literature for metals can vary over a wide range. The strongest and most important sorbents for most metals are humic and fulvic acids and the oxyhydroxides (Langmuir et al., 2003). The surface charge of these species is strongly pH dependent with sorptive capacity (negative charge) increasing with increasing pH. Thus, positively charged metal ions tend to be more mobile in acidic soils.

Because site-specific values are not available, default K_d values are presented for metals in Table 8.2.3. These default K_d values for metals represent median values reported in a recent literature survey of soil-water partition coefficients conducted for USEPA (Allison and Allison, 2005). In general, the following patterns of decreasing K_d values were observed for soils, sediments and suspended particulate matter (SPM) (Allison and Allison, 2005).

SOILS: PB > CR^{III} > HG > AS > ZN = NI > CD > CU >AG > CO

Sediments: Pb > Hg > Cr^{III} > Cu > Ni > Zn > Cd > Ag > Co > As
SPM: Pb > Hg > Cr^{III} = Zn > Ag > Cu = Cd = Co > Ni > As

For organic chemicals, researchers have found that K_d values remain relatively constant over various soil types when normalized to the fraction of organic carbon (*foc*) in the soil.[44] This partition coefficient is referred to as the organic carbon-water partition coefficient (K_{oc}) and defined as

$$Koc = \frac{Kd}{foc} \qquad (8\text{-}2)$$

where:

K_{oc} = organic carbon-water partition coefficient (mL/g)
foc = fraction of organic carbon (unitless)

Analogous to K_d, for a given constituent, the higher the K_{oc} value, the greater the tendency for the constituent to adhere strongly to soil or sediment. Log K_{oc} values are reported in Table 8.2.3.

The octanol-water partition coefficient (K_{ow}) is a measure of the equilibrium partitioning of an organic compound between octanol and water, and is expressed as follows (Verschueren, 1983):

44 A similar relationship has been reported when K_d values are normalized to the fraction of organic matter (*fom*) in soil. This organic matter-water partition coefficient is referred to as K_{om}. A factor of 1.724 is used to convert from K_{oc} to K_{om} where K_{oc} = 1.724 (K_{om}).

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$$K_{ow} = \frac{C_o}{C_w} \tag{8-3}$$

where:

K_{ow}	=	octanol-water partition coefficient (unitless)
C_o	=	concentration in octanol (µg/mL)
C_w	=	concentration of chemical in water (µg/mL)

The octanol-water partition coefficient is frequently used as a surrogate for estimating partitioning of organic chemicals between water and natural organic phases such as soil organic matter and biota (e.g. fish). Compounds with a high K_{ow} (expressed as log K_{ow} in Table 8.2.3) will tend to partition into fats or lipids in the environment rather than remain in the aqueous phase.

In the saturated zone, sorption to soil organic carbon reduces the rate of movement of a chemical in ground water relative to ground water flow. The relative rate of contaminant transport velocity to ground water flow is described by the retardation coefficient. The retardation coefficient, *R,* can be calculated using equation (8-4).

$$R = \frac{v_x}{v_c} = 1 + \frac{\rho Koc\ foc}{n} \tag{8-4}$$

where:

R	=	retardation coefficient (unitless)
v_x	=	average linear groundwater velocity (cm/s)
v_x	=	average velocity of contaminant (cm/s)
ρ	=	bulk density of soil (g/mL)
K_{oc}	=	organic carbon-water partition coefficient (mL/g)
foc	=	fraction of organic carbon (unitless)
n	=	total porosity in soil (unitless)

For sandy soils, EPA (2004) provides representative values of 0.375 for total porosity and 1.66 for soil bulk density. Assuming a *Koc* of 265 mL/g for PCE, and a *foc* of 0.0014 based on measurements at the Site, the calculated retardation coefficient for PCE is 2.6. Thus, the rate of PCE migration in the overburden aquifer is expected to be about 2.6 times slower than the ground water velocity. Estimated retardation coefficients for other constituents of potential concern (COPCs) at the Site, under the same conditions, are listed below.

COPC	R
PCE	2.6
1,1,1-TCA	1.8
TCE	1.6
1,1-DCA	1.3
1,1-DCE	1.4
cis-1,2-DCE	1.2

Volatilization

Henry's Law predicts the equilibrium partitioning of a compound between an aqueous solution and the atmosphere and provides an indication of the potential for a chemical to volatilize from an aqueous solution. The Henry's law constant, typically designated as H, has units of atm·m^3 / mole and is defined in equation (8-5).

$$H = \frac{P_i}{C_w} \tag{8-5}$$

where:

H	=	Henry's Law constant (atm m^3/mole)
P_i	=	partial pressure (atm)
C_w	=	concentration in water (mole/m^3)

The Henry's Law constant may also be reported in a dimensionless form (*H'*) where:

$$H' = \frac{H}{RT} = \frac{C_g}{C_w} \tag{8-6}$$

Where:

R	=	ideal gas constant (8.206 x 10^{-5} m^3 atm/mole K)
T	=	temperature (K)
C_g	=	concentration in the gas phase (mole/m^3)
C_w	=	concentration in water (mole/m^3)

The Henry's Law constant is different from the vapor pressure of a compound, which indicates the tendency of a compound to evaporate from its pure phase. A high Henry's Law constant indicates a compound will readily partition to the atmosphere from the aqueous phase. A low Henry's Law constant indicates that a compound will remain in the aqueous phase. U.S. EPA suggests that chemicals with Henry's Law constants greater than 1 x 10^{-5} atm-m^3/mole are sufficiently volatile to affect indoor air concentrations in buildings located above a ground water plume (U.S. EPA, 2004). Henry's Law constants for COPCs detected during the RFI are presented in Table 8.1.3.

Dimensionless Henry's Law constants calculated for CVOCs, assuming an average ground water temperature of 5 °C, are reported below and can be used to estimate soil gas concentrations in vadose zone soils located near the water table.

COPC	H'

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PCE	0.81
1,1,1-TCA	0.75
TCE	0.45
cis-1,2-DCE	0.18
1,1-DCE	1.14
1,1-DCA	0.25

Thus, for PCE with a dimensionless Henry's Law constant of 0.81, the expected concentration of PCE in soil gas at equilibrium with PCE in ground water at a concentration of 1 mg/L is 0.81 mg/L, which is equivalent to 810,000 µg/m^3 or 111,000 ppbv.[45]

8.2.3 Degradation Processes

Many organic compounds can undergo biological or chemical degradation. The ability of a compound to undergo degradation is expressed in terms of its half-life ($t_{½}$), which is the amount of time required for half of the concentration to be degraded. A short half-life indicates that the compound readily degrades as compared to a compound with a long half-life. Several factors can affect the rate of biodegradation including: the availability of nutrients, the concentration of the compound of interest, the availability of electron acceptors (e.g., oxygen, nitrate, sulfate, etc.), pH, temperature, and microbial population. Because so many factors affect the rates of degradation, Table 8.1.3 includes a notation of whether or not a chemical is susceptible to biodegradation. It should be noted, although it may be demonstrated that a chemical can undergo degradation under laboratory conditions, it is possible that degradation may not occur in the environment due to adverse conditions of the factors described above. An assessment of the site-specific biodegradation rates for the CVOCs of concern is included in the Monitored Natural Attenuation Report (LFR, 2005c).

For the chlorinated VOCs, the most important biodegradation process is reductive dechlorination. In this process, the chlorinated hydrocarbon serves as an electron acceptor, and a chlorine atom is removed and replaced by a hydrogen atom. Reaction rates are greatest under highly reducing methanogenic conditions, but can also occur under less reducing iron-, nitrate- and sulfur-reducing conditions.

Reductive dechlorination can occur in a sequential fashion resulting in the transformation of PCE to TCE to DCE to VC and eventually ethene. Both 1,1-DCE and *cis*- and *trans*-1,2-DCE may be formed; however, cis-1,2-DCE is typically the more common biodegradation product. Because PCE is the most oxidized of the chlorinated ethenes, it is the easiest to reduce and the most susceptible to reductive dechlorination followed by TCE, then DCE and finally vinyl chloride. DCE and vinyl chloride are the least susceptible to reductive dechlorination but can also degrade under aerobic conditions where they serve as electron donors.

TCA can also undergo sequential reductive dechlorination to form 1,1-DCA and then chloroethane and finally ethane. Similar to the PCE dechlorination scheme, TCA is transformed more readily than DCA, which in turn is transformed more readily than chloroethane. TCA can also undergo chemical hydrolysis to form 1,1-DCE and acetic acid. Hydrolysis is a degradation pathway whereby a water molecule or hydroxide ion is substituted for an atom or a group of atoms in an organic molecule. For TCA, the rate of

45 To convert PCE air concentrations from µg/m^3 to ppbv at 5 °C, divide by 7.268.

reaction depends only on temperature. At an average ground water temperature of about 5 °C, the estimated half-life is about 28 years (Gauthier and Murphy, 2003). However, at a temperature of 25 °C, hydrolysis is much faster, with an estimated half-life of 0.8 years. Thus, hydrolysis may be an important loss pathway for TCA in surface waters, particularly during the summer months, but is not a significant loss pathway in ground water. Hydrolysis reactions can also be pH dependent and may only occur under acidic or basic conditions. Constituents capable of undergoing hydrolysis are identified in Table 8.2.3.

Photodegradation or photolysis can occur directly or indirectly. Direct photolysis occurs when a compound absorbs enough light energy to break internal bonds. Indirect photolysis occurs when light energy is absorbed by other compounds (typically humic and fulvic acids), which then form hydroxyl or other radicals that can degrade the constituent of interest. Direct photolysis can be an important loss pathway for aromatic compounds including benzene, toluene and the polycyclic aromatic hydrocarbons. Although photolysis can occur in surface water or in air, photolysis potential is presented for the aqueous phase only because it is expected that the atmospheric concentration of the chemicals at the site are negligible. As shown in Table 8.2.3, the majority of compounds are not susceptible to photolysis in the aqueous phase and, for compounds that do undergo photolysis, indirect photolysis is the only mechanism observed.

Metals are elements and do not degrade in the environment except by radioactive decay (for some metals). Reported half-life values for the three uranium isotopes included in Table 8.2.3 are extremely long varying from 245 thousand to 4.47 billion years.

9 Contamination Characterization

9.1 Soil Contamination

Section 9.1 contains a detailed summary of the nature and extent of chemical constituents detected in surface and subsurface soil samples collected at and near the Facility during the pre-RFI and RFI phased field investigations. Because metals are naturally occurring in soils, several soil samples were collected for determination of site-specific background levels. These data are presented in Section 9.1.1. Surface soil samples, which were collected in part to provide data for the human and ecological risk assessments, are evaluated separately in Section 9.1.2. Subsurface soil samples (and selected surface soil samples) are discussed by AOC in Section 9.1.3

9.1.1 Determination of Soil Background

Background concentrations of metals were determined separately for surface and subsurface soil samples. Background surface soil samples were collected at ten locations west and southwest of Building 11 in an area that is believed to be unaffected by Facility operations. Background surface soil sampling locations are shown in Figure 5.1.1. Background concentrations of constituents detected in subsurface soils were established based on soil samples collected from three soil borings (SB-43, SB-44 and SB-45) located in the same vicinity, near Building 11, as shown in Figure 4.1.1. The subsurface soil samples were collected at different depths within the three borings. As subsurface soil samples did not exhibit significant stratigraphic variability over the intervals sampled, the metals concentrations are not considered to be stratified by depth.

Metal concentrations detected in background surface and subsurface soil samples are presented in Tables 5.1.2 and 4.1.6, respectively, and are summarized in Table 9.1.1. Table 9.1.1 includes the detection frequency, the range of concentrations detected and the 95 percent upper confidence limit on the mean (95% UCL). The 95% UCL values were determined using the USEPA ProUCL calculator (Version 3.0). Also included in Table 9.1.1 are MassDEP background levels for “natural” soils and the range of background levels reported by USEPA for surface soils on glacial till and drift (USEPA, 1995e).

The MassDEP Technical Update “Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soils (2002) provides background levels of metals in “natural” soils. All of the samples were selected to represent natural, undisturbed conditions. The background levels were selected following an analysis of several datasets, including:

- data collected to represent background at c.21E sites located in non-urban areas,
- natural soil samples collected from depths of 10 to 70 feet,
- generic background data published by the Agency for Toxic Substances and Disease Registry (ATSDR),
- preliminary data compiled by the Massachusetts Licensed Site Professional Association from background data submitted by its members,
- published data from ENSR, Inc. from three New England locations,
- background samples collected during the “big dig,” and
- site-specific background samples collected from Worcester and Watertown.

Except for arsenic and lead, MASSDEP natural soil levels were within the range of background levels reported by USEPA for surface soils over glacial till and drift (USEPA,

1995e). Swanson and Monacelli (2010) analyzed the underlying data supporting the estimates for arsenic and lead and suggest that the 20 mg/kg estimate for arsenic reflects contributions from the "arsenic belt" west of Boston and reports an upper bound estimate closer to 10 mg/kg for arsenic in natural soils. The authors concluded that natural levels of lead in soil are generally less than 20 mg/kg, but the MassDEP estimate of 100 mg/kg appears to be a reasonable maximum.

In general, background metal concentrations in surface soils were somewhat higher than concentrations detected in the subsurface soil samples. This is not unexpected given the increased adsorptive capacity in surface soils due to the higher organic matter content. Except for nickel and zinc, for which concentrations in surface and subsurface soils were similar, surface soil background concentrations exceeded subsurface background levels by a factor of two or more. Beryllium, cadmium, mercury, selenium and silver were detected at concentrations in surface soils exceeding MassDEP "natural" soil levels in certain samples (see maximum concentrations in Table 9.1.1), but the 95% UCL for metals showed only slight exceedances above the MassDEP "natural" soil levels for beryllium (0.43 vs. 0.4) and cadmium (2.3 vs. 2.0) and larger exceedances for selenium (1.9 vs. 0.5) and silver (7.5 vs. 0.6). All subsurface background metal concentrations were below MassDEP "natural" soil levels.

9.1.2 Surface Soil Sampling Results

9.1.2.1 Metals

Surface soil samples were collected primarily to provide additional information for the human health and ecological risk assessments (HERA) and, as a result, were not collected in specific AOCs. Therefore, individual samples were compared to the maximum detected concentrations in background samples on a sample-by-sample basis. The results of this comparison (and the 95% UCL for background provided for reference) are presented in Table 9.1.2 where concentrations exceeding the maximum background levels are highlighted in bold typeface. Included in Table 9.1.2 are metal concentrations measured in six floodplain soil samples collected east of Route 152 including two background locations. Concentrations of metals in on-site surface soils are also presented in Figures 9.1.1 and 9.1.2.

On-Site Soils. Concentrations of cadmium, chromium (total), copper, nickel, silver, and zinc exceeded maximum background concentrations in at least one on-site surface soil sample. Samples with the most metals exceeding background were SS-H-06, which is located near Taunton Street on the eastern boundary of the Facility, and samples SS-EH-03, SS-A1-02 and SS-A1-03, which were all collected near sub-AOC A-1. At location SS-H-06, cadmium, chromium, copper, and zinc exceeded background levels; but only cadmium exceeded background significantly at a concentration of 24.3 mg/kg compared to a maximum background concentration of 4.4 mg/kg.

Near sub-AOC A-1, cadmium, copper, silver and zinc were detected above maximum concentrations detected in background samples. This is an area where wastewater was formerly discharged into "frog" ponds. Copper and cadmium both exceeded background by more than a factor of two at concentrations of 44.3 mg/kg and 26.9 J mg/kg compared to maximum background concentrations of 14.70 mg/kg and 4.40 mg/kg, respectively. Concentrations of metals in soils near sub-AOC A-1 are further addressed in Section 9.1.3.

Elevated levels of metals (cadmium, chromium, copper, lead, nickel, silver and zinc) were also detected in surface soil samples collected from AOC B during the pre-RFI field investigation. These data are presented in Table A-1 and sampling locations are shown in Figure A-1. The highest concentrations of cadmium, copper, silver and zinc were detected in sub-AOC B-4 (at locations SB-20, SB-21 and SB-22), shown in Figure 4.1.1. This is an area where metal-bearing sludge and/or dust was apparently released to the ground surface from scrubbers and bag houses that operated nearby to control emissions from the adjoining metal melting operations in Buildings 1 and 2. Cadmium concentrations in these three samples ranged from 31,000 to 43,000 mg/kg; copper levels ranged from 1,100 to 2,800 mg/kg; silver concentrations ranged from 150 to 250 mg/kg; and zinc concentrations ranged from 5,900 to 6,600 mg/kg. Soil sampling results for AOC B are further described in Section 9.1.3.

Floodplain Soils. Floodplain soil sampling locations are shown in Figure 6.1.1. Four samples (FS-SD-01, FS-SD-50, FS-SD-204 and FS-SD-209) were collected from the banks of Sawmill Brook, and two samples (FS-TRIB-LB and FS-TRIB-RB) were collected from the left and right bank of a tributary to Sawmill Brook that was chosen to represent a background location unaffected by surface water runoff from the Facility. In general, metals concentrations detected in floodplain soil samples collected near Sawmill Brook were similar to metals concentrations detected at the background location with the following exceptions:

- beryllium levels at FS-SD-204 and FS-SD-209 (1.7 and 1.4 mg/kg, respectively) were two to three times higher than beryllium levels at the background location (0.15 and 0.61 mg/kg);
- the concentration of zinc at FS-SD-209 (81 mg/kg) was about two times higher than zinc levels at the background location (32 and 39 mg/kg); and
- the concentrations of chromium at FS-SD-204 and FS-SD-209 (12 and 25 mg/kg) was about four times higher than chromium levels at the background location (4.6 and 5.1 mg/kg).

Beryllium, chromium and zinc were detected at sediment sampling location SD-209 at 2.3, 31 and 140 mg/kg respectively (see Table 6.5.2), suggesting that translocation of sediments could account for the levels observed in floodplain soils. Similar levels of beryllium, chromium and zinc (detected at 1.6, 27 and 150 mg/kg, respectively) were measured at sediment sampling location SD-204. It should be noted that levels of cadmium, lead, nickel and silver at the floodplain soil background location exceeded on-site background levels by about a factor of two. Specifically, cadmium was detected at 7.9 and 14 mg/kg compared to a maximum on-site background level of 4.4 mg/kg, lead was detected at 104 and 124 mg/kg compared to a maximum on-site background level of 78 mg/kg, nickel was detected 11 and 19 mg/kg compared to a maximum on-site background level of 11 mg/kg, and silver was detected at 21 and 25 mg/kg compared to a maximum on-site background level of 11 mg/kg.

Because this tributary to Sawmill Brook is separated from the facility by a topographic ridge (visible in Figure 2.5) and fed by a small pond, which receives drainage from a nearby school (see Figures 2.3 and 2.4), it should be unaffected by surface water runoff from the Facility. Thus, it is unclear why certain metals are found at somewhat elevated levels at this location.

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9.1.2.2 Volatile Organic Compounds

Surface soil samples collected in areas that could have been affected by Site activities were also analyzed for VOCs. Eight VOCs (benzene, toluene, xylenes, 2-butanone, acetone, p-isopropyl toluene, PCE and TCA) were detected at low levels. Data for benzene, toluene, xylenes, PCE and TCA are presented in Figure 9.1.3. Benzene was detected in nine of sixteen samples at concentrations ranging from 5 to 88 µg/kg; while toluene and total xylenes were detected only once at concentrations of 6 J and 0.9 J µg/kg, respectively. Benzene, toluene and xylenes are constituents found in gasoline, which is not known to have been used in significant quantities on-site; although, at one time a gasoline or diesel pump was located adjacent to the main loading dock in the northeast corner of Building 8. Nonetheless, these very low levels are well below regulated standards for either USEPA or MassDEP.

Acetone was detected at low levels (17 J – 26 J µg/kg) in all three samples collected during the Supplemental RFI field investigation along with 2-butanone (also known as methyl ethyl ketone or MEK) at levels ranging from 10 J to 14 J µg/kg. In addition, *p*-isopropyl toluene was detected in two of the samples, both at a concentration of 2.5 J µg/kg. Acetone and MEK are common laboratory solvents, and *p*-isopropyl toluene is a constituent found in gasoline. Based on a 1973 Air Source Registration form for the Facility, acetone was used on-site. It is also reported that acetone can be formed in soil samples preserved with sodium bisulfate (Clausen et al., 2004).

TCA and PCE were also detected in surface soil samples collected at the Facility (Figure 9.1.3). TCA was detected in one sample (SS-EH-03 near AOC A) at a concentration of 6 J µg/kg. PCE detections were somewhat more widespread, ranging from 7 J µg/kg to 50 J µg/kg in six of 16 samples. The low levels of VOCs detected in samples SS-EH-03 and SS-EH-04 may be associated with the soil gas plume centered near AOC 5 and extending in the vicinity of sub-AOC A-1 (see Figures 9.3.1, through 9.3.4). Due to equilibrium partitioning, a migrating soil gas plume can result in low-level detection of VOCs in soils collected from within the plume area. Similarly, the highest PCE detection in surface soil, at SS-H-06 (near Taunton Street), appears to be associated with the soil gas plume that is likely related to the high VOC-containing ground water (10 mg/L range) in this area.

9.1.2.3 Polychlorinated Biphenyls

Surface soil samples were also analyzed for polychlorinated biphenyls (PCBs). Analytical results are presented in Figure 9.1.3. Aroclors 1248, 1254 and 1260 were detected in one or more samples. Aroclor 1254 was detected in six samples at low concentrations ranging from 47 to 800 µg/kg. The highest concentration was detected at SS-H-04, which is located northeast of former Building 5. It is possible that the PCBs detected at this location are associated with the leach field or former boiler room runoff at AOC 23. Aroclor 1254 was also detected at low concentrations of 47, 47.6 and 280 µg/kg at locations SS-EH-03, SS-A1-02 and SS-E-02, respectively. These samples are located near the former “frog” ponds in AOC A. These ponds are known to have received treated and untreated wastewaters. Aroclors 1248 and 1260 were also detected in this area at low concentrations of 59.4 µg/kg and 130 µg/kg, respectively. Aroclors 1254 and 1260 were also detected at 100 and 41 µg/kg, respectively in SS-H-03. This sample is located near the retention pond northeast of Building 8. This is not an area that is known to have been used for wastewater disposal.

9.1.3 Subsurface Soil

Section 9.1.3 contains a discussion of subsurface soil results grouped by AOC. Constituents detected in each AOC in subsurface soils are reported, and results are compared to site-specific background levels and MassDEP "natural" soil background levels. Complete data tables of laboratory results (i.e. detected and non-detected constituents) for both RFI Phase I and Phase II samples were included in the HERA Second Interim Deliverable (ENVIRON, 1997). Summary tables, which include only detected constituents, are included in the body of this report (Tables 4.1.6 – 4.1.11). Complete data tables of laboratory results for the samples collected during the Supplemental RFI field investigation are included in Tables 6.1.6 – 6.1.11. Soil boring locations are shown in relation to AOCs in Figure 4.1.1.

9.1.3.1 AOC A; sub-AOC A-1

Sub-AOC A-1 consists of a land area located west of Building 10 where wastewater had been released to two former "frog" ponds. The ponds were located where an aboveground tank and lined, emergency containment basin have since been installed in 1981 as part of a new wastewater treatment system (see Figure 9.1.4). Three soil borings (SB-15, SB-16, and SB-17) were advanced in this AOC to the water table (five to seven feet bgs) during the RFI Phase I field investigation. SB-15 was advanced in Building 10 to the east of the frog ponds; SB-16 was advanced in the southern frog pond; and SB-17 was advanced to the east of the northern frog pond.[46]

As part of the 2005 Supplemental RFI field investigation, two additional soil borings (SB-50 and SB-51) were drilled to the north and west of the northernmost frog pond to address any potential effects from spillover from this pond. In addition, soil boring SB-52 was installed west of SB-16 and within the footprint of the southern frog pond to further delineate soils in this area.

Metals. Metal concentrations detected in soil samples collected from AOC A-1 are presented in Figure 9.1.4; these data are summarized and compared to background levels in Table 9.1.3. As indicated in Table 9.1.3, concentrations of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver and zinc were detected above site background levels in AOC A-1. The highest concentrations of these metals were detected at a depth of 5 to 9 feet bgs in soil borings SB-16 and SB-52, which are located within the perimeter of the southern frog pond. Outside the southern frog pond, only cadmium, copper and silver exceed MassDEP "natural" soil levels and USEPA background levels if available. Cyanide was also detected in two samples from SB-16 at concentrations of 5.9 and 6.6 mg/kg. Antimony, beryllium and selenium were infrequently detected in only one or two of sixteen samples collected from AOC A-1.

The contents of the northern frog pond could not be sampled directly because it is currently covered by an emergency containment basin. This is not deemed to be a significant data gap because it is likely that the contents of the northern frog pond contain elevated concentrations of metals, similar to the southern frog pond, which has been sampled. As described in Section 9.1.2, cadmium, copper, silver and zinc were detected above maximum background concentrations in surface soil samples collected west of the northern frog pond. These same metals were detected at comparable levels at depth. These data suggest that some spillover from the northern frog pond has resulted in an increase in concentrations of

46 Because of a present-day emergency containment basin, it was not possible to advance SB-17 directly into the northern Frog Pond.

some metals in this area. However, except for cadmium and silver, metal concentrations are within a factor of two of MassDEP "natural" soil levels. The lack of sampling in the northern frog pond does not substantially change the conclusions regarding the characterization of this area.

VOCs. Samples collected from SB-16 at 2 and 5 feet bgs contained concentrations of PCE at 120 and 28 µg/kg, and TCE at 110 and 14 µg/kg, respectively. Low concentrations of TCA and 1,1-DCA were also detected in SB-16, and toluene was detected at very low concentrations in samples from SB-16 and SB-17. No VOCs were detected in samples collected from SB-15. These data were collected in January 1995 and are reported in Table 4.1.8.

As part of the Supplemental RFI field investigation, additional subsurface soil samples were collected in October 2005. PCE was detected at 18, 6.4 and 1.1 µg/kg in soil samples collected at 1, 7 and 9 feet bgs from boring SB-52, which was advanced in the southern frog pond (see Table 6.1.7). Acetone was the only other VOC detected in soil samples collected from this boring. This most recent sampling in the southern frog pond indicates that VOC concentrations have decreased over the past ten years and TCE, TCA and 1,1-DCA are no longer detected.

In soil borings advanced north (SB-50) and west (SB-51) of the northern frog pond, PCE was only detected at low concentrations (1.5 and 1.9 µg/kg) at a depth of 1 foot bgs. No PCE was detected at 5, 7 and 9 feet bgs (see Table 6.1.7). The low concentrations detected near the surface suggest that these soils may be affected by soil gas migrating from the hot spot near AOC 5 (see Figure 9.3.3). As indicated in Section 9.1.2, PCE and TCA were also detected at low levels in surface soils collected in this area. Because it is unlikely that any VOCs associated with spillover from these ponds would persist in surface soils this long after the pits were closed in 1981, the source of these low levels is most likely migrating soil gas from nearby AOC 5.

PCBs. No PCBs were detected in subsurface soil samples collected from AOC A-1 during the Supplemental RFI field investigation (see Table 6.1.10). However, as indicated in Section 9.1.2, low concentrations of PCBs were detected in surface soil samples collected near the northern frog pond. Thus, any PCB contamination in this area appears to be restricted to surface soils.

9.1.3.2 AOC A; Sub AOC A-12

Sub-AOC A-12 is the site of a former waste storage area located beneath what is now the north end of current Building 10. The area was used for above-ground storage of containerized wastes (e.g., spent carbon, spent resins, spent filter sand from the wastewater treatment plant, waste acids and alkalis, and waste oils). The wastes were generated from a wastewater treatment system, which was constructed in 1972 and removed in 1981. One 1,000-gallon above-ground storage tank (AST) was used to store fuel oil in this vicinity, and one 4,000-gallon underground concrete storage tank was used for storing regenerate wastes from the previous wastewater treatment facility. The location of the underground storage tank (UST) is indicated in Figure 9.1.4. The UST was removed prior to construction of a northern addition to Building 10 in 1981. A third addition to the north end of Building 10 was completed in 1983 bringing it to its current dimensions. The location of the former UST is now covered by an active above-ground wastewater tank in Building 10.

One soil boring, SB-18, was advanced approximately fifteen feet to the east of the UST in February 1995. Two soil samples, collected from this boring at a depth of 2-4 and 5-7 feet bgs, were analyzed for metals, VOCs, and cyanide. Data are reported in Tables 4.1.6 and 4.1.8.

In order to further delineate this area, one additional boring (SB-53) was advanced within the footprint of AOC A-12, just south of the UST (see Fig 9.1.4) as part of the Supplemental RFI in November 2005. Soil samples were collected at 0-2, 4-6 and 8-10 feet bgs and analyzed for VOCs, SVOCs and metals. Data are presented in Tables 6.1.7, 6.1.8 and 6.1.9.

Metals. Several metals were detected at SB-18 at a depth of 5-7 feet bgs with concentrations just above maximum background concentrations including: chromium (at 11.0 J mg/kg), silver (at 0.83 mg/kg), and zinc (at 29.1 mg/kg); but only silver exceeded the MassDEP "natural" background level (0.6 mg/kg).

At SB-53, concentrations of cadmium, chromium, copper, nickel, silver and zinc exceeded maximum background levels at the 0 – 2 foot depth interval. However, at 4 – 6 and 8 – 10 feet bgs, metal concentrations decreased significantly and were only slightly above background and generally below MassDEP "natural" soil background levels (see Table 6.1.9). For example, cadmium levels decreased from 1,200 to 15 mg/kg; chromium levels decreased from 110 to 14 mg/kg; copper levels decreased from 290 to 8 mg/kg; silver levels decreased from 110 to 6.2 mg/kg; and zinc levels decreased from 440 to 20 mg/kg between the 0 – 2 and 4 – 6 foot depth intervals. This concentration profile is consistent with a release to surface soils.

VOCs. In soil samples collected from SB-18, toluene was detected at a concentration of 2 J µg/kg at a depth of 2-4 feet bgs and was the only VOC detected. In soil samples collected from SB-53, PCE was detected at a concentration of 3,200 µg/kg in the surface soil (0 – 2 feet bgs). Lower concentrations (2.5 and 14 µg/kg) were detected at 4 – 6 and 8 – 10 feet bgs, respectively. Acetone (at 13 and 31 µg/kg) and a trace level of TCA (at 0.84 µg/kg) were the only other VOCs detected in this boring.

SVOCs. Fluoranthene (at 0.46 mg/kg) and pyrene (at 0.39 mg/kg) were detected in soil samples collected from SB-53 at a depth of 0-2 feet bgs. These were the only SVOCs detected in this boring.

Other Constituents. No Cyanide was detected in soil samples collected from SB-18.

These data indicate that the elevated levels of metals and PCE observed in surface soils in sub-AOC A-12 are generally confined to the surface and do not extend to deeper soil horizons. The relatively high concentration of PCE detected in the soil sample collected from just beneath the concrete slab could act as a source of soil gas in this area. At a concentration of 3,200 µg/kg PCE in soil, the calculated equilibrium soil gas concentration is about 963,000 ppbv.[47] Thus, PCE in soil at these concentrations could be one source of the soil vapor plume observed beneath Building 8. However, as described in Section 9.3, the

47 Equilibrium calculations assume a dimensionless Henry's Law constant of 0.81, a Koc value of 265 mL/g and a fraction of organic carbon in soil of 0.14% (see Section 8.2) at a temperature of 5 °C.

nearest soil gas samples collected from beneath the building slab in this area contained only 1,000 ppbv PCE and much higher levels were observed near AOC 5.

9.1.3.3 AOC B; sub-AOCs B-2, B-3 and B-18

Sub-AOCs B-2, B-3 and B-18 are located within the AOC B/7 Stabilization study area south of former Buildings 3, 6, and 7. Sub-AOC B-2 reportedly received releases containing metal sludge and wastewater associated with a wet scrubber system, bleed-off from an evaporative cooling tower, and releases from a closed wastewater UST located in sub-AOC B-18. Sub-AOC B-3 is a land area that reportedly received wastewater from the melt room and boiler blowdown, and sub-AOC B-18 is the location of a UST used to collect wastewater for direct pumping to the Facility's water treatment plant (WTP).

Metals. Three soil borings (SB-19, SB-20 and SB-22) were advanced in this area in December 1994, one in each sub-AOC, as part of the RFI Phase I field investigation. Detected metal concentrations are reported in Table 4.1.6 and summarized in Table 9.1.4. As indicated in Table 9.1.4, concentrations of all the metals detected in these three borings (arsenic, cadmium, chromium, copper, lead, nickel, silver and zinc) exceeded maximum background concentrations in at least one sample. Selenium was also detected at low levels; but was not detected in subsurface background samples.[48] However, only cadmium and silver exceeded MassDEP “natural” soil background levels.

A number of surface and subsurface soil samples were collected from sub-AOCs B-2, B-3 and B-18 during the pre-RFI Phased field investigations conducted in 1987 and 1988 when the Facility was still operating and all buildings were still present. Soil sampling locations are shown in Figure A-1; metals concentration data are reported in Table A-1b (Appendix A). Cadmium, chromium, copper, lead, nickel, silver and zinc were detected in surface soils at maximum concentrations of 3400, 32, 1300, 230, 44, 166 and 1120 mg/kg, respectively. Maximum concentrations in subsurface soils were lower by about an order of magnitude for cadmium, copper and zinc and lesser amounts for other metals.

VOCs. Only samples from soil boring SB-22 (drilled in December 1994 in sub-AOC B-18, located adjacent to a closed UST) contained VOCs above detection limits. Samples collected at 2, 5, and 7 feet bgs contained PCE at concentrations of 4,900, 84, and 98 µg/kg, respectively (see Table 4.1.8). The high, near surface PCE concentration may have been a moderate VOC source area in soil at the time; however, some decrease in concentration near the surface would be expected due to volatilization and leaching since then.

In pre-RFI sampling activities, several chlorinated solvents (PCE, TCE, methylene chloride and chloroethane) were detected at concentrations as high as 620 µg/kg in surface soils collected from these sub-AOCs (see Table A-1a in Appendix A).

Radionuclides. Samples collected during the pre-RFI field investigations were also analyzed for gross alpha and gross beta. Levels detected in surface and subsurface soil samples collected from sub-AOCs B-2, B-3 and B-18 are reported in Table A-1b (Appendix A; see figure A-1 for sampling locations). In surface soils, gross alpha and gross beta levels ranged as high as 66 and 136 pCi/g, respectively. In subsurface soils, maximum detected concentrations of gross alpha and gross beta were about a factor of three lower at 19 and 50

48 However, as shown in Table 9.1.1, selenium was detected in all background surface soil samples at concentrations ranging from 1.2 to 2.4 mg/kg.

pCi/g, respectively. A more detailed radiological survey of these sub-AOCs and surrounding areas was presented by Berlin and Duggan (1995) as part of the radiological characterization of the Site. This study is described in Section 4.7. Summary figures indicating the horizontal and vertical extent of radiological contamination are provided in Appendix O.

9.1.3.4 AOC B; sub-AOC B-4

Sub-AOC B-4 is a land area located south of former Building 3. Wastewater from two wet scrubbers, and dust from a later bag house, which were used to remove metal oxides and other small particulates from fumes generated during melting and casting of metal alloys, was reportedly released in this area. As part of the RFI Phase I investigation, soil boring SB-21 was advanced in this area and soil samples were collected at 2, 5 and 9 feet bgs. Surface soil samples were also collected during pre-RFI field investigations.

Metals. Metal concentrations detected in SB-21 are reported in Table 4.1.6. Concentrations of cadmium, chromium, lead, nickel, silver, and zinc exceeded maximum background levels in at least one sample. However, only cadmium and silver exceeded MassDEP “natural” soil background levels.

As indicated in Section 9.1.2, three surface soil samples were also collected in this area as part of the pre-RFI field investigation. Cadmium concentrations in these three samples ranged from 31,000 to 43,000 mg/kg; copper levels ranged from 1,100 to 2,800 mg/kg; silver concentrations ranged from 150 to 250 mg/kg; and zinc concentrations ranged from 5,900 to 6,600 mg/kg. These samples contained some of the highest concentrations of these metals detected in soils during the pre-RFI Phase I/II field investigation.

Radionuclides. Gross alpha and gross beta levels detected in this area during pre-RFI sampling activities ranged from 10 – 19 pCi/g and 3.2 – 4.2 pCi/g, respectively. A more detailed radiological survey of these sub-AOCs and surrounding areas was presented by Berlin and Duggan (1995) as part of the radiological characterization of the Site. This study is described in Section 4.7. Summary figures indicating the horizontal and vertical extent of radiological contamination are provided in Appendix O.

9.1.3.5 AOC B; sub-AOC B-35

Sub-AOC B-35 is a former dust collector, which was located outdoors on a concrete pad at the southwest corner of former Building 7. This equipment was used to collect metal-bearing dust from operations within the adjoining building. There is no information indicating whether any releases occurred from this equipment. Soil boring SB-23 was drilled adjacent to the concrete pad during the RFI Phase I field investigation in December 1994.

Metals. Concentrations of metals detected in subsurface soils collected from SB-23 were comparable to background levels and below MassDEP “natural” soil levels except for cadmium and silver, which were detected at 7.6 and 3.2 mg/kg, respectively in the sample collected from 2 – 4 feet bgs. Concentrations of these two metals decreased significantly with depth in boring SB-23.

In the one surface soil sample collected near sub-AOC B-35 in 1988 during the pre-RFI Phase II field investigation (SB-25 located in Figure A-1), cadmium and silver were detected at concentrations of 1,600 and 140 mg/kg, respectively. Other metals detected at elevated

levels in this sample included copper at 1,380 mg/kg, chromium at 18 mg/kg, and zinc at 400 mg/kg (Table A-1b).

VOCs. No VOCs were detected in soil samples collected from this boring.

Radionuclides. Gross alpha and gross beta were detected at 3.8 and 2.7 pCi/g, respectively in surface soil collected at SB-25 in 1988 (Table A-1b). A more detailed radiological survey of these sub-AOCs and surrounding areas was presented by Berlin and Duggan (1995) as part of the radiological characterization of the Site. This study is described in Section 4.7. Summary figures indicating the horizontal and vertical extent of radiological contamination are provided in Appendix O.

9.1.3.6 AOC 5

AOC 5 consists of a land area and former pit or pond located under the northwest corner of what is now Building 8, which was constructed in 1972. Contact and non-contact cooling waters, and acid cleaning and annealing wastewaters were reportedly discharged directly to the ground in this AOC prior to 1972. Later, an above-floor degreaser was once operated in Building 8 over the area described above.

As described in Section 9.3, some of the highest soil vapor concentrations of PCE at the Facility have been detected from just below the concrete floor in Building 8 in the area of AOC 5. In January 1995, soil boring SB-24 was drilled in AOC 5 and samples were collected at 2 and 8 feet bgs for analysis of metals and VOCs. Analytical data are presented in Tables 4.1.6 and 4.1.8. One additional boring (SB-54) was drilled in November 2005 at the location of the highest soil gas readings detected during an updated soil gas survey of the vadose zone beneath Building 8. Soil samples were collected at the surface (0-2 feet), mid depth (3-5 feet) and just above the water table (7.5-9.5 feet bgs). A duplicate sample was collected at the 7.5-9.5 feet depth interval. All samples were analyzed for VOCs, SVOCs and metals. Analytical data are presented in Tables 6.1.7 through 6.1.9.

Metals. In soil samples collected from SB-24, concentrations of cadmium, copper, lead, nickel, silver and zinc were each detected above maximum background concentrations in AOC 5. However, only copper and silver were detected above MassDEP “natural” soil levels at concentrations of 112 and 12.9 mg/kg, respectively. In SB-54, metal concentrations were highest in the deepest sample (at 7.5 – 9.5 feet bgs) and lowest in the surface sample, suggesting that the shallow soils sampled from SB-54 consisted of cleaner fill material from within the former pit. As in SB-24, only concentrations of copper and silver exceed MassDEP “natural” soil background levels.

VOCs. PCE was the primary VOC detected in SB-24. Samples collected at 2 and 8 feet bgs contained PCE at concentrations of 5,200 and 6 µg/kg, respectively (see Table 4.1.8). A duplicate analysis performed on the 2-foot sample, however, reported a PCE concentration of 470 µg/kg. This difference in the results of duplicate analyses may reflect soil heterogeneity. Concentrations of PCE detected in SB-54 ranged from 910 µg/kg at the surface to 2,500 µg/kg at a depth of 7.5 to 9.5 feet bgs.

At a PCE concentration of 1,000 to 5,000 µg/kg in soil, equilibrium soil vapor levels are estimated to be in the range of 300,000 to 1,500,000 ppbv.[49] As indicated in Section 9.3,

49 Equilibrium calculations assume a dimensionless Henry’s Law constant of 0.81, a Koc value of 265 mL/g and

soil vapor concentrations of PCE have been detected at levels as high as 870,000 ppbv in July 1989. More recently, PCE concentrations detected in soil gas during the Supplemental RFI investigation ranged as high as 66,000 ppbv in July-August 2005. These data indicate that PCE concentrations in soil at AOC 5 could be a source of PCE in soil gas beneath Building 8. It should be noted that soil gas concentrations in this area have decreased by about an order of magnitude since the late 1980s.

Ground water samples collected from the overburden well (MW48A) installed inside Building 8 at AOC 5 during the Supplemental RFI field investigation contained PCE at relatively low levels (~50 – 100 µg/L). No PCE was detected in the shallow bedrock well (MW48B) installed in the same area. Using Henry's Law, estimated soil gas concentrations at the water table would be expected in the range of 5,500 – 11,000 ppbv. These data suggest that the source of PCE more likely originates in the vadose zone soils beneath the concrete slab in Building 8 rather than ground water because ground water concentrations cannot explain the high soil gas readings in this area.

9.1.3.7 AOC 6

AOC 6 is an area located under the southwest corner of what is now Building 8, where wastewaters from metal-cleaning operations were reportedly released. Soil boring SB-25 was drilled in December 1994, approximately 120 feet south of SB-24 in Building 8, in an area where previous soil gas data suggested the presence of VOCs (see Figure 9.3.2). Soil samples were analyzed for metals and VOCs; analytical data are summarized in Tables 4.1.6 and 4.1.8.

Metals. Chromium, copper, silver, and zinc were each detected at concentrations above maximum background levels at a depth of 6 feet bgs in SB-25; however, only copper and silver were detected above MassDEP "natural" soil levels. Only the deeper sample was analyzed for metals because soil boring SB-25 was installed in AOC 6, a pit where wastewaters from metal-cleaning operations were reportedly released. This area and much of the area north of Building 5 was graded and filled prior to construction of Building 8. Therefore it is unlikely that shallow soil samples in this area represent soil conditions associated with the use of AOC 6 as a pit for wastewater discharge. **VOCs.** Samples collected from SB-25 at 2 and 6 feet bgs contained PCE at concentrations of 3 J and 220 µg/kg, respectively. PCE was not detected in the 14-foot samples, but the detection limit was elevated (1,300U) due to the necessary dilution for detection of TCA. TCA was detected at a concentration of 6,800 µg/kg at a depth of 14 feet along with 1,1-DCA at 470 J µg/kg and 1,1-DCE at 500 J µg/kg (see Table 4.1.8). TCA was detected at 16 µg/kg at a depth of six feet bgs and not detected at the surface. No evidence of free product was noted in the boring. The presence of relatively high concentrations of TCA, 1,1-DCA and 1,1-DCE, at or near the water table, yet in much lower concentrations in the upper soil profile suggests that these compounds migrated laterally in soil or ground water from an upgradient source area. An alternative explanation is that deeper contaminated soils were covered by a relatively clean fill layer prior to construction of Building 8, although there is no record of how the footprint of Building 8 was filled and graded.

No other VOCs were detected, and no additional constituents of concern were tested for in this area.

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a fraction of organic carbon in soil of 0.14% (see Section 8.2) at a temperature of 5 °C.

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9.1.3.8 AOC 7 (Courtyard Area)

AOC 7, also referred to as the Courtyard Area, is defined as the area surrounded by former Buildings 1, 2, 5 and 6 and includes the area beneath former Buildings 3, 9 and 12. The courtyard area varied in size from 1957, when it was limited to a small storage area behind Building Nos. 1 and 2, to the present, where it now encompasses approximately 56,400 square feet. The former Building 9 and 12 expansions, and the relocation of Building 3, have since covered a portion of the historic courtyard. Portions of the courtyard area has been paved since at least 1969.

This area was used as an outdoor waste storage area until 1983, when an indoor storage area was established. Wastes were stored in various types of drums, tanks and containers, including a 6,000-gallon tank trailer used to store waste oil. Wastes stored in this AOC included waste oils, chlorinated solvents, corrosive wastes, scrubber sludges, and wastewater treatment plant sludges. In December 2003, a field evaluation of physical structures (manholes and piping) in the upper courtyard area (located between former Buildings 9 and 12) identified the presence of a catch basin and dry well (ECS, 2004). As suggested in Section 8, this dry well may be what has been described as AOC 22.

Six soil borings (SB-26, SB-37 to SB-41) were advanced within AOC 7 as part of the RFI Phase I soil investigation. Soil boring locations are shown in Figure 4.1.1 and analytical data are presented in Tables 4.1.6 through 4.1.11 and summarized below. Because the Courtyard Area has been proposed as the location of an on-site disposal cell for contaminated soils from AOCs B, 7 and 16, a separate investigation of the Courtyard Area was conducted by ECS in December 2003 and March 2004. The results of this investigation are presented in the Supplemental Design Investigation Report (ECS, 2004b) and are summarized briefly below following the discussion of RFI sampling results.

RFI Field Investigation

Metals. Metal concentrations detected in soil borings drilled within AOC 7 in 1994 during the RFI Phase I soil investigation are provided in Table 4.1.6 and summarized in Table 9.1.5. Concentrations of most metals generally exceeded site-specific background; however, only cadmium, copper and silver were detected at concentrations exceeding MassDEP “natural” soil levels. The highest concentrations of all metals (except lead) were detected in soil boring SB-37, which is located at the southern end of the courtyard area near AOC B. The highest concentration of lead was detected in soils collected from SB-41, located between former Buildings 3 and 12. Beryllium, mercury, selenium and thallium were also detected sporadically and at low levels.

VOCs. VOC data are presented in Table 4.1.8. No VOCs were detected in soil boring SB-26, while very low concentrations of PCE, TCE, and toluene were detected in borings SB-38, SB-39, SB-40, and SB-41. PCE was detected at 3 J and 170 J µg/kg in soils collected from SB-37 at depths of 1 and 5 feet bgs, respectively. Samples collected from soil boring SB-37 also contained very low levels of TCE, TCA, and toluene.

PCBs. Selected soil samples from borings SB-38 and SB-41 in this AOC were also analyzed for PCBs (see Table 4.1.11). SB-38 was advanced in what is referred to as the Upper Courtyard area and SB-41 was advanced in the area between former Buildings 3 and 12. Aroclor 1248 was detected at concentrations of 37 J and 82 J µg/kg in samples

collected from SB-38 at depths of 1 and 5 feet bgs, respectively. Higher concentrations were detected in samples collected from SB-41. Aroclor 1248 was detected at 84,000 J and 2,500 J µg/kg; and Aroclor 1254 was detected at 160,000 J and 4,300 J µg/kg, at depths of 1 and 5 feet bgs, respectively.

Other Constituents. Cyanide was not detected in samples from any borings in AOC 7. TPHD was analyzed for, but also not detected, in samples from all six borings. Samples from borings SB-26, SB-39, and SB-41 were analyzed for SVOCs. The 2-foot sample from SB-26 contained low concentrations of several SVOC compounds (Table 4.1.9). Benzoic acid was detected in SB-41 at a concentration of 10 J µg/kg.

Radionuclides. AOC 7 was included in the Radiological Site Characterization Survey conducted by Berlin and Duggan (1995). This study is described in Section 4.7. Summary figures indicating the horizontal and vertical extent of radiological contamination are provided in Appendix O. The only area of the courtyard exceeding the screening level of 27 pCi/g was an area west of Building 2 and between former Buildings 3 and 12.

Supplemental Design Investigation

In December 2003, twenty-one soil borings were advanced in and around the Courtyard Area as part of the Supplemental Design Investigation (SDI). Five of the soil borings were completed as 2-inch diameter monitoring wells/piezometers (MW101, MW102, MW103, MW104 and P16) and two borings were completed as pairs of 1-inch diameter piezometers (P15-CY and P17). In addition four shallow soil borings (SS-101 through SS-104) were advanced and one surficial soil sample (SS-106) was collected as part of the SDI.

In March 2004, nineteen additional soil borings were advanced in the Courtyard Area. Three of these borings were completed as 2-inch diameter monitoring wells (P21, P23 and MW106) and one boring was completed as a 4-inch diameter monitoring well (P20). In addition, one shallow soil boring (SS-105) was advanced through the former dry well as part of the SDI. Monitoring well, boring and surface soil sampling locations are shown in Figure 9.1.5. Boring logs for all soil borings and monitoring wells completed as part of the SDI are included in Appendix B.

VOCs. Soil samples were collected at two-foot intervals from the surface to the total depth of each boring and screened in the field for the presence of VOCs. Samples submitted for laboratory analysis of VOCs were selected from the surface soil layer and/or the layer with the highest VOC screening level or the soil layer located just above the water table. Concentrations of VOCs are reported in Table 9.1.6.

PCE was the constituent detected most frequently (in 55 of 62 samples) followed by acetone (detected in 34 of 62 samples), TCA (detected in 29 of 62 samples), and TCE, which was detected in 26 of 62 samples. The highest concentration of PCE was detected in the vicinity of the discovered dry well in this area. One sample collected at a depth of 10-12 feet bgs from boring P16 contained 5,000,000 µg/kg PCE. Even for a moist, rich soil sample with 20% moisture and 1% organic carbon, a concentration of 5,000,000 µg/kg PCE indicates the presence of non-aqueous phase liquid (NAPL) in the soil sample.[50] A sludge sample

50 Soil concentrations greater than about 430,000 µg/kg indicate the presence of NAPL in soil assuming a water solubility of 150 mg/L, Koc value of 265 mL/g, a dimensionless Henry's Law constant of 0.81 and equilibrium partitioning in soil with a bulk density of 1.6 mL/g, fraction of organic carbon of 1.0 % and volumetric water

collected from within the dry well (SS-105) contained 11,000,000 µg/kg PCE. The high concentrations of PCE suggest that this dry well may be the dry well described as AOC 22, which reportedly received steam condensate from a sump containing two steam-heated vapor degreasers (see Section 8.1.10), and is likely one of the primary sources of the ground water plume extending east of Route 152.

The soil data suggest that the dry well is primarily a source of PCE. TCA was detected at only low concentrations in the vicinity of the dry well; and the highest concentration of TCA (1,200 µg/kg) was detected west of Building 12 in surface soils collected from B-109. However, a ground water sample collected in April 2004 from monitoring well P21, which is located within about ten feet of the dry well, contained 16,000 µg/L TCA. In addition, the ground water plume extending east of this area contains high levels of TCA, particularly in the deep bedrock layer. Thus, the low levels of TCA found in vadose zone soils may reflect historical usage patterns (PCE usage as a replacement for TCA) rather than evidence that the dry well was not a source of TCA. PCE and TCA breakdown products (cis-1,2-DCE, 1,1-DCE and 1,1-DCA) were detected infrequently in soils.

Although acetone was detected frequently (in more than half of the samples collected), detected concentrations were low (generally less than 50 µg/kg) and randomly distributed throughout the Courtyard Area. Although acetone often appears as a laboratory contaminant, there is also evidence that acetone was used as a cleaning solvent at the Site (source: 1973 air source registration document). Other volatile constituents detected in soils included the BTEX chemicals (benzene, toluene, ethylbenzene and xylenes) and other ketones (methyl ethyl ketone and methyl isobutyl ketone); but these chemicals were infrequently detected (in only 1 or 2 samples[51]) and at low levels (less than 10 µg/kg for BTEX chemicals and less than 45 µg/kg for ketones). These chemicals are unlikely related to facility operations.

Metals. Soil samples collected from the top two feet of soil were analyzed for RCRA 8 metals. These data are presented in Table 9.1.7 and compared to site-specific background levels in Table 9.1.8. Cadmium, chromium, lead and silver were detected above site-specific background concentrations and Mass DEP “natural” soil levels. However levels of chromium were within the range of USEPA background levels. As indicated in Table 9.1.8, maximum concentrations of cadmium, chromium, lead and silver detected in surface soils collected from the Courtyard Area were 97, 39, 150 and 51 mg/kg, respectively. Note that barium was detected at a maximum concentration of 59 mg/kg, compared to the MassDEP “natural” soil level of 50 mg/kg and much higher background range of 300 to 1500 mg/kg reported by USEPA. Barium was not analyzed for in background soils at the Site.

PCBs. Soil samples were collected at the surface and at depth (composited over six-foot intervals from the 0 to 6, 6 to 12 and 12 to 18 foot soil layers, if applicable), and analyzed for PCBs. A total of 136 soil samples were analyzed for Aroclors 1248, 1254 and 1260. Analytical results are reported in Table 9.1.9. Aroclor 1248 was detected in 90 of 136 samples at a maximum concentration of 1,810 mg/kg; Aroclor 1254 was detected in 69 of 136 samples at a maximum concentration of 483 mg/kg; and Aroclor 1260 was detected in 3 samples at less than 0.2 mg/kg.

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content of 20%.

51 Toluene, which was detected in 13 of 62 samples, is an exception.

The distribution of total PCB concentrations detected in Courtyard Area soils by depth interval (*i.e.* 0 – 6 feet, 6 – 12 feet, and 12 – 18 feet bgs) is shown in Figure 9.1.6. Total PCB concentrations detected at the 0 – 6 foot depth interval range from nondetect to 135 mg/kg; concentrations in only three samples (B-104, B-119 and B-121) exceed 50 mg/kg. All three samples with total PCB concentrations exceeding 50 mg/kg were collected from beneath the slab of former Building 12. PCB concentrations in about 60 % of the samples exceeded a value of 1 mg/kg; these samples were located throughout the Courtyard Area.

As shown in Figure 9.1.6, concentrations are generally lower (less than 20 mg/kg) at the 6 to 12 foot depth interval except for six samples, which were collected from soil borings B-109, B-121 and B-105, where concentrations exceeded 50 mg/kg. The three highest concentrations of total PCBs (2293, 717 and 171 mg/kg) were detected at a depth of 6 to 8, 8 to 10 and 6 to 12 feet in boring B-109, which is located just west of former Building 12. Soil borings B-121 and B-105 are located below the slab of former Building 12. Total PCBs in soil samples collected deeper than 12 feet bgs did not exceed a concentration of 1 mg/kg.

EPH. Soil samples collected from the top two feet of soil were analyzed for Extractable Petroleum Hydrocarbons (EPH); concentrations are reported in Table 9.1.10. C_{11} – C_{22} aromatic hydrocarbons were detected in 17 of 27 soil samples at concentrations ranging from 14 to 964 mg/kg. Concentrations in only five samples exceeded 200 mg/kg. These areas likely reflect past historical practices of storing waste oils at various locations within the Courtyard Area.

Radionuclides. Because low-level uranium radioactivity was detected during prior investigations of the Courtyard Area, a radiation survey was conducted during the SDI investigation. A report of this investigation is presented in Appendix D of the Supplemental Design Investigation Report (ECS, 2004b). The authors noted that slightly elevated soil radioactivity (2 to 3 times background) was detected in a distinct thin (1 to 3 inches thick) lens of soil, generally ranging from 1 to 2 feet below the paved courtyard surface and was determined to not exceed current Massachusetts Department of Public Health (MADPH) cleanup standards for radiological constituents. The approximate area of elevated soil measurements was a relatively small area in the upper courtyard, representing an area conservatively estimated at 160 feet by 50 feet and up to 4 feet deep (ECS, 2004b).

Upper Courtyard Remediation

The former drywell located in the Upper Courtyard area was excavated and removed along with surrounding soils in late 2007 – early 2008. This work was summarized in a report prepared by LFR, Inc. in April 2009. Summary tables and figures are provided in Appendix V.

Excavation of the area (approximately 65 feet long by 30 feet wide) down to the bedrock surface (approximately 20 to 27 feet bgs) began on October 25, 2007 and continued until December 18, 2007. The area of excavation is depicted in Figures 2 and 3 of Appendix V. The remains of a former transformer pad including a concrete slab, metal strapping, and pieces of a utility pole were uncovered along the eastern edge of the excavation and testing of excavated soils revealed the presence of PCBs. Excavated soils were stockpiled by depth and sampled for PCB analysis. PCB concentrations in soils excavated from 0 to 4 feet bgs ranged from 0.39 to 93 mg/kg, with two samples containing greater than 50 mg/kg

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PCBs. PCB concentrations in soils excavated from 4 to 8 feet bgs ranged from 1.46 to 6.55 mg/kg, and PCB concentrations in soils excavated from 8 to 20 feet bgs ranged from about 0.3 to 1.2 mg/kg (see Table 1 of Appendix V). In total, approximately 1,695 tons (57 truck loads) of soil were transported off-site to an appropriate waste management facility based on the levels of PCBs in the soil.

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9.1.3.9 AOC 13

AOC 13 consists of the surface waters and near shore sediments of Turnpike Lake to the west and south of the Facility. Characterization of the surface waters and sediments are addressed in Sections 9.4 and 9.5, respectively.

9.1.3.10 AOC 14

AOC 14 is a land area located under what is now Building 8 that reportedly received wastewaters from metal-cleaning operations. At the time of operations, wastewater was discharged through a neutralization unit into a leach field. Although there is no historical evidence that AOC 14 ever received chlorinated solvent waste, PCE and TCA have been detected in soil gas samples collected from beneath the concrete slab in Building 8 in this area. It is unclear if AOC 14 represents a source of these constituents or if the former leach field merely provides a preferential flow pathway and suitable subsurface environment for accumulation of chlorinated solvent vapors. When Building 8 was constructed, as much as ten feet of fill was required at the east end of the building to raise the building floor to the level of adjacent buildings.[52] A detailed assessment of soil gas sampling results is provided in Section 9.3.

Soil boring SB-27 was advanced within AOC 14 in February 1995 as part of the RFI Phase I field investigation to characterize metal concentrations in this area. Soil samples were collected at 6 and 18 feet bgs from this boring. Two additional borings (SB-55 and SB-56) were advanced through the concrete floor in Building 8 between AOCs 14 and 29 as part of the Supplemental RFI field investigation in October 2005. The locations of these two borings (shown in Figure 4.1.1) were selected based on the results of the updated soil gas survey described in Section 9.3, and coincide with the highest VOC concentrations detected in this area. Samples were collected from below the fill layer at 10 and 16 feet bgs in SB-55 and at 9 and 15 feet bgs in SB-56 and analyzed for VOCs and metals.

Metals. Concentrations of metals detected in soil samples collected from SB-27 are presented in Table 4.1.6. Chromium, copper, lead, nickel, silver and zinc were each detected at concentrations just above site-specific background. Beryllium and selenium were also detected at low levels. However, only concentrations of selenium (at 0.79 mg/kg) and silver (at 1.9 mg/kg) exceeded MassDEP “natural” soil background levels. Concentrations were slightly higher (within about a factor of two for most metals) in the sample collected at 18 feet bgs than in the sample collected at 6 feet bgs, which is clearly in the fill layer.

In soil samples collected from SB-55 and SB-56, metal concentrations (shown in Table 6.1.9) were comparable to site-specific background levels and below MassDEP “natural” soil

52 The amount of fill required ranged from as much as ten feet in the northeast corner of Building 8 to a foot or less at the western end. Assuming an average fill depth of five feet, the total volume of fill is approximately 15,000 cubic yards.

levels. The low levels of metals detected in these borings suggest that this area has not been affected by the discharge of wastewaters from metal cleaning operations.

VOCs. Only low levels of PCE were detected in soil samples collected from soil borings SB-55 and SB-56 (see Table 6.1.7). PCE was detected at 240 and 270 µg/kg at a depth of 9 – 10 feet bgs in SB-55 and SB-56, respectively. In deeper samples collected at 15 – 16 feet bgs, PCE was detected at 1.8 and 44 µg/kg. Benzene (at 1.1 µg/kg), toluene (at 1.9 µg/kg) and acetone (at 26 µg/kg) were also detected in the deeper sample collected from SB-55. However, no TCA was detected in either soil boring despite TCA being the predominant VOC detected in soil gas in this area. The low levels of PCE in soils collected at a depth of 9 – 10 feet bgs between AOCs 14 and 29 may be contributing to the PCE concentrations in soil gas near AOC 14; however, vadose zone soils do not appear to be a source of TCA in soil gas at AOC 14. Soil gas data are discussed in more detail in Section 9.3.

Overburden monitoring well MW49A was installed upgradient (west) of AOC 14 as part of the Supplemental RFI field investigation in 2005. The location of this well is shown in Figure 3.1. This well was sampled twice, in December 2005 and April 2006, and TCA was detected at a concentration of 690 and 400 µg/L. Because no TCA was detected in soils above the ground water zone, it appears that the source of TCA in soil gas collected from AOC 14 originates from an upgradient source area (such as AOC 5/6) and not AOC 14. PCE was not detected in the December sample and detected at 6.9 µg/L in the April sample collected from MW49A. Only low levels of TCE, cis-1,2-DCE and 1,1-DCA have been detected in this well.

Located downgradient to the east of AOC 14 is overburden monitoring well MW12. This well was first sampled in August 1988, and PCE and TCA were detected at concentrations of 3,650 and 13,000 µg/L, respectively. TCA degradation products 1,1-DCE and 1,1-DCA were also detected at 500 and 600 µg/L, respectively. Concentrations have steadily decreased since August 1988. In September 2005, MW12 was replaced by a new well pair (MW12A/B) because MW12 was often dry under GSM pumping conditions. In April 2006, concentrations of PCE and TCA were 410 and 160 µg/L, respectively in MW12A and 4,000 and 1,100 µg/L, respectively in MW12B. Because no TCA was detected in subsurface soil samples collected near AOC 14, these data suggest that this AOC is not a source of the high VOC levels detected in MW12 in August 1988.

9.1.3.11 AOC 16

AOC 16 consists of a wastewater disposal system comprised of two dry wells and an associated leachfield. The wastewater discharged to this AOC reportedly included wastewaters from the wire melt room, personnel cleanup wastes from a locker room, and wastes from an assay laboratory. In addition, from 1957 until 1962, treated wastewaters generated during the fabrication of uranium fuel elements (which involved the handling of natural, depleted and enriched uranium) were also discharged to this AOC. During a system malfunction, liquid wastes disposed in this leach field reportedly may have overflowed to the ground surface in this area. The area of the former dry well at AOC 16 will be addressed in future work under the jurisdiction of the Massachusetts Department of Public Health.

Subsurface soil samples were collected from three soil borings drilled in this area (SB-28, SB-29 and SB-30) and analyzed for metals and VOCs (see Tables 4.1.6 and 4.1.8). In

addition, as part of a separate radionuclide investigation within the affected area, a soil boring (SBRD33) was advanced inside the former dry well located in this area. Refusal was encountered in SBRD33 at 12 feet bgs, which indicates the depth of the dry well and suggests that the bottom was not porous. A second boring (SBRD33A) was subsequently drilled immediately outside the dry well. Soil samples were collected from both borings at a depth of 10 feet bgs.

Metals. Concentrations of arsenic, cadmium, chromium, copper, lead, nickel, and zinc in subsurface soils collected from AOC 16 were comparable or slightly above maximum concentrations detected in site-specific background samples; only copper, which was detected at a concentration of 128 mg/kg, and beryllium (detected in one sample at a concentration of 0.78 mg/kg) exceeded MassDEP “natural” soil levels.

Several metals were detected significantly above background in the soil sample collected from within the dry well (SBRD33, Table 4.1.6), including arsenic, cadmium, chromium, copper, lead, nickel, silver, and zinc. Beryllium, mercury, and selenium were also detected in this sample as well as cyanide at a level of 94.5 mg/kg. The exterior sample (SBRD33A) was not analyzed for metals.

VOCs. PCE and TCE were each detected at a depth of 15 feet bgs in samples collected from borings SB-29 and SB-30 at low concentrations of 2 J and 2J µg/kg, and 220 and 10 µg/kg, respectively. Low concentrations of TCA, 1,1-DCA, and vinyl acetate were also detected.

Low levels of VOCs (PCE, TCE, TCA and toluene) were also detected in samples collected from SBRD33 and SBRD33A. SBRD33 also had detected VOC concentrations of TCA at 4J µg/kg, PCE at 63 µg/kg, toluene at 2J µg/kg, and TCE at 27 µg/kg. For comparison, the exterior sample from SBRD33A had concentrations of PCE at 10 µg/kg, and TCE at 9 µg/kg.

PCBs. The sample collected from within the dry well was also analyzed for PCBs (Table 4.1.11). Aroclor 1248 was detected at 74,000 J µg/kg, Aroclor 1254 was detected at 80,000 J µg/kg, and Aroclor 1260 was detected at 25,000 µg/kg.

Other Constituents. Samples collected from both within and just outside the dry well were also analyzed for SVOCs and TPH (Tables 4.1.9 and 4.1.10). Fluoranthene and bis (2-ethylhexyl) phthalate were detected in the interior sample at concentrations of 5,900 J and 15,000 J µg/kg, respectively. Neither of these two compounds were detected in soil collected from just outside the dry well; however, pyrene was detected at a concentration of 62 J µg/kg. TPHD was only detected in the interior sample at a concentration of 160 µg/kg.

Radionuclides. Because AOC 16 was used to dispose treated wastewaters generated during the fabrication of uranium fuel elements, this is one of the areas targeted for investigation during the Radiological Site Characterization Survey (described in Section 4.7). As displayed in the series of figures contained in Appendix O, the highest uranium concentrations in soil were detected in AOC 16 and elevated levels were detected as deep as 18 feet bgs. BASF has proposed that soils in AOC 16 (as well as other very localized, limited volume of soils within AOCs B and 7, and sediments within the adjacent south embayment of Turnpike Lake, which exceed MADPH cleanup standards) be removed and disposed of at a licensed off-site disposal facility.

9.1.3.12 AOC 19

AOC 19 is a former small building adjoining former Building 7. The building was constructed with a concrete floor and walls and the floor was set approximately four feet below the adjacent former Building 7 floor level. The former building contained a grease trap, which removed oil and grease from the recirculating contact cooling water generated by a rolling mill. A sump pump located in the former building discharged water (potentially containing oil and metals) to the ground surface outside the building wall.

Boring SB-31 was drilled adjacent to the grease trap, and samples were collected at 2 and 4 feet bgs. Both samples were analyzed for TPH, with no detections reported.

9.1.3.13 AOC 22

AOC 22 is a dry well believed to have been located under the northeast corner of former Building 9. It reportedly received unknown quantities of steam condensate from a sump containing two steam-heated vapor degreasers. The location of AOC 22 is based on a single reference in a 1977 report describing the presence of a degreaser pit sump pump located in the wire cleaning room (former Building 1), which discharged hot condensate to a floor drain in old Building 4[53] that subsequently drained to an under floor dry well. It is unclear if the recently discovered dry well in the upper courtyard area (AOC 7) is related to this system, although the fact that the single connecting drain line was from the direction of old Building 4 and appeared to have been sheared off when Building 9 was constructed suggests that it may be.

VOCs. Soil boring SB-32 was drilled in 1995 at a location where previous soil gas data indicated a potential release of VOCs in the area. The boring was located downgradient from the previously suspected location of the former dry well. Samples collected at 2 and 8 feet bgs contained PCE at concentrations of 14 and 140 µg/kg,respectively. The soil sample collected at a depth of 8 feet bgs also contained TCA at a concentration of 4 J µg/kg (Table 4.1.8). No evidence of free product was noted in the boring. As described in Section 9.3, soil gas survey data indicated low to moderate levels of VOCs in vapor in both this area and in adjacent AOC 26. The low concentrations of VOCs in soil in this area lend credence to the idea that what has been described as AOC 22 is actually the dry well discovered in 2003 in the upper courtyard area in AOC 7.

9.1.3.14 AOC 23

AOC 23 consisted of a storm drain and a leach field. It was located north of former Building 1 and, at one time, it reportedly may have received floor spillage from the lower boiler room in former Building 1. Any floor spillage went through a concrete-lined, subsurface 200-gallon oil separator prior to entering the storm drain. The oil-water separator has since been filled with concrete and the storm drain is believed to be buried under the berm that was constructed with demolition debris in this area when Building 1 was demolished in 1996. A former 5,000 gallon UST used for the storage of No. 4 fuel oil was also located just north of the northwest corner of former Building 1. The tank was installed in 1959 and removed in 1986.

53 Old Building 4 was located on the south side of old Building 3, which was in the northeast corner of former Building 9 prior to the construction of Building 9.

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Two soil borings were advanced in this area in 1995 as part of the RFI Phase I soil investigation. Soil boring SB-33 was drilled to evaluate the potential impact of spillage on the former boiler room floor and soil boring SB-42 was drilled to evaluate the potential impact of the UST.

Metals. Concentrations of metals detected in soil samples collected from SB-33 were comparable to site-specific background levels and below MassDEP "natural" soil levels. Concentrations detected at a depth of 14 feet bgs were slightly higher (by less than a factor of two) than levels detected at 10 feet bgs (Table 4.1.6).

Other Constituents. Soil samples collected from SB-33 and SB-42 (at depths of 12 and 18 feet bgs) were also analyzed for total petroleum hydrocarbons (TPH); however, none were detected.

9.1.3.15 AOC 26

AOC 26 consists of an approximately 22-foot long by 2-foot wide concrete trench, which served as a housing for process piping. The trench was located within former Building 1. In February 1989, it was discovered that wastewaters had apparently leaked from the piping in this trench, which connects aqueous acid/alkali cleaning tanks with a drain that leads to the WTP, and contaminated subsurface soils. Approximately 7.5 cubic feet of soils and concrete were excavated from this area. Metals were detected in soil samples from the trench. The trench and piping were repaired in 1989.

As part of the RFI phase I soil investigation, one soil boring (SB-34) was advanced through the trench in 1995, and samples were collected at 2 and 6 feet bgs for analysis of metals and VOCs. Results are summarized in Tables 4.1.6 and 4.1.8.

Metals. Cadmium, chromium, copper, lead, nickel, silver, and zinc were all detected at concentrations above maximum background levels; and cadmium, copper and silver were detected above MassDEP "natural" soil levels at concentrations of 29.8, 297 and 2.8 mg/kg, respectively. Concentrations of all metals were typically highest in the 2-foot deep sample and decreased or stabilized with depth.

VOCs. PCE was detected at 8 µg/kg in samples collected from 2 and 6 feet bgs. Low concentrations of vinyl acetate were also detected in the sample collected at 2 feet bgs. No other VOCs were detected. Samples were also analyzed for cyanide; however, none was detected.

9.1.3.16 AOC 29

AOC 29 consists of a former above-floor degreaser that was located in Building 8 at the north central portion of the Facility. The degreaser may have operated from the time Building 8 was constructed in 1972 and until it was removed between 1990-1993, concurrent with the cessation of manufacturing activities at the Site. VOCs have been detected in soil gas samples collected from beneath the building slab in the vicinity of AOC 29 (see Section 9.3) and in ground water samples collected from the nearest monitoring well cluster (MW02/MW29).

VOCs. Soil boring SB-35 was drilled downgradient of the former degreaser in February 1995 to investigate potential VOC concentrations in the vadose zone soils. Samples were collected at 2, 9, 16 and 25 feet bgs. VOCs were only detected in the sample

collected at 25 feet bgs. In this sample, the only VOCs detected were PCE and TCE, at concentrations of 7 and 8 µg/kg, respectively (Table 4.1.8).

Ground water samples collected in May 1995 from the overburden monitoring well MW02, which is located slightly upgradient (west) of AOC 9, contained PCE and TCE at 1,100 and 45 µg/L, respectively (Table 4.2.10). Thus, it appears that the low levels of these constituents observed in vadose zone soils at 25 feet bgs are likely attributed to volatilization from ground water rather than sources associated with AOC 29. Note that the most recent sample collected from MW02 in December 2005 contained no VOCs, which suggests that the GSM is having an effect on ground water concentrations in the overburden zone in this area.[54]

Note that ground water samples collected in May 1995 from the shallow bedrock well (MW29) contained TCA and 1,1-DCA at 4,100 and 130 µg/L, respectively – and no PCE or TCE (Table 4.2.10). In August 2006, ground water collected from MW29 contained TCA, 1,1-DCA and 1,1-DCE at 720, 35 and 10 µg/L, respectively and again no PCE or TCE. Thus, the source of TCA in ground water and soil gas in the area of AOC 29 appears to be originating from an upgradient source (such as AOC 5/6) rather than operation of the above floor degreaser at this location.

9.1.3.17 AOC 30

AOC 30 consists of a former below grade degreaser pit located in former Building 6. At some point, prior to demolition of former Building 6 in the mid-1990s, the pit was filled in and covered with concrete. During Phase I, Boring SB-36 was drilled within the footprint of the former degreaser pit. The boring hit a buried concrete slab a few feet bgs, and the rig was relocated approximately 20 feet north to drill boring SB-36B. During Phase II, another attempt was made to further characterize the VOCs at AOC 30. A boring (SB-36C) was attempted adjacent to SB-36. Again, refusal occurred on the buried concrete slab, and elevated VOC concentrations were detected in soil and water above the slab. Due to concern of cross-contamination, which would result from penetrating the slab, the rig was relocated and a second boring (referred to as SB-36CR) was drilled four feet east of SB-36.

In October 2005, the concrete slab covering this pit was removed revealing two adjacent pits separated by an east-west wall. The northern pit reportedly contained the degreaser and the southern pit contained related pumps and piping. Both pits were intact, containing fill materials and holding liquid.[55] After removing the entire contents of both pits, the lower slabs of each pit were removed revealing what appeared to be dry soils beneath the pits. One soil sample was collected from below the center of the slab in the southern pit (AOC30-1) and two samples were collected from below the southern and northern edges of the northern pit (AOC30-2S and AOC30-2N, respectively). All three samples were analyzed for VOCs. After sampling, the excavated areas were backfilled with clean material.

Two additional subsurface soil samples were collected from soil borings (SB-58 and SB-59) advanced through the clean fill material to native soils beneath the pits and analyzed for PCBs after low levels of PCBs were detected in one of the composite samples used to characterize the excavated material for disposal purposes.

54 A complete summary of ground water monitoring results by well is provided in Appendix Q.
55 A photo log is provided in Appendix P.

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VOCs. The boring samples collected from SB-36 at one foot bgs (above the slab) contained PCE at concentration of 2,200 J µg/kg, 1,1-DCA at 12,000 J µg/kg, and chloroethane at 2,900 J µg/kg, respectively. The sample collected immediately below the depth of the buried slab (approximately 3 feet bgs) in SB-36B had concentrations of TCA at 6 µg/kg, PCE at 6 µg/kg, and toluene at 2J µg/kg (Table 4.1.8).

Soil collected from SB-36C (also located within the pit, above the slab), contained TCA at 410 J µg/kg, 1,1-DCA at 53,000 µg/kg, methylene chloride at 440 J µg/kg, and PCE at 1,200 J µg/kg. After the rig was relocated, two soil samples were collected below the base of this slab from SB-36CR. No VOCs were detected above detection limits for samples collected at 5.5 or 9 feet bgs. These data were consistent with the presence of an intact concrete pit, which effectively prevented leakage into the underlying soil.

Soil samples collected from directly below the concrete pit during the Supplemental RFI field investigation (AOC 30-1, AOC 30-2N and AOC 30-2S) contained low to moderate levels of chlorinated solvents (TCE, TCA, 1,1-DCE and 1,1-DCA). For example, TCA was detected at 570, 74 and 2,300 µg/kg; and TCE was detected at 180, 0.8 and 18 µg/kg in samples AOC 30-1, AOC 30-2N and AOC 30-2S, respectively (Tables 6.1.6, 6.1.7). While no significant leakage from the pits was evident from visual observations and prior sampling, it appears that some minor leakage has occurred. This leakage may be responsible for the low levels of VOCs detected in soil gas in this area (see Figures 9.3.3 and 9.3.4).

PCBs. No PCBs were detected in the two additional subsurface soil samples collected from native soils beneath the pits.

9.1.4 Estimation of Hazardous Constituent Mass in Each AOC

For the limited purpose of fulfilling the requirements of Section IX.B.2.ii of the ACO, an evaluation was made of the estimated quantities of hazardous constituents within each AOC and sub-AOC. These calculations are not intended to be definitive, and should serve no other purpose than acting as an estimation as required by the Consent Order. For soil, each AOC and sub-AOC was divided into a hypothetical box or cylinder based on the dimensions of the area, the depth to ground water (DTW) or depth of deepest sample collected, and number of vadose zone samples collected from within it. The assumed dimensions of each area were estimated using information obtained from available aerial photographs, text descriptions and figures. Each area was then subdivided into three layers including a surface layer from 0 – 2 feet and two equal subsurface layers extending to ground water or the depth of the deepest sample. The DTW was obtained from boring logs when the information was available. In several cases, the boring log did not note DTW, or the water table was not encountered in the boring, and DTW was estimated from nearby borings.

The mass of soil in each AOC was obtained using an average soil dry density of 55.5 kg/ft^3 and the dimensions of each area as discussed above. The average soil dry density was calculated from four samples collected near the Facility, which were averaged and used for all soil calculations. For sediments in AOC 13, an average dry density of 21.2 kg/ft^3 was assumed based measured values for Turnpike Lake sediments.

The average constituent concentration in each layer was calculated assuming a value of zero for non-detects. A volume-weighted average concentration of a contaminant across an AOC was then calculated and used to determine the absolute mass of contaminant in each

AOC. Weighted average concentrations and total mass were calculated for VOCs, SVOCs, PCBs, and individual metals for each AOC. Results of these calculations are summarized in Table 9.1.11. Note that these calculations do not reflect the soil removal conducted in the Upper Courtyard Area, which extended below the water table. As the mass estimates are based on a weighted average concentration, the reduction in mass above the water table is proportional to the relative area excavated, which is approximately 5% of the total area of AOC 7.

9.2 Ground Water Contamination

9.2.1 Background Ground Water

Two monitoring wells were installed to characterize background ground water quality at the Facility. MW07 was installed in the overburden and MW37 was installed in bedrock. The background wells are located in a wooded area outside the perimeter security fence on a portion of the Facility that has not been used for manufacturing or chemical/waste storage (see Figure 3.1). This location is also on the upgradient side of the Facility in a zone of ground water recharge from Turnpike Lake. Both wells are constructed with stainless steel casings/screens. A discussion of the results of chemical tests of ground water from these wells is provided below.

9.2.1.1 Chlorinated Volatile Organic Compounds

Chlorinated volatile organic compounds (CVOCs) were analyzed for in the background ground water samples during all five rounds of RFI sampling including the Appendix IX sampling event. In general, CVOCs have not been detected, however, PCE was detected in the overburden background monitoring well MW07 at 3 µg/L and 8 µg/L in Rounds 1 and 2 respectively and in bedrock background monitoring well MW37 at 25 µg/L in Round 2 (Table 4.2.10)[56]. Review of the field records for the initial three rounds of testing (Appendix IX, Round 1, Round 2) conducted during the Phase I investigation indicates that sampling-induced cross contamination is the likely explanation for the anomalous detections of PCE in the background monitoring wells MW07 and MW37.

To minimize cross contamination, the sampling program was designed so that monitoring wells would be sampled in the order of expected concentrations of total CVOCs, *i.e.*, clean wells would be sampled first and wells with increasing concentrations would follow. This sampling order was followed during the Appendix IX sampling event, and no CVOCs were detected in the background monitoring wells MW07 and MW37. However, in Rounds 1 and 2, monitoring well MW28 was sampled out of order and before the sampling of MW07 and MW37. PCE was detected in MW28 at 1,600 micrograms per liter (µg/L) in Round 1 and at 1700 µg/L in Round 2. Although the sampling pump and equipment were decontaminated between each well following standard procedures, it appears that cross contamination between MW28 and the background wells may have occurred during Rounds 1 and 2. In addition, as discussed above, the location of the background wells indicates that impact from the Facility or other sources is extremely unlikely.

Following communications with the USEPA, it was agreed that MW07 and MW37 would be re-sampled to resolve the issue of cross contamination. On July 26, 1996, both wells were purged and sampled for CVOCs (EPA Method 8240). Equipment blanks were collected

56 A well-by-well summary of VOC concentrations detected in ground water is provided in Appendix Q.

before each well was sampled, and one duplicate sample was collected concurrent with each primary sample. The chemical analytical data was validated according to Region I Tier II guidelines, and PCE was not detected in any of the samples (in fact, no CVOCs were detected in these samples). A complete description of the field procedures, sampling program and results is presented with the Phase II data in Section 5.0 of this report.

Based on the review of the entire sampling record, it is concluded that the detections of PCE in MW07 and MW37 in Rounds 1 and 2 were anomalous data and were likely the result of cross contamination. It is therefore concluded that MW07 and MW37 remain suitable as background ground water monitoring locations. The expected concentrations of CVOCs in background ground water are non-detect.

Further discussion of CVOCs results for other wells is presented in Section 9.2.2.

9.2.1.2 Metals

Numerous metals were detected in ground water samples collected from MW07 and MW37 during the RFI and the Supplemental RFI field investigations. The frequency of metals detection was particularly higher in the total metals analyses, as compared to the dissolved (filtered) analyses, suggesting that many of the detections may be associated with particulate material in the wells that was not removed by the low-flow sampling technique. Based on the five rounds of sampling for the two background wells, no metal was detected in 50 percent or more of the samples. Therefore, background cannot be characterized by statistical representation using the 95% UCL. Concentrations of metals detected in background ground water samples collected during the RFI are presented in Table 9.2.1.

Three metals occur in the background samples with notable frequency, albeit at relatively low concentrations: chromium, nickel, and lead. It is unknown whether these metals are naturally occurring in the soils and bedrock, or are the result of slow corrosion of the stainless steel used in constructing these wells, coupled with incomplete purging of borehole water with the low-flow sampling technique employed in the RFI.

For the purpose of evaluating ground water, analytical results for ground water samples were compared to the Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act. The concentrations of metals measured during the RFI in background wells are below the MCL with one exception. The results in both background monitoring wells exceeded the MCL for antimony in the Round 3 sampling event. Because antimony was not detected before or after Round 3, the Round 3 antimony results are considered anomalous, and background likely does not exceed the MCL for any metals.

Concentrations of the five metals most frequently detected above MCLs in ground water at the Facility (antimony, cadmium, chromium, lead, and nickel) are displayed for the entire monitoring network, including the background wells, for the five rounds of testing in the RFI Phase I/II and Supplemental investigations on Figures 9.2.10 through 9.2.14. Further discussion of metals results in ground water is presented in Section 9.2.3.

9.2.1.3 Other Constituents

Dioxins and furans were not detected in any of the samples collected and analyzed during the Appendix IX sampling event. These compounds were, therefore, not included in the later RFI sampling programs. Likewise, polychlorinated biphenyls were also not included in the

routine tests for the background wells due to lack of finding PCBs in the Appendix IX sampling event. Background concentrations for all of these other chemicals are assumed to be non-detect.

9.2.2 Volatile Organic Compounds

Ground water samples collected during the Appendix IX, and the RFI Phases I/II and Supplemental investigations along with the annual groundwater monitoring events were analyzed for VOCs. Based on a review of this data, the following VOCs were detected with the greatest frequency: PCE, TCE, TCA, cis-1,2-DCE, 1,1-DCE, and 1,1-DCA. In addition, these constituents were detected at levels above their respective MCLs, with the exception of 1,1-DCA for which a MCL does not exist. Vinyl chloride was also detected at levels above its MCL of 2 µg/L but only at a very low frequency. This constituent is likely a degradation byproduct of DCE. No other CVOCs were detected above their MCLs.

The distribution of CVOCs in ground water at the Facility is widespread, reflecting multiple likely source areas from which CVOCs have migrated and formed a more-or-less continuous plume which extends to the east of Route 152. For efficiency of presentation of this data, isoconcentration contour maps are presented for total CVOCs detected during the most recent round of sampling conducted in November 2010 in the overburden and the shallow and deep bedrock units on Figures 9.2.1 through 9.2.3, respectively. Complete data summary tables showing all validated results for the RFI Phase I, II and Supplemental investigations are shown in Sections 4.0, 5.0 and 6.0, respectively and in Appendix Q. Further discussion of the current distribution and the temporal trends for concentrations of CVOCs in the overburden and bedrock are provided below.

9.2.2.1 Volatile Organic Compounds - Geographic Distribution/Temporal Trends

The spatial patterns of CVOC concentrations observed in ground water monitoring wells and in soil gas (see Section 9.3) indicate that a number of the identified AOCs are contributing to the occurrence of CVOCs in ground water; however, the majority of the on-site ground water CVOC contamination appears to originate in two principal areas of the Facility:

- AOCs 5 and 6 and potentially AOC 29 beneath Building 8, and
- the area including AOC 7 in the upper courtyard area, and AOC 22/26 beneath Building 1.

AOC 5 is a former land disposal area/pit located beneath the northwest corner of Building 8 that reportedly received contact and non-contact cooling waters and acid cleaning and annealing wastewaters. An above-floor degreaser was also operated in this area within Building 8. AOC 6 is an area located in the southwest corner of what is now Building 8 where wastewaters from metal cleaning operations were reportedly released to the ground; and AOC 29 is the location of a second above-floor degreaser operating within Building 8.

The pattern of soil gas concentrations detected in samples collected from beneath Building 8 suggests that CVOC sources may be present in the vadose zone beneath Building 8. The highest groundwater concentrations in this area have historically been observed in MW12 (downgradient of Building 8) and MW29 (slightly upgradient of AOC 29). The predominant CVOC detected in ground water beneath Building 8 has been TCA, although PCE and other degradation byproduct have also been detected. Concentrations of TCA in bedrock

monitoring wells northeast of Building 8 (MW03/14/16) in the northern portion of the CVOC plume, and upgradient of the GSM barrier wall and line of extraction wells, were in excess of 4 mg/L in the early 1990s, but have declined by about an order of magnitude to less than 0.4 mg/L since then, with cessation of degreaser operations at the Facility in 1993 and startup of the GSM in 1998 (see Figure 9.2.4).

The concentration of PCE in this same well nest (MW03/14/16) has historically been less than 1 mg/L; however, upon the startup of the GSM in early 1998, PCE concentrations increased in the bedrock to over 2 mg/L (see Figure 9.2.4). It is likely this increase in PCE is the result of migration from areas to the south of Building 8, which was triggered by the change in bedrock flow patterns, and/or the flushing of highly concentrated VOCs from bedrock microfractures induced by the pumping of extraction well EW06 at the north end of the GSM. Over time, with the operation of the GSM, concentrations of total CVOCs on the northern portion of the CVOC plume in this area have declined to less than 1 mg/L.

Recent testing of the shallow bedrock zone indicates that the concentration of total CVOCs is approximately 5 mg/L in MW12B, immediately downgradient of Building 8 (see Figure 9.2.2). Based on ground water flow direction, enhanced by GSM pumping effects, it seems that CVOCs were released in the vicinity of Building 8 and/or migrated from beneath former Building 1 from a variety of upgradient sources. The concentrations of total CVOCs in overburden monitoring wells beneath Building 8 (*i.e.* MW48A and MW49) are less than those observed in MW12B (last sampled in 2006).

AOC 22/26 is the location of a former dry well that reportedly received steam condensate from a sump containing two steam-heated vapor degreasers, and a nearby concrete trench beneath former Building 1. Although significantly elevated concentrations of PCE and its degradation products and lesser amounts of TCA have been found in soil gas and ground water in this area, the former dry well may actually be located in the upper Courtyard Area of AOC 7 as described below. Historically, concentrations of PCE in excess of 40 mg/L have been detected in the overburden zone (MW04), and in excess of 20 mg/L in shallow bedrock (MW15) immediately downgradient of this area in the early 1990s while the Facility was still operating (see Figure 9.2.5). Since then, total CVOC concentrations in shallow bedrock have declined somewhat from a range of 20 to 30 mg/L in the early 1990s to a range of 10 to 20 mg/L in MW45B in the 2004-2006 timeframe (see Figure 9.2.2). A deep bedrock monitoring well (MW45C) screened from 180 to 200 feet bgs was installed in April 2009 and sampled in May and November 2009. Total CVOC concentrations were in the 10 to 14 mg/L range. However, whereas groundwater collected from MW45A and MW45B contained almost entirely PCE and TCE and no TCA, groundwater collected from MW45C contained about 8 to 10 mg/L TCA and lesser amounts of PCE and TCE.

Although no DNAPL layers have been directly observed beneath AOCs 22/26, the consistently high concentration of CVOCs in this area since the Facility was closed indicates the likely presence of source material (DNAPL) in the overburden and bedrock zones. CVOCs have been found at concentrations in excess of 10 mg/L deep into the shallow and deep bedrock zones, indicating significant vertical migration has occurred through high angle, nearly vertical fractures, creating an area that will likely remain a significant source of CVOCs for the foreseeable future. A significant bedrock fracture zone has also been mapped to cross this area from west to east, which provides a zone of preferential migration

that facilitates the movement of CVOCs off-site to the east in bedrock. This area is regarded to be a significant source of the CVOC contamination found in downgradient ground water.

As mentioned above, and previously described in Section 8.0, the northeast corner of AOC 7 contained a dry well that was apparently used for the disposal of PCE and TCA solvents. Based on the location of this dry well and the concentration of VOCs detected in sediments collected from this well (see Section 9.1.3.8), it appears that this structure is what has historically been described as AOC 22. Concentrations of total CVOCs have been measured in ground water at over 100 mg/L near the dry well indicating the likely presence of source material (DNAPL) in the overburden and/or bedrock zones. For example, PCE and TCA were detected at 150 mg/L and 16 mg/L, respectively in PW-21. PCE was also detected at 65 mg/L in PW-20 and 38 mg/L in PW-23 (see Table 9.2.2). This area is regarded to be a significant source of the CVOC contamination found in downgradient monitoring wells. Like AOC 22/26, this dry well overlies the fracture zone that conveys ground water to the east. As indicated in Section 9.1.3.8, the former drywell and surrounding soils were excavated in late 2007.

Elsewhere on the facility other less significant sources of CVOCs have been identified in the vicinity of AOCs A-1 and 30, although concentrations in ground water are typically well below those found in the areas discussed above.

Although the on-site plume of detectable CVOCs spans much of the frontage of the Facility property along Route 152, the most concentrated portion of the plume leaving the Site is found near extraction wells EW02 and EW03, monitoring wells MW04/15/17, MW53A/B/C, and piezometers P12, P12a, P12b and P13, which are downgradient of AOCs 22/26 and 7. For example, the newly installed deep monitoring well MW53C, located east of the Upper Courtyard Area, contained total CVOCs in the 70 to 80 mg/L range at 180 to 200 feet bgs. Further downgradient, total CVOC concentrations were detected at 20 to 30 mg/L in piezometer P12b.

The migration of CVOCs from this area extends downgradient to the east to well nests MW40A/B, MW41A/B and MW21A/B/C. This migration pathway corresponds approximately with the alignment of a fracture zone in the bedrock that was identified during the pump testing of extraction well EW02 (associated with the GSM) and during subsequent geophysical testing of this well and nearby wells in 2008.[57] This fracture zone may have contributed to the off-site migration in this area. Historically, along this flow path, concentrations of total CVOCs have been detected off-site in the range of 1 to 10 mg/L in both the overburden and bedrock zones.

CVOCs in the overburden historically migrated off-site to the east of Route 152, where ground water is drained into Sawmill Brook (see Figure 9.2.1). Overburden concentrations of total CVOCs in this area in the late 1980s and early 1990s exceeded 5 mg/L, but have significantly declined since the early 1990s, particularly since the startup of the GSM in 1998, with concentrations recently reported to be less than 0.1 mg/L at MW21A. This significant improvement in water quality is likely the result of better interception of contaminated ground water in the overburden at the upgradient GSM, and the natural flushing of the overburden by the infiltration of clean rain water on the unpaved properties

57 A more detailed discussion of the conditions in the area of the GSM and the significance of this fracture on ground water migration and capture is provided in Section 13 of this report.

downgradient of the GSM and east of Route 152. Further to the north, concentrations of CVOCs migrating in the overburden from beneath Building 8 also are observed to rapidly decline as ground water reaches the area of discharge along the southern boundary of the drive-in property (see Figures 9.2.1 and 9.2.4).

Concentrations of CVOCs in sediment and surface water (described in Sections 9.4 and 9.5) also suggest that CVOCs in ground water are transported east of Route 152 and discharge in the low lying wetlands due to ground water upwelling in this area. In particular, CVOCs were not detected in sediment or surface water samples collected from locations upstream of the low-lying area east of Route 152 but were detected at elevated concentrations in samples collected from within the ground water upwelling zone in this area. The highest CVOC concentrations were detected in sediment and surface water samples collected near overburden monitoring well MW21A where the highest levels of VOCs were detected in off-site ground water.

In the bedrock zone, migration of CVOCs has also occurred historically towards the wetlands east of Route 152. Similar to what was observed in the overburden, total CVOC concentrations declined with the shutdown of the Facility in 1993 and later, with the startup of the GSM in 1998. The improvement in water quality in the bedrock has been less than observed in the overburden, however, and recent total CVOC concentrations in off-site wells bordering the wetlands continue to exhibit concentrations in the range of approximately 2 mg/L (see Figure 9.2.2). The slower improvement in bedrock water quality is likely the result of a slower rate of flushing of the bedrock zone from upgradient ground water, as the operation of the GSM has significantly intercepted the natural flow of ground water through the bedrock zone from Turnpike Lake. A more complete discussion of the performance of the GSM is provided in Section 13.5. The long-term trend for CVOC concentrations in bedrock in this area, however, should continue downward due to operation of the GSM.

As the CVOCs have migrated to the east of Route 152, the direction and extent of migration is controlled by the discharge of ground water into the low-lying wetlands east of the road and southeast of the drive-in property. Evidence of this discharge has included the historic presence of springs or “seeps” along the boundary of the upland areas and the wetland immediately east of the Facility, and the presence of CVOCs in surface water and sediment in the wetlands. This natural discharge process is the result of the location and relative elevation differences between the principal source of water (Turnpike Lake) and the wetlands. Because Turnpike Lake is perennial, and always contains some amount of surface water, this discharge process will persist to a greater or less degree throughout the year and during periods of both high rain (and high water table) and drought. The historical ground water quality data also supports a conclusion that the wetlands form an effective sink that prevents the migration of CVOCs farther to the east towards Lake Mirimichi, even in the deeper bedrock zones. A number of years of monitoring data from sentinel bedrock monitoring wells located along the eastern and southern boundaries of the wetland have consistently shown no detection of CVOCs beyond the principal discharge area south of the drive-in property (see Figures 9.2.1, 9.2.2, and 9.2.3). Two new very deep (> 200 feet bgs) sentinel wells (MW33D and MW43D) were installed in August 2010 to determine whether CVOCs are migrating beyond the wetlands to the north and east. No chlorinated VOCs were detected in either well during the annual groundwater monitoring event in November 2010 (see Figure 9.2.3).

As discussed in Section 7.0, approximately 78 private wells located to the northeast of the Facility were sampled in March 1989 for VOCs. These samples were intended to determine if contaminated ground water in the shallow and deep bedrock had affected ground water quality in the existing private wells. At that time, none of the chemicals detected in the private wells had been detected at the Facility with the exception of TCA. TCA was detected in one well located approximately 3,000 feet north of the Facility at a concentration of 6 µg/L. Other private wells north of the Facility including some in closer proximity to the Facility and several wells in the immediate vicinity of the contaminated well had no detectable concentrations of VOCs suggesting that the detection of TCA in one private well is anomalous and not indicative of contamination from the Facility.

9.2.2.2 Uncertainties in Groundwater Transport Analysis

As discussed above, several lines of evidence support the Conceptual Site Model (see Section 2.0) that contaminants in groundwater naturally discharge to the low lying wetlands east of Route 152. Evidence of this discharge has included the historic presence of springs or “seeps”, and the presence of CVOCs in surface water and sediment in the wetlands. The historical ground water quality data also supports a conclusion that the wetlands form an effective sink that prevents the migration of CVOCs farther to the east towards Lake Mirimichi. Aside from a few transient low-level hits detected in 1995 and 1997, no CVOC contamination has been detected beyond the wetlands even after many years of monitoring.[58] The groundwater flow model presented in Appendix H also supports this conceptual model. However some uncertainties remain. For example, there currently exist no bedrock monitoring wells located east-northeast of MW21B/C to confirm the direction of groundwater flow in this areas and demonstrate that no CVOCS are migrating beyond the wetlands in this direction. In addition, the recent installation of several new “very deep” monitoring wells (i.e. MW53C, P12b, P16c), and extension of the EW02 extraction well borehole from 200 feet to approximately 300 feet bgs, show that CVOC contamination extends as deep as 290 feet bgs in areas on-site and east of Route 152, beyond the GSM. There are no very deep wells further east of P16c to evaluate the off-site migration of contaminants at these depths. The installation of additional well nests east of the wetlands would serve to reduce the uncertainty associated with this conceptual flow model.

9.2.2.3 Volatile Organic Compounds- Natural Attenuation Processes

An evaluation of natural attenuation of CVOCs has been ongoing at the Site since 1999 and the results have been summarized in two reports (ECS, 2004c; LFR, 2005c). Based on data presented in the two reports, and the more extensive ground water monitoring record over the past nearly 20 years, there is evidence that a moderate level of natural degradation of PCE, TCE, and TCA in ground water is occurring at the Site.

PCE, TCE, and TCA will biodegrade in a low oxygen environment by reductive dechlorination, forming TCE, cis-1,2-DCE and 1,1-DCA as the principal degradation byproducts. TCA will also chemically degrade (hydrolyze) in water to form 1,1-DCE. All of these byproducts as well as ethene and ethane have been found in ground water downgradient of the Facility, demonstrating that some level of degradation is in fact occurring[59]. The potential significance of this degradation in limiting the downgradient

58 CVOCs were detected at low levels in MW33B in 1995 and MW39, MW24A/B and MW34 in 1997 see Table 4.2.10. However, since that time, no CVOCS have been detected beyond the wetlands.

59 It should be noted that the assumed degradation byproducts TCE, cis-1,2-DCE, 1,1-DCA and 1,1-DCE may also occur as impurities in PCE and TCA. In addition, TCE was used as a degreasing solvent at the Facility

movement of CVOCs, however, must be evaluated within the context of the rate of flow in ground water and the proximity to downgradient receptors/discharge zones.

To understand the potential significance of degradation in controlling the downgradient migration of CVOCs, a series of plots have been prepared that demonstrate the relative molecular (molar) fraction of TCA and PCE vs. their principal degradation byproducts (TCA to 1,1-DCA and 1,1-DCE; and PCE to TCE and cis-1,2-DCE) across the ground water monitoring network downgradient of the Facility (see Figures 9.2.6 through 9.2.9). As indicated in Figures 9.2.6 and 9.2.7, there is extensive conversion of PCE to TCE and cis-1,2-DCE at the edges of the overburden plume, most notably along the southern edge of the plume; however, biodegradation of PCE is less extensive in the shallow bedrock zone and there is little change in the degree of PCE biodegradation along the centerline of the plume, where CVOC concentrations are highest, east of Route 152 before it discharges into the wetlands. Also as seen in Figures 9.2.8 and 9.2.9, only the southern edge of the TCA plume in both the overburden and shallow bedrock zones shows relative concentrations of 1,1-DCE and 1,1-DCA that indicate any noteworthy chemical and biological degradation is occurring. Thus, overall, chemical and biological degradation does not appear to be a significant loss pathway for TCA.

It is apparent from these plots that although some degradation is occurring, the relative molar fractions of PCE and TCA are not being materially reduced by degradation as these CVOCs are migrating across Route 152 to the area of the wetlands near well cluster MW21. At the point that these CVOCs ultimately discharge into the shallow surface waters in the wetland area via upwelling from shallow bedrock, a significant fraction of the CVOCs are still present as the original parent compounds (PCE and TCA).

This analysis indicates that while natural degradation is causing some reduction of TCA and PCE in ground water, the effect is most significant at the edge of the plume where it reaches the natural discharge zone east of Route 152.

9.2.3 Metals

Thirteen metals were analyzed for in ground water samples collected from all overburden and bedrock wells in the RFI Phase I/II and Supplemental investigations. The deep bedrock wells were sampled after their installation in October 1996 and again during the RFI Phase I/II and Supplemental investigations. The complete analytical results of the metals analyses for each well are presented in summary tables in Sections 3.0, 4.0, 5.0, and 6.0 of this report. For efficiency of presentation, the RFI results for the five metals (antimony, cadmium, chromium, lead, and nickel) that were detected at levels that exceeded their respective MCLs at least once during the two phases of the investigation have been presented on maps (see Figures 9.2.10 through 9.2.15). All of the metals were detected at least once during the RFI sampling events. Including all five rounds of RFI sampling, the most commonly detected metals were antimony, arsenic, cadmium, chromium, copper, lead, nickel, and zinc. However, the relative frequencies of detection of these metals varied significantly among the rounds. Beryllium, mercury, silver, and thallium were rarely detected.

The analytical method used in Phase I for antimony was EPA Test Method 3010A/6010, which has a contract reporting limit of 60 µg/L. However, actual instrument detection limits

and may itself be a source of cis-1,2-DCE.

reported by the laboratory varied from 2 to 26 µg/L. In Phase II, the analytical method for this metal was changed to EPA Test Method 3015/6010A, which has a contract reporting limit of 9 µg/L. However, actual instrument detection limits reported by the laboratory varied from 1.1 to 3.3 µg/L. For these reasons, it is difficult to make strict comparisons between the Phase I/II and Supplemental investigation antimony data. The only time that antimony was detected above its MCL during the five RFI rounds was in Round 3. During this round, however, antimony was also detected in the background wells above its MCL and at levels comparable to those noted in the monitoring wells. Note that although arsenic and beryllium each had one instance of exceeding their MCLs, they were not included on the figures. The rationale for excluding these metals from the figures is that the only instance that they exceeded their MCL was at MW30A in Round 1. The concentrations of most metals in this particular sample were 5 to 10 times higher than those that were reported at this well in the other sampling rounds and were thus considered anomalously high.

Figures 9.2.10 through 9.2.14 are box maps showing the concentrations of the five metals (antimony, cadmium, chromium, lead, and nickel) that were detected at levels above their respective MCLs most often over the period of the RFI. Overall, metals were detected more frequently and at higher levels in the overburden as compared to the bedrock. Even within the overburden though, the pattern of detection was sporadic and often varied greatly at a particular well. Within the overburden, the concentrations of detected metals were highest in on-site wells west of Route 152. In particular, elevated concentrations of cadmium were detected downgradient of the former frog ponds in monitoring wells MW01 and MW46A, located south and west of Building 10, and in monitoring wells MW04 and MW12 downgradient of AOC 26 and AOC 14, respectively. These areas appear to represent localized areas of contamination, however, and the metals data do not exhibit the characteristics of a widespread plume of contamination that extends across the Facility into off-site areas. Cadmium exceedances of MCLs were generally not observed on-site in the bedrock zone.

Chromium, lead and nickel were also sporadically detected and, in a few instances, exceeded MCLs in on-site overburden wells, but were generally not found in the bedrock zone. The presence of these metals in ground water may be related to the historic discharge of waste water, but at low concentrations may also be related to the slow corrosion of the stainless steel well casings/screens, as was noted in the background wells.

The elevated concentration of metals detected during Phase I of the RFI in MW30A (see Figure 9.2.10) unlikely reflects an off-site metals plume. The elevated metals that were detected in 1995 included chromium, lead and nickel in MW30A and lead in MW22A. Note that concentrations of these metals decreased significantly in later rounds of sampling. The source of these metals is unclear; however, the owner of the private property east of Route 52 operates a landscaping and contracting business, and an equipment maintenance shed is located there also. On-site metals contamination found in AOC B originates primarily from baghouse dusts containing cadmium oxide, but only low levels of cadmium were detected in MW05 and no cadmium was detected in MW30A. Note that more recent sampling results conducted during Phase II in 1997 and during the Supplemental investigation in 2005 also show very low or non-detect levels of cadmium in MW05 and MW30A.As requested by USEPA, a new overburden/shallow bedrock monitoring well pair MW54A/B was installed on-site south of MW05 in August 2010 to test for the presence of a dissolved metals plume in this area. Groundwater samples were collected in November 2010 and analyzed for total

and dissolved metals (see Table 6.2.3). No metals were detected above MCLs. Cadmium, chromium, copper and nickel were detected in the overburden well MW54A at total concentrations ranging from 0.7 to 3.8 µg/L, but only chromium was detected in the dissolved phase at 0.5 µg/L. Arsenic, chromium and nickel were detected in the shallow bedrock well MW54B at 1.3 µg/L or less. These data indicate that there is no dissolved metals plume in this area.

East of Route 152, metals were only detected sporadically in overburden wells and then at levels that were generally lower than in wells west of Route 152. One overburden monitoring well near Sawmill Brook (MW22A) exhibited cadmium at slightly above the MCL in Round 3 and Supplemental RFI sampling rounds, however no pattern of cadmium contamination in upgradient and nearby wells consistent with a more expansive plume from the Facility is exhibited in the data. Within the bedrock, samples from wells east of Route 152 did not yield any detection greater than the MCLs for the metals analyzed. These data indicate that metal contamination has not migrated in the overburden or bedrock east of Route 152.

9.2.4 Dioxins, Furans, Pesticides, and PCBs

No dioxins or furans were detected in any of the samples collected and analyzed during the Appendix IX sampling event. One pesticide, 4,4'-DDT, was detected at an estimated concentration of 0.03 J µg/L in ground water monitoring well MW28. These compounds were not included in the analytical program for the Phase I and II or Supplemental Field Investigations.

Up to 13 wells have been tested for PCBs over the period of the RFI and detects have been noted only at wells located in the courtyard area (MW06, MW27, and MW28) or in wells located down-gradient of the former dry well at AOC 16 (MW05 and MW18). PCBs were not detected in wells downgradient of these areas, which indicates that migration of PCBs from the source areas is not occurring.

9.3 Soil Gas

Five separate soil gas investigations have been conducted at the Facility during pre-RFI and RFI field investigations. Soil gas hot spots have been identified near AOCs A-1, 5, 6, 7, 14 and 22/26. PCE and TCA were the primary VOCs detected in soil gas. PCE concentrations were generally higher in samples collected near AOCs A-1, 5, 7 and 22/26; whereas, TCA concentrations were generally higher in soil gas samples collected near AOC 6 (in 1989), AOC 14 and in outdoor areas sampled east and northeast of Building 8. Soil gas concentrations of PCE and TCA were generally about an order of magnitude higher during pre-RFI soil gas surveys (conducted in 1988 and 1989) when all buildings were intact and the Facility was still operating, compared to RFI surveys (conducted in 1995, 1997 and 2005), which were conducted after Facility operations had ceased and, for the latter two surveys, after many of the buildings were demolished.

It should be noted that the presence of a concrete slab over vadose zone soils complicates interpretation of the spatial distribution of soil gas concentrations. Under building slabs, migration of soil gas is dominated by advective flow caused by building underpressurization. Soil gas will tend to migrate along preferential flow pathways and enter buildings through cracks and utility openings. Soil gas can also accumulate beneath areas where the building slab is intact. Thus, soil gas hot spots beneath a building slab may reflect subsurface

features such as preferential flow pathways and high permeability layers rather than source areas. This may explain the TCA hot spot near AOC 14 despite detecting no TCA in subsurface soils. Where soils are not covered by former Building slabs and any pavement is deteriorated, such as in the upper courtyard area (AOC 7), volatilization to the atmosphere limits accumulation and spreading of soil gas.

9.3.1 August 1988 Soil Gas Survey

The first soil gas investigation at the Site was conducted in August 1988. Seventy-eight soil gas samples were collected on-site at the Facility and off-site at the former drive-in property located across Route 152. Temporary probes were installed to a depth of approximately 2.5 feet bgs and soil gas samples were analyzed for PCE, TCE, TCA and trans-1,2-dichlorethylene (trans-1,2-DCE) using a portable GC. Sampling locations are indicated in Figure A-3 and analytical results are provided in Table A-5 in Appendix A.

As indicated in Figure A-3, most of the on-site soil gas sampling points were located in the open area between the eastern edge of Buildings 1, 2 and 8 and Taunton Street (Route 152). In addition, four samples were collected near AOC 6 and a background location was sampled behind Building 11. Locations where detected VOC concentrations (sum of PCE, TCE, TCA and trans-1,2-DCE) exceeded 100 ppbv are shown in Figure 9.3.1 along with an indication of the primary VOC detected at each location.

The highest PCE concentration (215,000 ppbv) was detected at SG-71 near AOC 6; the second highest PCE concentration (27,000 ppbv) was detected at SG-75 located east of AOC 22. PCE was also detected in soil gas collected from AOC 16 at concentrations in the 1000 – 2000 ppbv range. These are the three main PCE source areas detected during this sampling event. In contrast, the highest TCA concentrations (up to 224,000 ppbv) were detected northeast of Building 8 near the edge of Taunton Street. The only other area where TCA was detected at a concentration much higher than PCE was at SG-16; however, surrounding soil gas locations contained primarily PCE. Only low levels (2 – 14 ppbv) of trans-1,2-DCE were detected at the former drive-in property along with a single hit of PCE at 1,100 ppbv.

9.3.2 July 1989 Soil Gas Survey

A second shallow soil gas investigation was conducted at the Facility and in an area to the east of the Facility in July 1989, to further delineate the occurrence of CVOCs. Eight areas were targeted for investigation including the locations of four former solvent degreasers at AOCs 5, 22, 29 and 30, two former bulk solvent storage areas near Buildings 10 and 12, two former waste disposal areas (AOCs 5 and 6) and a then active wastewater treatment pit (AOC A). In addition, three transects were sampled to delineate the edge of the plume of contamination to the north and south of the Facility.

A total of 66 samples were collected using 7-foot long, 3/4 inch diameter steel probes driven 2 to 6 feet into the ground with a truck-mounted hydraulic hammer. Soil gas sampling locations are shown in Figure 9.3.2. Based on the results of the pre-RFI Phase I investigation, soil gas samples were analyzed for PCE, TCE, TCA and trans-1,2-DCE.[60] Analytical data are presented in Table A-11.

60 After the first 15 samples were analyzed, trans-1,2-DCE was dropped from the target compound list because it did not appear to be a significant contaminant and analysis time was significantly longer than for the other

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As shown in Figure 9.3.2, the highest concentrations of VOCs in soil gas were detected in the western half of Building 8/10 near AOCs A-1, 5 and 6 and an area near the former degreaser pit and trench in the wire department (AOCs 22/26). PCE concentrations were generally one to two orders of magnitude higher than concentrations of TCE and TCA near AOC's A-1, 5 and 22/26. Higher TCA concentrations were detected in three areas: near AOC 6, beneath the eastern half of Building 8, and northeast of Building 8. TCA was also the primary VOC detected along the north-south oriented transect in the southeast corner of the Facility. Compared to the August 1988 sampling event, VOC concentrations detected in July 1989 were higher near AOCs A-1 and 22/26 and lower in samples collected in the area northeast of Building 8.

9.3.3 April 1995 Soil Gas Survey

The third soil gas survey at the Site was conducted during the RFI Phase I field investigation. Soil gas samples were collected from 26 locations in AOCs A-1, 5, 6, 14, 22, 29, and 30 by Foster Wheeler Environmental Corporation on April 25 to 27, 1995 to further delineate the horizontal extent of VOCs in the subsurface. Most of the samples were collected within the current and former buildings; six of the soil gas samples were collected outside the current and former buildings. All samples were analyzed for TCE and PCE. Quantitative analysis of TCA could not be performed using the Photovac instrument used in the survey. The locations of the 26 soil gas survey points (SG-67 through SG-93) are presented in Figure 4.3.1. The survey chemical data are plotted in Figure 4.3.2.

Consistent with previous soil gas sampling results, the highest PCE concentrations were detected near AOC 5 (SG-92) and AOC 22/26 (SG-93). However, compared to earlier results (collected in 1988 and 1989 when the Facility was still operating), PCE concentrations were about an order of magnitude lower in 1995. For example, the highest PCE concentration detected in 1995 was 45,000 ppbv compared to >855,000 ppbv detected from the same area (AOC 5) in 1989.

9.3.4 November 1997 Soil Gas Survey

A fourth soil gas survey was conducted in November 1997 as part of the RFI Phase II field investigation to evaluate whether a source of VOCs existed in the courtyard area (AOC 7) near former Building 12. Soil gas samples were collected from 19 locations at a depth of approximately 2 feet bgs and analyzed for chlorinated VOCs (PCE, TCE, TCA, 1,1-DCE, cis-1,2-DCE and Trans-1,2-DCE). Sample locations and analytical results are presented in Figures 5.3.1 through 5.3.4.

No 1,1-DCE, cis-1,2-DCE or trans-1,2-DCE were detected. PCE was detected at concentrations as high as 460,000 ppbv; whereas, the highest TCE and TCA concentrations detected were 1,800 and 1,700 ppbv, respectively. As shown in Figure 5.3.4, the highest PCE concentrations were detected at three locations (SG-106, SG-103 and SG-111) separated by areas with much lower PCE concentrations. The elevated PCE concentrations near SG-103 likely reflect the dry well later discovered in 2003 in this area. It is unclear if the elevated soil gas concentrations detected at SG-106 (beneath former Building 12) and SG-111 (beneath former Building 9) reflect preferential subsurface migration pathways away from the dry well area or represent separate source areas.

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target compounds.

9.3.5 July-August 2005

A more comprehensive soil gas survey of the vadose zone soils beneath Buildings 8 and 10 and adjacent building slabs to the south was performed as part of the Supplemental RFI field investigation in July/August 2005. Soil gas samples were collected from 93 locations arranged in a grid pattern on 50-foot centers with a finer grid pattern on 25-foot centers surrounding AOCs 5, 6, and 30. The sampling grid extended from Building 10 to the eastern wall of Building 8 and south of Building 8 to include the adjoining building slabs of former Buildings 5 and 9 and part of 6. Sampling locations are shown in Figure 6.3.1.

Soil gas samples were analyzed for a limited suite of CVOCs (PCE; TCE; TCA; cis-1,2-DCE; trans-1,2-DCE; 1,1-DCE; 1,2-DCA; 1,1-DCA and vinyl chloride). Analytical results are reported in Table 6.3.1. PCE and TCA were the primary VOCs detected. Isoconcentration contours of PCE and TCA are shown in Figures 9.3.3 and 9.3.4.

PCE concentrations in soil gas show two hot spots beneath Building 8 in the vicinity of AOCs 5/6 and 14. In addition, the edge of what appears to be a third hot spot is visible near AOC 22/26. As indicated in Table 6.3.1, the highest concentrations of PCE detected in these two areas are 66,000 parts per billion by volume (ppbv) near AOC 5/6 and 14,000 ppbv near AOC 14. Compared to prior soil gas sampling events, PCE concentrations in soil gas near AOC 5/6 are similar to levels detected in 1995 and have decreased by more than an order of magnitude since 1989. Too few samples were collected in the vicinity of AOC 14 during prior sampling events to make a valid comparison of levels in this area. PCE concentrations in soil gas near AOC 22/26 have exceeded 440,000 ppbv in the past (detected in 1989 at SG-49 – see Section 3.2.5); however, the highest concentration detected near the edge of this AOC in 2005 was 12,000 ppbv.

As indicated in Figure 9.3.4, the highest TCA concentrations in soil gas were located in the vicinity of AOC 14 at levels ranging from 10,000 to 14,000 ppbv. Only one other soil gas sample was collected near this area and analyzed for TCA in prior sampling events. The concentration of TCA in this sample (SG-30 collected in July 1989) was 6,500 ppbv. However, TCA has been detected in prior soil gas surveys at concentrations ranging from 50,000 to 220,000 ppbv at locations east and northeast of AOC 14 (see Figure 9.3.1).

As discussed in Section 9.1.3.10, no TCA was detected in subsurface soils collected near the soil gas hot spot at AOC 14. However, MW12 is located east of AOC 14 and this well historically contained high levels (~ 13,000 µg/L) of TCA. Relatively high concentrations of TCA (~ 4000 µg/L) have also been detected in the shallow bedrock well MW29 located near AOC 29; but no TCA has been detected in the overburden well near AOC 29. Due to the proximity of MW12 and MW29 to AOC 14, it is likely that the source of TCA in soil gas near AOC 14 is related to the relatively high levels of TCA in ground water in this area.

9.4 Surface Water

The two nearest surface water bodies to the Facility are Turnpike Lake to the south and west, and Sawmill Brook, which originates at the southern outfall of Turnpike Lake and runs south to north through the low-lying wetlands east of Route 152. Sawmill Brook eventually merges with Turtle Brook just north of the former drive-in property and empties into Lake Mirimichi. Turnpike Lake and Sawmill Brook have been sampled since August 1986, when the Facility was still operating and all the buildings were still present. At that time, concentrations of metals and VOCs in surface water were significant due to discharge of

metals to Turnpike Lake from roof drains and surface water runoff, and discharge of VOCs to Sawmill Brook via ground water seeps east of Route 152.

Since that time, concentrations of VOCs and metals in surface water have decreased significantly due in part to cessation of manufacturing operations in 1993, building demolition and termination of all roof drain discharge to Turnpike Lake in 1996/1997, and the start-up of the GSM in 1998. VOC concentrations in surface water samples collected from Sawmill Brook near the suspected ground water seep area have decreased by more than an order of magnitude, and outside of the south embayment area, metal concentrations in surface water are comparable to background levels.

9.4.1 Pre-RFI Sampling Results

Twenty-two surface water samples (SW-01 – SW22) were collected from Turnpike Lake, the northern and southern spillways from Turnpike Lake, Sawmill Brook, Turtle Brook and the inlet to Lake Mirimichi between August 1986 and August 1988 during pre-RFI Phase I/II sampling events. Five additional surface water samples were collected from Turnpike Lake (LK01 – LK05), and eight additional samples were collected from Sawmill Brook and its tributaries in August 1989 during the pre-RFI Phase III sampling event. Surface water sampling locations are shown in Figure A-2. Pre-RFI Phase I/II analytical data are provided in Tables A-4a and A-4b; Phase III data are provided in Table A-9.

In addition to the 13 surface water samples, storm water samples were collected from each of the four major roof drain outfalls at the Site immediately following a short, intense rainfall event. Three roof drain samples (RD02 – RD04) were collected at outfalls to Turnpike Lake, and one roof drain sample (RD01) was collected at the outfall to a storm water management basin located northwest of Building 8. The roof drain sample locations are depicted in Figure A-2; analytical data are presented in Table A-10.

Storm event sampling of roof drain outfalls in 1988 indicated that particulate accumulations on building roofs were a major source of metals to Turnpike Lake. As indicated in Section 7.3.2, these buildings were demolished in 1996 and 1997 to eliminate this source. Since that time, one additional surface water sample (SW-06), and five additional sediment samples (SD-41, SD-41DUP, SD-42, SD-43 and SD-44) were collected from the south embayment of Turnpike Lake in May/June 2005, approximately eight years following building demolition activities. Two of these locations (SD-43 and SD-44) were re-sampled in June 2010.

Maximum concentrations of metals detected in the south embayment during the Supplemental RFI Investigation in 2005 were generally within a factor of two of levels detected during Phase I/II sampling events. For example, cadmium was detected at a maximum concentration of 248 mg/kg prior to building demolition and 400 mg/kg post building demolition, chromium was detected at maximum concentrations of 97 and 61 mg/kg pre- and post-building demolition respectively, and nickel was detected at 76 and 37 mg/kg pre- and post-building demolition, respectively. Arsenic and silver were exceptions with maximum concentrations detected at 3.2 and 41 mg/kg, respectively prior to building demolition and maximum concentrations of 8.3 and 170 mg/kg post building demolition.

Locations SD-43 and SD-44 were re-sampled in June 2010. In general, metal concentrations were about a factor of two higher compared to 2005 levels and may suggest

a continuing release of metals to the South Embayment. These results are described further in Section 9.5.3.1.

9.4.1.1 Turnpike Lake

VOCs. No VOCs were detected in surface water samples collected from Turnpike Lake during pre-RFI sampling events.

Metals. Cadmium, copper, lead and zinc were detected at maximum concentrations of 1930, 445, 780 and 2567 µg/L in roof drain samples collected at the three outfalls to Turnpike Lake (see Table A-10). The outfalls empty into the south embayment of Turnpike Lake, which is where the highest concentrations of these three metals were detected in surface water samples. During pre-RFI Phase I/II sampling events, maximum concentrations of cadmium and zinc were 350 and 910 µg/L, respectively; copper was detected at a maximum concentration of 32 µg/L and lead was not detected. Antimony was also detected in one sample at a concentration of 30 µg/L.

During the pre-RFI Phase III sampling event, low levels of zinc (21 – 84 µg/L) and lead (6 – 13 µg/L) were detected in all lake water samples including the sample collected from the background station (LK01). Mercury, lead and zinc were detected in surface water collected from the background location at 0.2, 6 and 84 µg/L, respectively. Trace levels of mercury (0.2 – 0.5 µg/L) were also detected at three of the other four sampling locations. Cadmium (at 5 and 12 µg/L) and copper (at 12 and 18 µg/L) were the only metals detected in the lake that were not also detected at the background location.

9.4.1.2 Sawmill Brook

VOCs. In surface water samples collected during pre-RFI events from Sawmill Brook and its tributaries located east of Route 152, total VOC concentrations ranged as high as 3,610 µg/L. The two samples collected from the apparent ground water seeps (SW25 and SW26 – see Figure A-2) contained 734 and 3,610 µg/L total VOCs. PCE, TCE, TCA and 1,2-DCE (total) were detected at maximum concentrations of 2400, 240, 440 and 530 µg/L, respectively. The surface water samples collected from tributary receiving primarily ground water inflow also contained significant levels of VOCs. At SW24, PCE was the primary VOC detected (1,500 µg/L); while further downstream at SW-05, both PCE and TCA were detected at similar levels (990 and 850 µg/L, respectively). PCE and TCA concentrations detected at the furthest downstream sampling location near the confluence with Turtle Brook (SW-08), which receives both surface water from Turnpike Lake and ground water, were much lower at 15 and 18 µg/L, suggesting that upwelling groundwater is diluted to a significant extent by local runoff and overflow from Turnpike Lake by the time it reaches this area. Some volatilization from surface water may also be occurring.

Metals. Maximum concentrations of lead and antimony detected in surface water samples collected during pre-RFI sampling from Sawmill Brook and its tributaries (100 and 130 µg/L, respectively) were higher than maximum concentrations detected from Turnpike Lake samples. Chromium and nickel were also detected in surface water samples collected from Sawmill Brook along with low levels of cadmium, copper, mercury and zinc.

Radionuclides. Maximum concentrations of gross alpha and gross beta detected in Turnpike Lake and Sawmill Brook were similar at 2.2 and 2.7 pCi/L in Turnpike Lake and 1.0

and 2.8 pCi/L in Sawmill Brook. All were well below the US EPA drinking water standard of 15 pCi/L.

9.4.2 RFI Phase I/II Sampling Events

Two rounds of surface water sampling were conducted during the RFI Phase I investigation of Turnpike Lake and the stream system east of the Facility. Round 1 was conducted between March 31, 1995 and April 10, 1995; and Round 2 was conducted between May 15 and May 18, 1995. Two additional rounds of sampling (Rounds 3 and 4) were conducted during RFI Phase II activities: Round 3 was conducted between May 18 and June 5, 1997; and Round 4 was conducted September 10-11, 1997. The locations of surface water samples are shown on Figure 4.4.1. Analytical results are summarized in Tables 4.4.6 through 4.4.8.

9.4.2.1 Turnpike Lake

VOCs. No surface water samples collected from Turnpike Lake were analyzed for VOCs.

Background Metals. During Phase I, two locations were selected to collect background surface water samples in Turnpike Lake: one north of Shepard Street and south of Route 1 (SW-10), and the other near the inlet at the southwest portion of the Lake (SW-09). Elevated levels of silver, lead, and zinc at SW-09 and zinc at SW-10 suggested that these areas had been impacted by off-site sources of contamination (e.g., runoff from road surfaces). To better define background surface water conditions, the Phase I background locations SW-09 and SW-10 were re-located during Phase II and re-named SW-09A and SW-10A. Two additional background surface water samples were collected in the northwestern and southern portions of Turnpike Lake (SW-12 and SW-13, respectively). Overall, metal concentrations were lower at locations SW-09A, SW-10A, SW-12 and SW-13 compared to locations SW-09 and SW-10. Detected concentrations of metals in background surface water samples are shown in Figure 9.4.3.

Metals. During all four rounds of sampling, surface water samples were collected in Turnpike Lake just west of AOC A (SW-07); towards the center of the south embayment (SW-06); and near the northern spillway (SW-08). Concentrations of metals detected in Turnpike Lake are shown in Figure 9.4.2. The highest concentrations of metals in surface water samples were detected during Rounds 1 and 4 at location SW-06 in the south embayment. The elevated concentrations are believed to be a result of the inadvertent entrainment of sediment in the surface water samples. For example, the suspended solids concentration in the sample collected during Round 4, was 340 µg/L compared to low to non-detectable levels in the three prior sampling events. Thus, it is believed that the high metal results during Round 1 and 4 are therefore artifacts of the sampling method and not representative of Site conditions.

In the area west of AOC A (SW-07), cadmium, lead, and nickel were detected above background concentrations in Round 2. However, concentrations of metals in samples collected during Rounds 1, 3 and 4 were comparable to background levels. Metal concentrations detected in surface water samples collected at the northern outlet of Turnpike Lake (SW-08) were comparable to background levels and suggest that this area is not impacted by Facility operations.

9.4.2.2 Sawmill Brook

VOCs. Surface water samples were collected at the southern outlet of Turnpike Lake (SW-05), at three locations in Sawmill Brook (SW-01, SW-02 and SW-04), at the inlet to Lake Mirimichi (SW-11) and at one background location (SW-03) for analysis of VOCs. The background sample (SW-03) was collected in a small tributary, which feeds into Sawmill Brook from the southeast. The tributary is separated from the main branch of Sawmill Brook by a small topographic ridge (see Figure H-9), and is therefore considered to drain a different area than the area drained by the main branch. VOCs detected in surface water samples are shown in Figure 9.4.3.

As shown on Table 4.4.6 and Figure 9.4.3, nine VOCs were detected in Sawmill Brook and its tributaries. Two of these VOCs, methylene chloride and 1,1,2,2-tetrachloroethane, were only detected at low concentrations during Phase I. These were the only two VOCs detected at the background location SW-03. Because these constituents are not associated with the Facility and were only detected during Phase I, it is believed that the presence of these constituents is the result of laboratory-induced contamination.

The remaining VOCs were only detected above detection limits at two locations located in Sawmill Brook, SW-01 and SW-02. 1,1,1-TCA and PCE were detected during all four sampling rounds at both locations. TCE was detected in all but two samples. 1,1-Dichloroethane, 1,1-dichloroethene, 4-methyl-2-pentanone, and carbon tetrachloride were detected infrequently during Phase I and II.

With the exception of one detection of methylene chloride at an estimated concentration below the detection limit, VOCs were not detected in any of the samples collected near the Facility below the Turnpike Lake southern spillway (SW-05) and directly downstream of the southern spillway (SW-04). VOCs were, however, detected further downstream at sample locations (SW-02 and SW-01). The absence of VOCs in the stream directly downstream of the Facility and the appearance of VOCs further downstream (i.e., in the low lying area to the east of Route 152) suggest that VOC impacted ground water upwelling to the stream is the source of VOCs in this area.

Low concentrations (at estimated levels below the detection limits) of seven VOCs were detected further downstream at SW-11, near the point where Turtle Brook flows into Lake Mirimichi (see Figure 9.4.3). Of the four VOCs detected, PCE was the only chemical consistently detected in all four sampling rounds.

MassDEP collected five surface water samples on April 27, 1997, which were analyzed for VOCs. Four of these samples were collected from Lake Mirimichi; one was collected from Turtle Brook. Detected VOCs are presented on Figure 9.4.4. In the sample collected from Turtle Brook, TCE and PCE were detected at concentrations similar to those observed at SW-11 (1.1 and 1.9 µg/L, respectively).

The only VOCs detected in Lake Mirimichi were the gasoline additive, methyl tert butyl-ether, and PCE. PCE was only detected in one sample at a concentration of 0.55 µg/L. This sample was located in close proximity to the discharge of Turtle Brook into Lake Mirimichi. These results suggest that the presence of VOCs in Sawmill Brook is having minimal impact on Lake Mirimichi. It is also noted above how other sources, such as the Laidlaw Landfill, are discharging significant concentrations of CVOCs to the Lake.

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Metals. Background conditions in Sawmill Brook are characterized by samples collected at one location (SW-03) during Rounds 1, 2, and 3. SW-03 was not sampled in the Round 4 sampling event due to low flow at the SW-03 location. The levels of constituents detected at SW-03 are comparable to the levels detected in surface water samples collected at SW-08 and background locations in Turnpike Lake (*i.e.* areas which otherwise do not show an influence by the Site).

Cadmium, copper, nickel, silver and zinc were detected in several samples at concentrations above background in surface water samples collected from Sawmill Brook and at the inlet to Lake Mirimichi. In general, the highest concentrations of metals were observed in the sampling location closest to the Facility (SW-05). Only copper, lead, silver, and zinc were detected at the inlet to Lake Mirimichi (SW-11). Metal concentrations detected at SW-11 were generally low with the exception of silver, which was detected once (during Round 1) at a concentration of 29.7 µg/L. Other metals were detected at concentrations comparable to background levels and indicate that migration of metals from the Facility beyond the low-lying area east of the Facility is limited.

PCBs. PCBs were not detected in any surface water sample above the respective detection limit.

Water Quality Parameters. Surface water samples were analyzed for a variety of water quality parameters including major cations and anions, alkalinity, pH, total dissolved solids and total suspended solids. Based on a review of the data that is presented in Tables 4.4.7 and 4.4.8, no significant differences were observed in water quality parameters between the background samples and the samples collected from Sawmill Brook and Turnpike Lake.

9.4.3 Supplemental RFI Sampling Results

A total of 29 surface water samples were collected in late May and early June 2005 during the Supplemental RFI field investigation. Twenty-three surface water samples were collected from Sawmill Brook and its tributaries east of Route 152; and six samples were collected from Turnpike Lake. An additional four samples were collected near the confluence of Sawmill Brook and Turtle Brook (SD-47, SD-48, SD-60 and SD-61), and one additional sample was collected from a tributary to Sawmill Brook (SD-TRIB) that was chosen to represent a background location unaffected by surface water runoff from the Facility, to support the ecological risk assessment and further assess the downstream extent of metals contamination in the Brook. Surface water sample locations are shown in Figure 6.4.1.

9.4.3.1 Turnpike Lake

VOCs. None of the samples collected from Turnpike Lake were analyzed for VOCs.

Metals. Six samples (including one duplicate at SW-08) were collected from Turnpike Lake at five previously sampled locations (SW-06, SW-07, SW-08, SW-09A and SW-12). Analytical results are reported in Tables 6.4.2 – 6.4.4. Surface water samples were collected at locations SW-09A and SW-12 to characterize background conditions in Turnpike Lake. Low levels of chromium (1.5 µg/L), copper (1.5 µg/L) and lead (0.8 µg/L) were detected in the unfiltered sample collected from station SW-09A; copper and zinc were detected at 1.1 and 12.5 µg/L, respectively in the filtered sample collected from this location.

Only low levels of chromium (1.1 µg/L) and copper (1.0 µg/L) were detected at SW-12. These concentrations are at or below concentrations detected at the same locations during Rounds 3 and 4. While we could not locate suitable background levels detected elsewhere for comparison purposes, these levels are below USEPA Region V Ecological Screening Levels for chromium, copper, lead and zinc which are 42, 1.58, 1.17 and 65.7 µg/L, respectively.

As shown in Table 6.4.4, concentrations of metals detected in Turnpike Lake samples (SW-06, SW-07 and SW-08) were similar to or below background levels. No lead was detected in these samples, and chromium and copper concentrations were below background levels. Dissolved zinc was detected at 12.9 µg/L, which is similar to the level detected in SW-09A.

9.4.3.2 Sawmill Brook

VOCs. Along Sawmill Brook and its tributaries, samples of filtered and unfiltered surface water were collected at six previous sampling locations (SW-01, SW-02, SW-03, SW-04, SW-05, and SW-11) and six new locations (SW-14, SW-15, SW-16, SW-17, SW-18, and SW-19) shown in Figure 6.4.1. One of these samples (SW-19) was collected from the private impoundment immediately downgradient of the southern spillway from Turnpike Lake, and two pairs of samples (SW-14 and SW-15) were collected in an area suspected to be influenced by ground water seeps. These latter two sample locations were sampled in June 2005 and again in April 2006 under lower flow conditions. Duplicate samples were collected at SW-03 and SW-04. Each of these filtered and unfiltered surface water samples were analyzed for metals; unfiltered samples were also analyzed for VOCs.

In addition to these 12 locations, seven surface water samples (SW-201 through SW-207) were collected in support of the monitored natural attenuation (MNA) program. The purpose of this sampling was to provide supplemental data to support the on-going evaluation of the natural attenuation of chlorinated hydrocarbons in ground water. Unfiltered samples were collected from all seven locations and analyzed for VOCs. Five of these samples (SW-201, SW-202, SW-204, SW-206, and SW-207) were also analyzed for filtered and unfiltered metals. The surface water sampling locations are presented in Figure 6.4.1.

No VOCs were detected in the background sample collected at SW-03. The highest concentrations of CVOCs were detected at the location of the suspected ground water seep area (SW-15) in samples collected during the second round of sampling in April 2006. Concentrations of PCE, TCA and TCE detected in unfiltered ground water samples collected from this location were 100, 37 and 18 µg/L, respectively. The second highest concentrations of these three VOCs (61, 20 and 17 µg/L, respectively) were detected at SW-202, located downstream from SW-15. Because no VOCs were detected at SW-201, which is located between SW-15 and SW-202, the VOCs detected at SW-202 may reflect a minor, secondary seep area.

Concentrations detected in surface water samples collected from the seep area under high flow and low flow conditions differed by less than a factor of two, with higher concentrations observed under lower flow conditions at SW-15 but higher concentrations observed under higher flow conditions at SW-14. Flow rates varied from 0.5 to 1.0 feet/sec in June 2005 and 0.03 to 0.08 feet/sec in April, 2006. Overall, VOC concentrations have decreased significantly compared to the levels detected during pre-RFI sampling activities. For example, PCE, TCE and TCA were detected at maximum concentrations of 2400, 240 and

440 µg/L, respectively in August 1989 compared to concentrations of 100, 18 and 37 µg/L detected in April 2006. These lower concentrations likely reflect both the cessation of facility operations in 1993 and the significant beneficial effect that the GSM is having on ground water concentrations of VOCs in this area.

At sampling location SW-18 where Sawmill Brook merges with Turtle Brook, PCE and TCA were detected at concentrations of 1.1 and 0.95 µg/L, respectively. No VOCs were detected further downstream at the inlet to Lake Mirimichi (SW-11). Thus, ground water discharge to Sawmill Brook and the low-lying wetlands east of Route 152 appears to be having a negligible effect on water quality in Lake Mirimichi.

Metals. Station SW-03 is located on a tributary that flows into Sawmill Brook from the southeast and was selected to represent background conditions in the low-lying wetlands to the east of Route 152. Low levels of arsenic (0.6 µg/L), chromium (1.3 J µg/L), copper (0.8 µg/L), nickel (1.5 J µg/L), selenium (1.0 µg/L) and zinc (20.8 J µg/L) were detected in unfiltered surface water collected at this location in 2005. Based on comments received from USEPA, and in consultation with a representative from USEPA, an alternative reference location (SW-TRIB) was chosen in 2010. Low levels of barium (42,7 µg/L) and nickel (2.0 µg/L) were detected in unfiltered surface water collected at this location. Once again, while suitable background levels could not be located for comparison purposes, these levels are below USEPA Region V Ecological Screening Levels for arsenic, barium, chromium, copper, nickel, selenium and zinc which are 148, 220, 42, 1.58, 28.9, 5 and 65.7 µg/L, respectively.

Metals concentrations detected in Sawmill Brook in 2005 were similar to background levels detected at SW-03 with average concentrations of most metals at or below 1.0 µg/L. For example, arsenic was detected in 10 of 20 samples at a maximum concentration of 0.8 µg/L; chromium was detected in 19 of 20 samples at an average concentration of 1.0 µg/L (maximum of 2.3 µg/L); and cadmium was detected in 14 of 20 at an average concentration of 0.8 µg/L (maximum of 1.4 µg/L). Average concentrations of copper (which was detected in all 20 samples) and nickel (detected in 17 of 20 samples) were only slightly greater than 1.0 µg/L at 1.2 µg/L and 1.4 µg/L, respectively (with maximum values of 2.1 and 2.0 µg/L, respectively) . The average concentration of zinc in the 17 samples where it was detected was 15 µg/L; the maximum concentration of zinc detected was 27.3 µg/L.

Metals concentrations detected in 2010 at the confluence of Sawmill Brook and Turtle Brook were similar to levels detected in 2005. For example, arsenic was detected at an average concentration of 0.6 µg/L, cadmium was detected at an average concentration of 0.8 µg/L, and nickel was detected at an average concentration of 1.6 µg/L. All are below USEPA ecological screening levels.

9.5 Sediment Contamination

The extent of contamination is determined based on an examination of chemical analytical data, field observations, and the findings presented in this section. Sediment data were collected in several rounds of sampling including samples collected from:

- 4 locations in Turnpike Lake during pre-RFI sampling activities conducted between August 1986 and September 1988.

- 30 locations in Turnpike Lake, 5 locations in Sawmill Brook and at AOC 44 during RFI Phase I sampling activities conducted in May 1995.
- 6 locations in Turnpike Lake and 3 locations in Sawmill Brook during RFI Phase II activities in April 1997.
- 7 locations in Turnpike Lake and 42 locations in Sawmill Brook in late May and early June 2005 during the Supplemental RFI field investigation.
- 3 locations in Turnpike Lake and 9 locations in Sawmill Brook in June 2010 to further delineate the extent of contamination beyond the confluence of Sawmill Brook and Turtle Brook and to support interpretation of the sediment toxicity testing results.
- 11 locations in Turnpike Lake and 7 location in Sawmill Brook in October 2010 to characterize the levels of cadmium, PCBs and uranium in Turnpike Lake and uranium in Sawmill Brook.

The results of the chemical analyses of sediment in the south embayment and west of AOC A in Turnpike Lake indicate that to the extent that metals in sediment are migrating, migration is toward the southeast outlet of Turnpike Lake. Elevated levels of copper, lead and zinc detected in sediments collected from “background” locations suggest that roadway runoff is also a source of metals in Turnpike Lake and potentially Sawmill Brook sediments.

PCBs are present in sediment samples collected closest to the shore in the south embayment. Because the concentrations decrease to below the detection limit within tens of feet from shore, it appears that PCBs are not migrating beyond the near shore area in the south embayment. As discussed in Section 8.0, PCBs that were detected on-site generally have high Koc values and, therefore, would not be expected to migrate in an aqueous phase.

In Sawmill Brook, it is likely that metals are transported while adsorbed to sediment. Higher concentrations of metals in sediment are associated with regions of deposition and several areas along Sawmill Brook exhibit this deposition pattern. The most significant appears to be near the southeast corner of the former drive-in property. The furthest extent of downstream migration for most metals is location SD-61 in Turtle Brook (approximately 400 feet downstream from the confluence with Sawmill Brook) where levels of metals approach background levels. This observation suggests that low flow velocity in the upstream impounded area prevents most sediment from migrating beyond the wetland bordering the former drive-in property.

In contrast with metals, VOCs detected in Sawmill Brook are primarily associated with the aqueous phase and controlled by ground water upwelling in the area near MW21.

9.5.1 Pre-RFI Sampling Results

Two sediment samples (SW-01 and SW-02) were collected from the south embayment of Turnpike Lake, one sediment sample (SW-03) was collected from Turnpike Lake west of Building 7, and one sediment sample (SW-04) was collected from a background location along the northeast shore of Turnpike Lake between August 1986 and September 1988. All four sediment samples were analyzed for VOCs, priority pollutant metals, cyanide, and gross alpha and beta. Sediment sampling locations are depicted in Figure A-1. Analytical data are provided in Tables A-3a and A-3b.

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VOCs. The only VOC detected in Turnpike Lake sediment was PCE which was detected west of AOC A at the detection limit.

Metals. Concentrations of cadmium, copper, silver, lead and zinc were detected in sediments located at SW-01 and SW-02 (in the south embayment near outfalls from plant roof drains) at concentrations in the range of 200 to 400 mg/kg. Nickel and chromium were detected at concentrations near 30 mg/kg. In contrast, at the one location selected as background (SW-04), lead and zinc were detected at 60 to 80 mg/kg; chromium, copper and nickel were detected in the range of 5 to 10 mg/kg; and other metals were present at less than 5 mg/kg. Concentrations of metals detected at SW-03 were generally within a factor of two of background levels.

Cyanide. No cyanide was detected at any of the four locations.

Radionuclides. The highest gross alpha and gross beta concentrations were detected at SW-01 at 126 and 27.5 pCi/g, respectively. However, concentrations at SW-02 were in the range of 2 – 3 pCi/L and even lower at 1.2 pCi/L or less at SW-03 and SW-04.

9.5.2 RFI Phase I/II Sampling Results

During RFI Phase I sampling activities, sediment samples were collected at 30 locations in Turnpike Lake and 5 locations in Sawmill Brook. In addition, one sediment sample was also collected from the storm water retention basin at AOC 44. During the RFI Phase II field investigation, a limited sediment sampling program was conducted to confirm the results of the Phase I sampling program. Six samples were collected from Turnpike Lake (including two background locations) and three samples were collected from Sawmill Brook. The sediment sample locations are shown on Figure 4.5.1.

9.5.2.1 Turnpike Lake

During RFI Phase I/II sampling activities, sediment samples were collected in Turnpike Lake from 20 locations in the south embayment, eight locations west of AOC A, and from one location at the northeast outlet of the lake. In addition, four sediment samples were collected from background locations.

VOCs. Sediment samples collected from Turnpike Lake were not analyzed for the presence of VOCs.

Metals. All sediment samples collected from Turnpike Lake were analyzed for metals in Phase I and Phase II. The results of these analyses are presented in Table 4.5.3. Analytical test results for six metals detected in sediments (lead, cadmium, chromium, copper, silver, and zinc) are shown on Figure 9.5.1. Analytical test results for the remaining seven metals (antimony, arsenic, beryllium, mercury, nickel, selenium and thallium) are shown on Figure 9.5.2.

During the Phase I RFI, elevated detection limits for antimony and mercury were reported in the background sample SD-10. A new sample (designated SD-10A) was collected further off shore for analysis in Phase II. The sediment background sample SD-09 was also collected near the shore in Phase I (20 feet) and contained an elevated concentration of lead. A new location, SD-09A, was selected approximately 100 feet from the shore. The maximum analytical result from Phase II samples SD-09A and SD-10A was used to characterize background conditions for each analyte in Turnpike Lake.

Maximum concentrations of metals detected in background samples SD-09A and SD-10A included arsenic at 3.2 mg/kg, beryllium at 2.0 mg/kg, chromium at 9.3 mg/kg, copper at 16.8 mg/kg, lead at 25.2 J mg/kg, nickel at 5.1 mg/kg, selenium at 2.9 mg/kg, and zinc at 15.5 J mg/kg. Cadmium was also detected at low levels 0.41 and 0.51 mg/kg but detected in the blank as well.

The highest concentrations of metals in Turnpike Lake were detected in sediments collected from the south embayment. Cadmium, chromium, copper, lead, nickel, selenium, silver and zinc exceeded background levels in at least one sample. Maximum concentrations of cadmium, copper and lead were in the range of 200 to 250 mg/kg at 260, 248 and 208 mg/kg, respectively. Chromium and nickel were detected at maximum concentrations of 97 and 76 mg/kg; and selenium, silver and zinc were detected at 13, 41 and 25 mg/kg. Cadmium was the most frequently detected metal above background concentrations in the south embayment. In general, concentrations of metals decreased with distance from shore. Chromium and copper were also detected at concentrations of approximately ten times background near the shore and at lower concentrations throughout the rest of the embayment.

Several metals were affected by anomalously high detection limits during Phase I resulting from method and field blank contamination. Of these five metals (antimony, lead, nickel, silver, and zinc), most were concentrated near the shore and outlet to Sawmill Brook. Selenium was detected at levels slightly higher than background in several samples in the south embayment at scattered locations that are not indicative of any pattern. Mercury, beryllium, arsenic, and thallium were not detected in the south embayment but elevated detection limits were reported for these metals.

In sediment samples collected west of AOC A, concentrations of cadmium, chromium and nickel exceeded background levels in at least one sample with maximum detected concentrations of 4.2, 23.2 and 15.4 mg/kg, respectively. In addition, antimony was detected in one sample at a concentration of 7.4 mg/kg. Other metals were detected at concentrations comparable to background levels. The one sample collected near the northeast spillway contained elevated levels of chromium, lead and nickel at concentrations of 12.1, 130 J and 16.6 mg/kg, respectively.

The elevated lead concentrations are likely attributed to anthropogenic emissions from automobiles and runoff from nearby roadways rather than from Facility operations. The values for chromium and nickel were within the range of concentrations characterizing background for Sawmill Brook (SD-03). These results suggest that operations at the Site have not impacted Turnpike Lake north of the Facility, and that sediment transport from the Facility within the lake is directed to the southern outlet at the eastern extent of the south embayment.

SEM/AVS. SEM/AVS analysis was conducted on sediment samples collected from three locations in the south embayment (SD-19, SD-24 and SD-28) and two locations in the lake area west of AOC A (SD-34 and SD-35). Strong metal-sulfide complexing of certain metals (cadmium, copper, lead, nickel, and zinc) can reduce bioavailability of those metals if sufficient acid volatile sulfides (AVS) are present in the sediment to form metal sulfides. If the amount of simultaneously extracted metals (SEM, on a molar basis) is greater than the amount of acid volatile sulfides (AVS) in the sediments (also on a molar basis), then the metals are expected to be bioavailable. This is normally expressed as the ratio SEM/AVS,

where ratios above one indicate that the metals are bioavailable. If the ratios are less than one, the metals are not likely to be bioavailable. Table 4.5.4 presents the results of these analyses and summarizes the SEM/AVS ratios individually and as a sum for the above listed suite of metals. The individual ratios are also presented to provide a qualitative understanding of which metals are more likely to be free if the others are bound in metal-sulfide compounds.

The SEM-AVS ratios exceeded one in all samples (indicating bioavailability), with the highest ratio of 58.8 detected in sample SD-19 in the south embayment. The metal with the highest concentration in this sample was zinc, which suggests that zinc is more likely to be bioavailable than the other metals. As SEM metals were not detected in samples collected west of AOC A, the potential bioavailability of sediment metals detected west of AOC A (i.e. in Turnpike Lake outside the south embayment) cannot be estimated. Metals bioavailability is discussed further in Section 11.0.

SVOCs and PCBs. Three of the near-shore samples collected from the south embayment (SD-06, SD-20, and SD-21) in April 1995 were analyzed for SVOCs and PCBs. These data were used to reevaluate the analytical program for the fish tissue testing program and to confirm the analytical program for the remaining sediment samples.

Ten polycyclic aromatic hydrocarbons (PAHs) were detected in the sediment sample collected at SD-21, and two PAHs were detected in the sediment sample collected at SD-20. Four PAHs were detected in the duplicate sample collected at SD-06, and no PAHs were detected in the primary sample collected at SD-06. The PAHs ranged in concentration from 16J to 230J µg/kg.

All three sediment samples contained benzoic acid at concentrations ranging between 68 J and 400 J µg/kg. Phthalates were detected in samples collected from locations SD-06 and SD-21. There are no known uses of phthalates at the site. Bis(2-ethylhexyl)phthalate was detected in the sediment sample collected at SD-21, and the primary and duplicate sediment samples collected at SD-06, at concentrations ranging from 120 J to 350 J µg/kg. Di-n-octylphthalate was detected in the sediment sample collected from SD-21 at a concentration of 48 J µg/kg. Phthalates are typically used in plasticizers and, therefore, are present in such materials as laboratory equipment, sampling devices, and surgical gloves. These phthalate detections may be related to sampling or laboratory-induced contamination.

The same sediment samples were also analyzed for PCBs. Three PCB Aroclors were detected: Aroclor 1242, Aroclor 1248, and Aroclor 1254. Total PCBs detected in the primary and duplicate samples collected at SD-06 and SD-20, ranged in concentration from 196 J to 300 J µg/kg. For the sediment sample collected at SD-21 (near the outfalls associated with former roof drains), total PCBs were detected at a concentration of 96,000 µg/kg. The results of the PCB analyses are summarized in Table 4.5.7.

9.5.2.2 Sawmill Brook

Sediment samples were collected at six locations in Sawmill Brook including one location from below the southeast spillway from Turnpike Lake (SD-05) and five locations downstream from this area. One sediment sample (SD-03) was collected from a tributary to Sawmill Brook, which is not believed to receive surface water flow from Turnpike Lake or any

runoff from the Facility and therefore is considered to be representative of background conditions for downstream areas.

VOCs. All sediment samples collected from Sawmill Brook and from below the spillway at the south embayment were analyzed for VOCs. The results of these analyses are presented in Table 4.5.5 and shown in Figure 9.5.3. No VOCs were detected in sediment samples collected from SD-03, SD-04 and SD-05 except for methylene chloride, which is a known laboratory contaminant and was also detected in the blank. VOCs were detected in the sediment samples collected from SD-01, SD-02, SD-39 and SD-40. The highest results were detected in SD-02, which is located within the area where ground water upwells into Sawmill Brook. TCA was detected at a concentration of 3,100 µg/kg along with 1,1-DCA at 1,700 µg/kg and cis-1,2-DCE at 1,900 µg/kg. No PCE was detected at this location or in any sediment samples collected during the RFI Phase I/II sampling events.

None of the VOCs detected at SD-02 were detected upstream from this location; and VOC concentrations were observed to decrease in the downstream samples. These observations suggest that ground water is the source of the VOCs in sediment and that transport of VOCs in the streams is limited. The presence of benzene and toluene in downstream samples collected east of the drive-in property are likely attributed to automobile-related sources.

Metals. Chromium, copper, lead, and nickel were detected in sediment collected from the background location SD-03. Zinc was also detected in this sample but in the blank as well. Concentrations of chromium, lead and nickel (21, 42 and 24 mg/kg, respectively) were higher than concentrations of the same metals detected at background locations in Turnpike Lake.

Most of the metals detected in sediment samples collected from Sawmill Brook (cadmium, chromium, copper, lead, nickel, selenium, silver and zinc) exceeded background levels. The highest concentrations of chromium, copper, silver and lead were detected at location SD-02. However, when this location was re-sampled two years later in April 1997, concentrations of most metals decreased significantly. For example, lead concentrations decreased from 263 mg/kg to 3.8 J mg/kg and chromium concentrations decreased from 38.9 to 12.3 mg/kg.

9.5.2.3 AOC 44 (Retention Basin)

The sediment sample (SD-36) collected from the storm water infiltration basin (AOC 44) contained arsenic (4.1 mg/kg), cadmium (2.1 mg/kg), chromium (72 mg/kg), copper (176 J mg/kg), lead (250 mg/kg), mercury (5.0 mg/kg), nickel (34.6 mg/kg), and silver (25.4 J mg/kg). Because this storm water retention basin does not discharge to Turnpike Lake or any other water body, it does not affect surface water quality, and therefore, comparison to background concentrations in sediment in Turnpike Lake is not meaningful.

9.5.3 Supplemental RFI Sampling Results

A total of 49 sediment samples, including three duplicates, were collected in late May and early June 2005, and an additional 33 sediment samples were collected in June and October 2010 during the Supplemental RFI field investigation. A total of 23 sediment samples were collected from Turnpike Lake and 59 sediment samples were collected from Sawmill Brook and its tributaries. Sample locations are shown in Figure 6.5.1. Analytical results are reported in Tables 6.5.2 through 6.5.6 and summarized below.

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9.5.3.1 Turnpike Lake

Five sediment samples (including one duplicate) were collected from four locations (SD-41, SD-42, SD-43 and SD-44) in the south embayment of Turnpike Lake in 2005; and two samples (SD-09A and SD-10A) were collected from background locations in the southwest and northern reaches of the lake in 2005 (see Figure 6.5.1). All Lake samples collected in 2005 were analyzed for priority pollutant metals, SEM-AVS, PCBs and total organic carbon (TOC). In addition, because hydrocarbons were stored in the courtyard area near AOC 7 and have been detected in soils on the south side of the Facility, additional tests for volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH) were conducted on all Lake samples to determine if hydrocarbons have accumulated in Lake sediments. Two locations in Turnpike Lake (SD-43 and SD-44) and one background location (SD-09A) were re-sampled in June 2010 to support the sediment toxicity testing results for those locations. These three samples were analyzed for VOCs, metals, SEM-AVS and TOC. Five additional samples, including one duplicate (SD-319, SD-319DUP, SD-320, SD-321 and SD-322) were collected in October 2010 for analysis of PCBs; six additional samples were analyzed for cadmium (SD-311, SD-312, SD-313, SD-314, SD-319 and SD-319DUP); and four samples (SD-308, SD-309, SD-309DUP and SD-310) were analyzed for uranium.

VOCs. Three of the sediment samples collected in 2010 were analyzed for VOCs. Only 2-butanone was detected in Turnpike Lake at 0.28 and 0.36 mg/kg in SD-43 and SD-44, respectively. No VOCs were detected at the background location SD-09A.

Metals. Cadmium, chromium, copper, lead, nickel and zinc were detected in sediments collected from background locations (SD-09A and SD-10A) in 2005 at concentrations exceeding background levels detected previously in these areas. As shown in Table 9.5.1, maximum concentrations of copper, lead and zinc at 54, 320 and 380 mg/kg, respectively were notably higher than levels detected previously. Concentrations of chromium and nickel were about 2 to 4 times higher. Cadmium was detected at location SD-09A at 13 mg/kg but not SD-10A. Location SD-09A was re-sampled in 2010. Cadmium, chromium and nickel were detected at 26, 22 and 28 mg/kg, which is about 1.5 to 2 times higher than 2005 levels.

Included in Table 9.5.1 are MassDEP and USEPA background levels in soils as well as MassDEP sediment screening values. The levels of cadmium detected at SD-09A exceed both MassDEP natural soil levels and MassDEP sediment screening values; however, levels of chromium and nickel detected at SD-09A are within the range of USEPA and MassDEP background soil and sediment screening values. Although zinc levels at SD-09A exceed background soil values, they are below USEPA sediment screening values.

Because operations at the Facility ceased in 1993, prior to the RFI Phase I/II sampling events, the higher levels detected during the Supplemental RFI sampling are not likely attributed to Facility operations. In fact the highest levels of lead and zinc detected in sediments during the Phase I, Phase II and Supplemental RFI investigations were detected at “background” location SD-09A. During Phase II, sediments were collected by boat, approximately 100 feet from shore. However, during the Supplemental RFI, sediments were collected approximately forty feet from shore. Sediments collected at both background locations may be affected by surface water runoff from nearby roads

Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, vanadium and zinc were detected in sediments collected from the south embayment of Turnpike Lake. The highest concentrations were detected at the location nearest to the Facility at SD-43 consistent with surface water runoff as the source of these metals. Maximum concentrations detected in 2005 were generally within a factor of two of maximum concentrations detected during Phase I/II sampling events with the exceptions of arsenic and silver which were detected at maximum concentrations of 8.3 and 170 mg/kg in 2005 compared to maximum concentrations of 3.2 and 41 mg/kg detected previously.

Locations SD-43 and SD-44 were re-sampled in June 2010. In general, metal concentrations were about a factor of two higher compared to 2005 levels. For example, cadmium was detected at 781 mg/kg at SD-43 in 2010 compared to a concentration of 400 mg/kg detected previously. Similarly, chromium was detected at 112 mg/kg in 2010 and 50 mg/kg previously, and silver was detected at 326 mg/kg in 2010 and 170 mg/kg in 2005. This same pattern is observed at sediment sampling location SD-44 where cadmium was detected at 170 mg/kg in 2010 and 57 mg/kg in 2005. The distribution of cadmium levels in the South Embayment of Turnpike Lake based on maximum concentrations observed at each location is shown in Figure 9.5.4. The pattern of contamination is consistent with surface water discharge from AOC B. Maximum concentrations of metals detected in the South Embayment of Turnpike Lake during the Supplemental RFI Investigation are presented below:

Metal	Max Concentration (mg/kg)
Antimony	1.68
Arsenic	8.6
Barium	76
Beryllium	1.3
Cadmium	781
Chromium	112
Copper	300
Lead	240
Mercury	0.832
Nickel	45.6
Selenium	4.04
Silver	326
Vanadium	98.1
Zinc	550

Because this same pattern of higher metals concentrations observed in 2010 compared to 2005 was also observed in samples collected from the background location, it is unclear if this difference reflects an actual increase in metals concentration, or differences in sampling and analysis (e.g. higher extraction efficiency in 2010). Examination of total organic carbon (TOC) levels reported in Table 6.5.2 show that levels were significantly higher in samples collected in 2005 compared to 2010. For example, the level of TOC measured at background location SD-09A was 25.9% in 2005 and 10.2/11.4% in 2010, and the level of TOC measured at SD-43 was 19.6% in 2005 and 13.1% in 2010. Over all sediment locations re-sampled in 2010 (i.e. SD-09A, SD-43, SD-44, SD-47, SD-48, SD-50, SD-202 and SD-214) TOC levels averaged 26% in 2005 compared to 13% in 2010. Because metals can bind strongly to some forms of organic carbon (e.g. humic and fulvic acids), the lower

levels of TOC observed in 2010 might account for the generally higher metals concentrations in 2010.

SEM/AVS. SEM/AVS analyses were performed on sediments collected from the two background locations and four south embayment locations in 2005 and from one background location and two south embayment locations in 2010. Results are presented in Table 6.5.5. These data were used to assess the bioavailability of metals in sediments and are discussed in further detail in the Ecological Risk Assessment (Section 11.0). SEM/AVS ratios in the two background sediment samples collected in 2005 were 0.76 at SD-09A and 1.61 at SD-10A. No ratio could be calculated for the background sample collected in 2010. In sediments collected from the south embayment, SEM/AVS ratios ranged from 0.74 to 1.24 with SEM/AVS ratios at two locations exceeding a value of 1.0.

Polychlorinated Biphenyls (PCBs). PCBs were detected in 2 of the 4 sediment samples collected from the south embayment in 2005. Aroclor 1254 was detected at a concentration of 490 µg/kg at SD-42 and 20,000 µg/kg at SD-43. Aroclor 1248 was also detected at SD-43 at a concentration of 27,100 µg/kg. These data are consistent with RFI Phase II sampling of south embayment sediments when the highest concentration of total PCBs detected was 96,000 µg/kg. Five additional samples including one duplicate (SD-319, SD-319DUP, SD-320, SD-321 and SD-322) were collected in October 2010 to further characterize the spatial extent of PCBs in the south embayment. Aroclor 1254 was detected at a concentration of 0.0789 mg/kg at SD-319 but not detected in the duplicate sample collected at this location. No PCBs were detected at the other three locations. The distribution of PCBs in the south embayment of Turnpike Lake is shown in Figure 9.5.5. These data indicate that PCB contamination is limited to the near shore area of the south embayment.

Total Uranium. Four additional samples including one duplicate (SD-308, SD-309, SD-309DUP and SD-310) were collected near the spillway in the south embayment to further characterize the spatial extent of uranium levels in the south embayment of Turnpike Lake. Total uranium levels in these four samples ranged from 1.48 to 2.57 pCi/g. The distribution of total uranium in the south embayment of Turnpike Lake is shown in Figure 9.5.6. Similar to the pattern of PCB contamination, the highest total uranium concentrations are limited to the near shore area of the south embayment.

Volatile and Extractable Petroleum Hydrocarbons (VPH/EPH). VPH and EPH analyses were conducted on all six sediment samples collected from Turnpike Lake in 2005. Background location SD-09A was clean; however, the highest concentrations of extractable petroleum hydrocarbons (C11 – C22 aromatics and C19 – C36 aliphatics) were detected at the second background location at SD-10A. As indicated in Figure 6.5.1, SD-10A is located in Turnpike Lake just north of where Shepard Street crosses the lake. Extractable petroleum hydrocarbons were also detected at all four south embayment locations. Ethylbenzene (at a concentration of 1.13 mg/kg in sample SD-44) was the only volatile hydrocarbon detected in lake sediments.

9.5.3.2 Sawmill Brook

Forty-two sediment samples (including two duplicates) were collected in 2005 and 17 sediment samples were collected in 2010 from Sawmill Brook and the associated stream system located in the low-lying area east of Route 152. Sediment sampling locations are

shown in Figures 6.5.1 and 6.5.2. Surface sediment sampling was conducted at five previous sampling locations (SD-01, SD-02, SD-03, SD-04, and SD-05) and at three new locations along the previously sampled reach of Sawmill Brook (SD-49, SD-50, and SD-51) in 2005. In addition, two surface sediment samples (SD-45 and SD-46) were collected in the wetland area where ground water upwelling is suspected; and two surface sediment samples (SD-47 and SD-48) were collected at downstream locations on Sawmill Brook. SD-47 was collected in the vicinity of SD-40 (sampled during RFI Phase II) and SD-48 was collected approximately 100 to 200 feet downstream in a reach of the stream that appears to be an area of sediment deposition. These 14 surface sediment samples were analyzed for metals, VOCs, PCBs, and TOC. In addition to reporting total metal concentrations, all samples were analyzed for SEM-AVS to evaluate metal bioavailability. Twenty-eight sediment samples from 14 other locations were collected in 2005 in support of the monitored natural attenuation (MNA) program. The purpose of this sampling was to provide supplemental data to support the on-going evaluation of the potential occurrence of natural attenuation of chlorinated hydrocarbons in ground water. These 28 sediment samples were collected along Sawmill Brook in and downgradient of the primary ground water discharge area. Sediments were collected from two depth intervals (0 – 0.5, and 1 – 2 feet bgs) to evaluate the vertical distribution of any constituents detected in the sediment. The depth intervals were selected based on previous sampling data indicating a total sediment thickness of approximately two feet. These 28 sediment samples were analyzed for VOCs and TOC. Samples located on the main branch of Sawmill Brook (i.e., SD-201, SD-202, SD-204, SD-206, and SD-207 through SD-214) were also analyzed for metals.

Seventeen additional samples were collected in 2010 to support interpretation of the sediment toxicity testing results, to further delineate the extent of metals contamination beyond the confluence of Sawmill Brook and Turtle Brook, and to characterize the levels of uranium in Sawmill Brook.

VOCs. The list of VOCs detected in sediments collected from Sawmill Brook and the low-lying wetlands in 2005 includes PCE, TCE and TCA and their biodegradation products (cis-1,2-DCE, 1,1-DCE, 1,1-DCA, chloroethane and vinyl chloride). Detected concentrations are reported in Table 6.5.3. The highest concentrations of chlorinated VOCs were detected between locations SD-201 and SD-204 with maximum concentrations of TCA and PCE at 2.9 and 19 mg/kg, respectively. Concentrations of TCA and PCE detected elsewhere were generally below 0.1 mg/kg. Deeper sediments (collected at a depth of 1 – 2 feet bgs) generally contained higher concentrations of VOCs, likely reflecting a loss of VOCs in the surface sediment layer.

These data suggest that the primary ground water contaminant plume discharges in the area between SD-201 and SD-204. The nearest monitoring well cluster to this area is MW21A/B/C. PCE concentrations in ground water samples collected in January 2006 from this overburden, bedrock and deep bedrock well cluster were 27, 780, and 170 µg/L, respectively. With a Koc value of 265 mL/g for PCE, and a measured organic carbon content of 40% (at SD-202 where a PCE concentration of 19 mg/kg was detected), the sediment-water partition coefficient for PCE is 106 mL/g. Thus, the equilibrium pore water concentration at SD-202 is estimated to be around 180 µg/L, which is in the range of concentrations detected at the MW21 well nest and is consistent with ground water upwelling from the bedrock aquifer in this area.

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In general lower levels of CVOCs were detected in 2010. For example, concentration of TCA decreased from 2.9 mg/kg in 2005 to 0.44 mg/kg in 2010, and PCE was detected at a concentration of 19 mg/kg in 2005 and not detected in 2010, at location SD-202. Similarly, at SD-46, TCA decreased from a concentration of 0.29 mg/kg in 2005 to a concentration of 0.029 mg/kg in 2010. These lower levels likely reflect the effectiveness of the GSM at reducing off-site concentrations of CVOCs in the overburden aquifer. PCE was not detected in MW21A in 2010 and detected at 870 and 220 µg/L in MW21B and MW21C, respectively.

Carbon disulfide was detected in 15 of 43 samples in 2005; but this constituent was also detected in two of the trip blanks and no concentration was greater than ten times the blank level. Acetone and 2-butanone were frequently detected in sediment samples; acetone was detected in 36 of 43 samples and 2-butanone was detected in 23 of 43 samples in 2005. Acetone concentrations ranged as high as 0.81 mg/kg and 2-butanone was detected at a maximum concentration of 0.27 mg/kg. Both of these chemicals are common laboratory contaminants and both are natural biodegradation products. Although acetone is reported to have been used at the Facility, it has only been consistently detected in groundwater in one monitoring well (MW40B), which is located off-site upstream of Sawmill Brook. This well was sampled in November 2001, December 2002, October 2003, November 2004 and January 2006. The highest concentration of acetone detected in this well was 2.0 mg/kg in October 2003. The level of acetone detected in this well, and the fact that acetone has never been consistently detected at elevated concentrations on-site, suggests an off-site source of this constituent.

Benzene, toluene and isopropyl toluene are common constituents of gasoline and were detected at low levels in 5, 21 and 13 of the 43 sediment samples collected in 2005. Benzene and isopropyl toluene have never been detected in ground water on-site and toluene has only been detected sporadically and at low levels (less than 5 µg/L). These data suggest an off-site source for these chemicals, such as roadway runoff from Rte. 152. In 2010, tert-butylbenzene was detected at a concentration of 0.92 mg/kg at sediment sampling location SD-202.

***Metals*.** Concentrations of metals detected in Sawmill Brook sediments are reported in Table 6.5.2. Two samples (including one duplicate) were collected at location SD-03, which was selected as a background location in 2005. Arsenic, beryllium, cadmium, chromium, copper, lead, nickel and zinc were detected at low levels in sediment collected at SD-03. Arsenic and beryllium were detected at estimated concentrations of 3.0 and 3.9 mg/kg but not detected in earlier sampling rounds. Concentrations of other metals including copper, lead and zinc at 24, 41 and 24 mg/kg, respectively were comparable (within a factor of two) to levels previously detected at this location.

At USEPA's request, an alternate background location (SD-TRIB) was selected in 2010. SD-TRIB is located on a tributary to Sawmill Brook that was chosen to represent a background location unaffected by surface water runoff from the Facility. Levels of arsenic, beryllium, chromium and lead were similar to levels detected at SD-03 in 2005; however, cadmium was detected at a concentration of 26.7 mg/kg at SD-TRIB in 2010 compared to a level of 2.4 at SD-03 in 2005, and zinc was detected at a concentration of 72.6 mg/kg at SD-TRIB in 2010 compared to levels of 24 and 29 mg/kg at SD-03 in 2005. Because SD-TRIB is located on a tributary to Sawmill Brook and is unaffected by runoff from Turnpike Lake, the source of higher levels of cadmium and zinc in this sample compared to SD-03 is unclear.

Metal concentrations are compared to background soil levels and sediment screening values in Table 9.5.1. Levels of cadmium at SD-TRIB exceed MassDEP natural soil levels and sediment screening values; however, zinc levels are below MassDEP natural soil levels and sediment screening values. Beryllium levels at SD-03 and SD-TRIB ranged from 3.9 to 6.8 mg/kg, which is above the MassDEP natural soil level of 0.4 mg/kg. Nickel and selenium were also detected above MassDEP natural soil levels at SD-TRIB.

No antimony, mercury, selenium or thallium were detected in any of the sediment samples collected from Sawmill Brook in 2005 due to elevated detection limits. In 2010 sampling, antimony, mercury and selenium were detected at low levels in 9 of 9 samples with maximum detected concentrations of 0.8, 0.2 and 4.4 mg/kg, respectively. Thalium was detected in 1 of 9 samples at a concentration of 0.2 mg/kg. Barium was analyzed for in 2010 and detected in 9 of 9 samples at concentrations ranging from 48 to 161 mg/kg. Arsenic was detected in 45 of 47 samples at concentrations ranging from 1.3 to 17 mg/kg; most concentrations were less than 10 mg/kg. The highest concentration was detected at a depth of 1 – 2 feet bgs in Sawmill Brook (SD-214-1-2). Beryllium was detected in 34 of 47 samples at concentrations ranging from 0.52 to 3.3 mg/kg with a median value of 2.1 mg/kg. Beryllium was also detected at the background locations (SD-03 and SD-TRIB) at 3.9 to 7.8 mg/kg, which suggests that the beryllium detected in Sawmill Brook sediments may be unrelated to Facility operations.

Concentrations of lead and zinc detected in Sawmill Brook sediments in 2005 are plotted in Figure 9.5.4. The sampling locations are arranged in order from left to right proceeding upstream to downstream in Sawmill Brook. Note that concentrations show a peak in surface sediments and also at depth in the vicinity of sampling locations SD-209, SD-210, and SD-211. Peaks are also observed at SD-202 and SD-204/SD-206. The peak at SD-202 is only observed in surface sediments. The peaks are likely related to sedimentation areas along the brook. Because lead and zinc are commonly associated with roadway runoff, one possible source of these metals, particularly in the area of SD-209, SD-210, and SD-211, is surface water runoff from the former drive-in when it was operating.

Relative concentrations of copper, lead and zinc as a function of distance downgradient and depth are plotted in Figure 9.5.5. As shown in this figure, copper concentrations follow the same trends observed for lead and zinc, particularly at depth. In contrast, trends in cadmium, chromium and nickel concentrations with downgradient sampling locations are somewhat more variable (Figure 9.5.6). In surface sediments, concentrations appear to decrease with distance downgradient except near SD-210 where concentrations tend to increase, particularly for cadmium and chromium. This concentration pattern would be consistent with sediment transport from the south embayment of Turnpike Lake and a secondary source, perhaps surface water runoff from the former drive-in, originating near SD-210. Overall, cadmium was detected in 44 of 47 samples collected from Sawmill Brook at concentrations ranging from 0.84 to 120 mg/kg with a median concentration of 26 mg/kg. Chromium was detected in all samples at concentrations ranging from 3.0 to 63 mg/kg with a median value of 21 mg/kg.

At locations where samples were collected at the surface (0 – 0.5 feet) and at depth (1 – 2 feet), only lead and zinc show a statistically significant difference in sediment concentrations with higher concentrations observed in samples collected at the surface compared to at

depth.[61] The median zinc concentration detected at the surface was 88 mg/kg compared to a median concentration of 46 mg/kg detected at depth. For lead, the median concentrations detected at the surface and at depth were 88 and 57 mg/kg, respectively.

Copper was detected in all the Sawmill Brook sediment samples at concentrations ranging from 3.2 to 64 mg/kg; the median concentration detected was 25.5 mg/kg, which is similar to the concentration detected at the background location SD-03. Copper concentrations detected at background locations SD-09A and SD-10A were 51 and 54 mg/kg; although, these samples have likely been affected by roadway runoff.

Four sediment samples were collected prior to and just beyond the confluence of Sawmill Brook and Turtle Brook (SD-47, SD-60, SD-48 and SD-61; see Figure 6.5.1) to further characterize the downstream extent of metals contamination in Sawmill Brook. Locations SD-47 and SD-48 were also sampled in 2005. As previously noted, TOC levels in SD-47 and SD-48 measured in 2005 (39.8% and 30.4%, respectively) were about two times higher than levels detected in 2010 (19.2% and 17.7%, respectively). For most metals (i.e. antimony, beryllium, chromium, lead, mercury, silver, vanadium and zinc) there was no discernable trend in concentration with distance downstream. However arsenic concentrations decreased from 7.2 to 5.4, barium concentrations decreased from 157 to 127 mg/kg, cadmium concentrations decreased from 58 to 29 mg/kg, and nickel concentrations decreased from 31.8 to 24.6 mg/kg. The levels of arsenic, barium, cadmium and nickel at the sampling location furthest downstream in Turtle Brook are at or below background levels measured at SD-03 and/or SD-TRIB suggesting that low flow velocity in the upstream impounded area prevents most sediment from migrating beyond the wetland bordering the former drive-In property.

SEM-AVS. SEM-AVS analyses were performed on 12 Sawmill Brook samples in 2005 and 9 Sawmill Brook/Turtle Brook samples in 2010. SEM/AVS ratios ranged from 0.07 to 11.5; ratios exceeded 1.0 in 7 of 21 samples. These data are discussed in further detail in the Ecological Risk Assessment (Section 11.0).

PCBs. No PCBs were detected in 14 Sawmill Brook sediment samples collected in 2005.

Total Uranium. Seven additional samples (SD-301 through SD-307) were collected along Sawmill Brook (see Figure 6.5.2) to determine if uranium detected in Turnpike Lake has migrated off-site via the southern spillway in the south embayment. Total uranium levels measured in Sawmill Brook ranged from 0.615 to 2.42 pCi/g with an average value of 1.36 pCi/g. In comparison, background levels of total uranium measured in soil ranged from 0.3 to 4.6 with an average value of 1.64 pCi/g (n = 30; see Table 4.7.1e). These data indicate that uranium found in Turnpike Lake has not migrated to any significant extent beyond the near shore area in the south embayment (see Figure 9.5.6).

9.5.4 Sediment Characteristics

9.5.4.1 Deposition Areas and Seasonal Variation in Sediment Transport

Areas of deposition and erosion were presented in Section 7.3 and are discussed below. Field observations indicate that the discharge channel immediately east of the south

61 Wilcoxon paired sampled test, $p = 0.05$

embayment in Turnpike Lake is a flume, which is an area of erosion. This is immediately followed by an impoundment, which is an area of deposition. Areas of deposition and erosion along the unnamed streams between the impoundment and the former drive-in movie theater vary depending on the seasonal variation in water velocities in the streambed. In the area immediately east of the former drive-in movie theater, surface water in Sawmill Brook slows due to a culvert under an earthen road, which crosses the stream, creating an impounded area. The approximate boundaries of this impounded area are indicated on Figure 7.3.4.

Chemical data discussed above support this interpretation of deposition/erosion patterns with the greatest apparent accumulation observed at the beginning of the impounded area near SD-210. Concentrations are somewhat higher in depositional areas, and are lower in erosional areas.

9.5.4.2 Estimation of Hazardous Constituent Mass in Turnpike Lake Sediments

Results from the RFI Phase I, Phase II and 2005 sediment sampling programs were used to estimate the mass of constituents in sediments in Turnpike Lake (AOC 13). To prepare the mass estimate, AOC 13 was subdivided into two areas; 1) west of AOC A, and 2) the south embayment. Average concentrations in sediments were calculated on a dry weight basis assuming a value of zero for non-detects. Estimation of mass was calculated following the same method as was employed for soil in the other AOCs. This generic methodology is discussed further in Section 9.1.4 and the mass estimates for sediments are presented in Table 9.1.11.

9.6 Fish

The purpose of the Phase I and II fish sampling program was to assess the impact of Facility operations on neighboring water bodies and to provide information for use in the HERA. In this section, a comparison is made between the fish collected from the background sampling location (the Old Mill Pond), and those collected from Turnpike Lake and the private impoundment. Discussion of the human health and ecological risk of ingestion of these fish is presented in Sections 10 and 11, respectively.

9.6.1 Development of Background Concentrations

As discussed in Section 4.6 and 5.6, several metals and PCBs were detected in fish collected from the south embayment and the private impoundment. To determine whether these detections were significant, the detected constituents were compared to background concentrations of fish collected from the Old Mill Pond.

Background concentrations for each class of fish (i.e., bottom feeder, game, and prey) and each type of sample (muscle, offal, or whole body) were determined using the following method. In cases where three or more samples were collected, and more than 50 percent of the samples contained detectable concentrations, 95% UCL concentration of constituents in fish from the Old Mill Pond was calculated. 95% UCL values were not calculated for less than three samples in accordance with comments provided by USEPA. In addition, the maximum detected concentration was presented for all chemicals regardless of frequency of detection.

Summary values (95% UCL and maximum detection) for each class and type of fish from the south embayment of Turnpike Lake and the private impoundment were, separately,

compared to the appropriate value in background to determine whether, in general, fish in the reference area had been impacted by Facility operations. If a 95% UCL was calculated in both the reference area and in background, these values were compared. If the 95% UCL was not calculated, the maximum concentration from the fish class was compared to the maximum detection in background.

Discrete fish sampling analytical results are presented in Table 4.6.3. The background concentrations (95% UCL and maximum detected concentration) are presented on Table 9.6.1. Results exceeding background concentrations are shown in bold type on Table 9.6.1.

9.6.2 South Embayment of Turnpike Lake

A total of fifteen fish (five of each class of fish) were collected from the south embayment and analyzed for metals and PCBs. Bottom feeders and game species were filleted and the muscle and offal samples were analyzed separately for these constituents.

Bottom Feeders. Aroclors 1242, 1254 and 1260 were detected in muscle and offal samples at concentrations above background levels. Aroclors were more frequently detected, and detected in higher concentrations, in the offal samples. Aluminum and copper were detected above background concentrations in muscle samples. No other metals were detected in muscle tissue above background concentrations. The following metals were sporadically detected in the offal samples above background concentrations: arsenic, cadmium, cobalt, copper, and silver. Only silver was detected in all of the offal samples analyzed in elevated concentrations above background.

Game Species. Aroclor 1242, 1254, and 1260 were detected in muscle and offal samples at concentrations above background levels. Mercury, nickel, and silver were detected in muscle samples above background concentrations. No other metals were detected above background concentrations in the muscle samples analyzed. Cadmium, chromium, copper, mercury and silver were detected above background in offal samples.

Prey Species. Aroclors 1242, 1254, and 1260 were detected above background concentrations. Five metals were detected above background concentrations: cadmium, chromium, mercury, silver, and vanadium. With the exception of cadmium, these metals were detected at concentrations at or near background concentrations.

9.6.3 Private Impoundment

A total of eight fish (two bottom feeders, one game species, and five prey species) were collected from the private impoundment and analyzed for metals and PCBs.

Bottom Feeders. Aroclor 1254 was detected in concentrations that exceeded background in all the muscle and offal samples analyzed. Aroclor 1260 was detected in one muscle and one offal sample at a concentration above background. Cadmium and vanadium were the only metals detected above background concentrations in the muscle sample analyzed. Cadmium, lead, nickel, silver and zinc were detected in the offal samples just above background concentrations. Cadmium was detected in elevated concentrations in the two offal samples analyzed.

Game Species. Aroclors 1242 and 1254 were detected above background in both the muscle and offal samples. Selenium was the only metal detected above background

concentrations in the muscle sample analyzed. Cadmium was the only metal detected above background in the offal sample analyzed.

Prey Species. Aroclor 1260 was detected above background concentrations in all of the samples analyzed. Aroclor 1254 was detected in two of the samples analyzed in concentrations exceeding background. Seven metals were detected above background concentrations: aluminum, cadmium, copper, lead, selenium, silver, and vanadium. Cadmium was the only metal detected in elevated concentrations.

9.6.4 Conclusions

Several metals and PCBs were detected in fish. As stated previously, the purpose of the development of a table of background concentrations in fish was to obtain data for the HERA and to evaluate whether Facility operations have impacted fish. Because the sample size used in this statistical analysis was relatively small (i.e., five samples or less), the 95% UCL should not be viewed as an absolute number. Most metals were infrequently detected in fish samples (e.g., present in one or two samples) and detected at concentrations just above background. Because these metals were detected at low concentrations in only a few samples, these detections may still be within the range of background concentrations.

Cadmium and Aroclors 1242, 1254, and 1260 were consistently detected above background concentrations in fish from both the private impoundment and in the south embayment. Based on a review of the literature, the concentrations of cadmium and PCBs detected in fish are not expected to adversely impact the fish present in Turnpike Lake or the private impoundment; however, there may be some risk in the ingestion of fish containing PCBs. Further discussion of the human and ecological risk of these constituents is presented in Sections 10 and 11.

9.7 Indoor Air

Indoor air has been tested at the Facility on a number of occasions and is summarized in Section 9.7.

9.7.1 Prior Indoor Air Sampling Events.

Indoor air sampling was initially conducted at the Facility in September of 2001 (ENVIRON, 2001). Four indoor air samples (AS-1A through AS-4A) were collected from within Building 8 and Building10 along with three background ambient air samples collected from the nearby Nature Conservancy property. Indoor air sampling locations are shown in Figure 9.7.1. Sample locations AS-1A and AS-2A were chosen based on historic areas of concern (AOCs 5, 6 and 29) located within Building 8; sample AS-3A was collected from within the occupied office portion of Building 8; and sample AS-4A was collected in the wastewater treatment area of Building 10. At that time, low concentrations of several VOCs were detected. At the request of the United States Environmental Protection Agency (USEPA), the air sampling program was expanded to include additional indoor air sampling in Winter 2002-03 and Spring 2003 to evaluate the extent of seasonal variation in indoor air levels.

The Winter 2002-03 event was conducted on March 6, 2003 and included a total of eight indoor air samples collected from the original four locations (AS-1A through AS-4A) and four additional locations: AS-9A located along the southern portion of Building 10; AS-10A located near AOC-6; and duplicate samples AS-11A/AS-11B located in an unoccupied office area in the southeast corner of Building 8. The Spring 2003 sampling event was conducted

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on May 22, 2003 and included 10 indoor air samples collected from the eight locations sampled on March 6, 2003 along with two additional locations (AS-12A and AS-13A) identified based on an inspection of the concrete foundation for possible soil vapor intrusion pathways. A copy of the Winter 2002-03 and Spring 2003 Air Sampling Report is provided in Appendix I and results are summarized in Tables 9.7.1.

A fourth indoor air sampling event was conducted on December 18, 2007. A total of six indoor air samples were collected at locations AS-1A, AS-3A, AS-8A, AS-11A, AS-11B[62] and AS-13A. The sampling locations were chosen to provide updated sampling results in areas where:

- elevated concentrations of CVOCs were previously detected (AS-11A and AS-11B),
- where employees of FSP-One, Inc. spend the majority of their time (AS-3A), and
- at representative locations within the warehouse portion of Building 8 (AS-1A, AS-8A and AS-13A) where workers may be present.

Samples were collected using 6-liter, individually-certified, stainless steel SUMMA® canisters equipped with 24-hour airflow controllers. The canisters were set at a breathing height of approximately four to six feet and the samples were collected over a period of approximately 24 hours. The SUMMA® canister samples were analyzed by Alpha Analytical Labs in Mansfield, MA using EPA Method TO-15. Laboratory reports are provided in Appendix I and results are summarized in Tables 9.7.1.

A fifth sampling event was conducted on November 9, 2009. A total of six indoor air samples were collected at locations previously sampled in December 2007 with the exception that AS-11A and AS-11B were co-located samples. As in the December 2007 event, the sampling locations were chosen to provide updated sampling results in areas where employees of FSP-One, Inc. spend the majority of their time (AS-3A); at representative locations within the warehouse portion of Building 8 (AS-1A, AS-8A and AS-13A) where workers may be present; and where the highest indoor air concentrations were previously detected (AS-11A/AS-11B). Samples were collected using 6-liter, individually-certified, stainless steel SUMMA® canisters equipped with eight-hour airflow controllers. The canisters were set at a breathing height of approximately four to six feet and the samples were collected over a period of eight hours. The SUMMA® canister samples were analyzed for eight CVOCs (PCE, TCE, vinyl chloride, TCA, 1,1-DCA and 1,1-DCE) by Alpha Analytical Labs in Mansfield, MA using EPA Method TO-15. Laboratory reports are provided in Appendix I and results are summarized in Table 9.7.1.

9.7.2 Current Indoor Air Sampling Program

In order to further assess the building spaces currently in use by the Site tenant, FSP One, Inc. (FSP), additional indoor air sampling events were performed on July 27, 2010 and October 13, 2010. Samples were collected at five locations:

- an outdoor air sample (Ambient Outside) placed upwind (west) of Building 10;

62 Note that sample location AS-11B was collected from the southeast corner of Building 8, within the same office cubicle area, but far enough apart from AS-11A (approximately 30 feet) to not be considered a co-located sample.

- two samples from the two currently occupied FSP office spaces (Sales Office and Corner Office);
- one sample from the AS-2A location (Former Maintenance Area); and
- one sample from between the AS-8A and AS-13A locations (Former Production Area).

Sample locations are shown on Figure 9.7.1. Samples were collected using 6-liter, individually-certified, stainless steel SUMMA® canisters equipped with 24-hour airflow controllers. The samples were collected over a period of approximately 22 hours and analyzed by Alpha Analytical of Mansfield, MA using EPA Method TO-15. Laboratory reports are provided in Appendix I and results are summarized in Table 9.7.2.

9.7.3 Indoor Air Testing Results

9.7.3.1 Prior Sampling Events.

Concentrations of constituents detected in indoor air during the November 2009 and earlier sampling events are provided in Table 9.7.1. All eight CVOCs targeted for testing were detected in at least one of the samples in 2009. As in previous sampling events, the highest concentrations of CVOCs were detected in the unoccupied office area in the southeast corner of Building 8 at sampling locations AS-11A/AS-11B. In this area, PCE, TCE and TCA were detected at maximum concentrations of 11, 28 and 4.9 parts per billion by volume (ppbv). Average concentrations of PCE and TCA detected elsewhere in the building were generally lower by about a factor of five; TCE concentrations detected elsewhere were about 25 to 30 times lower.

In general, CVOC concentrations detected in November 2009 are about two times lower than levels detected during the prior winter sampling event conducted in December 2007, except at location AS-11A/AS-11B where concentrations are similar. The two winter sampling events are being compared because soil vapor intrusion potential is expected to be highest during the winter heating months when indoor air ventilation is expected to be lowest. Summertime levels detected in May 2003 were generally lower than levels detected during the November 2009 wintertime sampling event.

9.7.3.2 Current Sampling Program

Constituents detected in indoor air during the most recent sampling events conducted in July and October, 2010 are summarized and compared to USEPA Region 3 Screening Levels in Table 9.7.2. Benzene and PCE were detected in indoor air at levels exceeding Region 3 Screening Levels. Vinyl chloride was not detected above the laboratory reported detection limits at any of the sampling locations. Exceedances of the EPA screening criteria indicates that further investigation and assessment of these VOCs is warranted. An indoor air risk characterization would be required to further quantify both the threshold Hazard Index (HI) and Excess Lifetime Cancer Risk (ELCR), consistent with MassDEP and EPA guidance documents and it is that determination which will define if an actual impact is occurring to occupants of Building 8.

In order to fulfill MassDEP requirements, an additional two consecutive rounds of quarterly indoor air sampling are planned for January 2011 and April 2011. At the conclusion of four quarters of indoor air sampling, a technical memorandum will be prepared, comparing

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measured concentrations to both EPA and MassDEP standards. In addition, an evaluation of the Building 8 HVAC system will also be provided in this memo.

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10 Human Health Risk Assessment – (to be completed)

Section 10.0 will be completed following a decision on the Future Land Use Proposal Application.

11 Ecological Risk Assessment

The objective of this ecological risk assessment (ERA) is to characterize the potential risks to ecological resources from constituents present in environmental media at the Site and in adjacent areas including Turnpike Lake and Sawmill Brook (including the private impoundment) and the forested wetlands east of the Site.

This ERA is updated with recently obtained supplemental data and revisions that address USEPA's draft comments issued in December 2008 on the revised DRAFT RFI Report submitted in April, 2007. Many of USEPA's comments related to the ERA for the Site. In response to these comments, and following a Site visit and consultation with a representative from USEPA in October 2009, additional testing of surface water and sediment was implemented in accordance with an approved QAPP dated April 14, 2010. The additional testing included chemical analysis of floodplain soils, surface water and sediments, biological community assessment and sediment toxicity testing.

This ERA is consistent with national and regional USEPA guidance for conducting ERAs including:

- Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (USEPA, 1997c);
- Guidelines for Ecological Risk Assessment (USEPA, 1998);
- Estimating Exposure of Terrestrial Wildlife to Contaminants (USEPA, 1994);
- Toxicological Benchmarks for Wildlife: 1996 Revision (USEPA, 1996);
- ECO-Update: Role of Screening-level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments (USEPA, 2001);
- Generic Ecological Assessment Endpoints (GEAEs) for Ecological Risk Assessment (USEPA, 2003);
- Assessing Risks To Populations At Superfund And RCRA Sites - Characterizing Effects On Populations (USEPA, 2006b);
- Framework for Metals Risk Assessment (USEPA, 2007);
- Risk Updates #4, (USEPA, Region 1, 1996b); and
- Risk Updates #5, (USEPA, Region 1, 1999).

This ERA follows USEPA's (1997c) eight-step process that is comprised of two tiers: a screening-level ecological risk assessment (SLERA) followed by a baseline ecological risk assessment (BERA) as shown on Figure 11.1. The purpose of the BERA is to determine whether concentrations of constituents of potential ecological concern (COPECs) currently existing in soil, sediment, surface water, or biota have the potential to adversely affect ecological receptors that may forage within the area. The remainder of this section provides the following components of the ERA:

- Section 11.1 SLERA – is a screening level conservative evaluation determining need for more in depth evaluation and in this case was used to identify the COPECs that are evaluated in detail in the BERA;

- Section 11.2 Baseline Problem Formulation – This section establishes the scope and goals of the BERA, culminating in the selection of assessment and measurement endpoints and presentation of the ecological conceptual Site model (CSM);

- Section 11.3 Baseline Exposure Assessment – This section describes the data used in the ecological risk assessment, and reports on the magnitude and frequency of exposure of the receptors of interest to the COPECs;

- Section 11.4 Baseline Effects Assessment – The effects assessment evaluates the potential for COPECs to cause adverse effects in ecological receptors of interest (ROIs) and estimates the relationship between the extent of exposure and severity of effects;

- Section 11.5 Baseline Risk Characterization - Risk characterization involves the integration of the exposure assessment and effects assessment to determine the likelihood, severity, spatial distribution and certainty of adverse effects with consideration of uncertainties within the ERA process; and

- Section 11.6 Scientific Management Decision Point – The Scientific Management Decision Point summarizes the results of the risk assessment and determines if the information is adequate to characterize risk.

11.1 Screening Level Ecological Risk Assessment

A SLERA is a conservative assessment intended to rapidly screen out those sites, portions of sites, receptors, chemicals, and/or pathways that clearly do not pose unacceptable risks to ecological receptors. The findings of this SLERA inform the problem formulation that is presented in Section 11.2, and form the basis for the BERA. This SLERA is streamlined, in that it consolidates USEPA's (1997c) Step 1 Screening-Level Problem Formulation and Ecological Effects Evaluation and Step 2 Exposure Estimate and Risk Calculation. This streamlined SLERA was judged appropriate because exceedances of screening values were obvious, and ecological investigations conducted in 2005 and 2010 are considered to be elements of a BERA. In addition, USEPA comments on the 2007 Draft RFI indicated that elements of a BERA were already included in the SLERA.

11.1.1 Environmental Setting

This section provides a brief summary of the land use, habitat and native species in and near the Study Area, and the sensitive ecological habitats and receptors that may be exposed to Site constituents. A full characterization of the Site use and historic industrial operations is provided in Section 2 of the RFI.

11.1.1.1 Land Use and Layout

The BASF property is a 45 acre parcel located in an area of mixed commercial, residential, and natural resource preservation land uses (Figure 2.5). It is bordered by Turnpike Lake to the west and south, and a forest/wetland area owned by the Natural Resources Trust of Plainville to the north (see Figures 2.3 and 2.4). The Site is located within the Taunton River Drainage Basin, a small sub-area of the Narragansett Basin. For purposes of the ERA, the term "Site" refers only to the portion of the property located west of Route 152 that is or was covered by buildings, hardscape (pavement or former building foundations), or landscaping (Figure 2.5). The Site and surrounding area including Turnpike Lake and the forested

wetlands and associated streams located east of Route 152 are defined as the Study Area (Figure 6.5.1) for the purposes of this ERA. The wetlands are abutted to the immediate west by upland industrially-zoned parcels owned either by BASF (former Drive-In property and former house lots) or a business-residence grandfathered under town planning ordinance. Other residences abut the wetlands to the east (Figure 2.4).

Turnpike Lake is a constructed impoundment that has two surface outlets, one of which flows from the embayment immediately south of the Site (the South Embayment), and one of which is located approximately 0.13 miles to the north of the South Embayment. The surface outlet to the north empties into Turtle Brook and the surface outlet to the south empties into Sawmill Brook. Sawmill Brook eventually merges with Turtle Brook to the northeast of the former Drive-In theater (east of Route 152) (see Figure 2.5). The low-lying wetlands surrounding Sawmill Brook also receive drainage from the south and east, and Turtle Brook receives drainage from the north. . Drainage from the low-lying areas eventually enters Lake Mirimichi, approximately one mile to the northeast of the Site, via Turtle Brook.

11.1.1.2 Habitat in the Study Area

The identification of habitats within the study area is based on field surveys conducted by ENVIRON biologists and Certified Ecologists in 1995, 2005, and 2010. The Site currently consists of one main structure (consisting of Buildings 8 and 10). A second building (Building 11), is located northwest of the main structure. The Site property provides only limited habitat for terrestrial mammals and birds, because the landscape is dominated by concrete floor slabs from nine former buildings that were demolished in 1996 and 1997. The areas north and east of the main building consist of paved parking lots. Access to the Site is limited by a 6-foot chain-link fence topped with barbed wire. South and west of the Site, a relatively narrow (20 to 100 feet in width) strip margin of trees and other vegetation occurs between the Site and Turnpike Lake. Dominant tree species include oak, maple, and white pine. The understory is relatively sparse, with brambles and blueberry dominating. There is no wetland fringe along the lake; the boundary between aquatic and terrestrial habitats is abrupt and well defined. No wetland areas occur on the Site.

The aquatic features associated with the Study Area are Turnpike Lake, a private pond, Sawmill Brook, Turtle Brook, and the associated wetlands surrounding Sawmill Brook.

- Turnpike Lake is a relatively large and shallow eutrophic lake and much of its shoreline is undeveloped. It is classified by the National Wetland Inventory (NWI) as lacustrine, limnetic, unconsolidated bottom, permanently flooded, diked impoundment (Appendix K; USFWS, 2010).
- The lake discharges to two streams, Sawmill Brook to the south and east of the Site and Turtle Brook north of the Site (on the Natural Resources Trust land), which flow west to east from Turnpike Lake (Figure 2.5).
- Sawmill Brook originates from the south embayment of Turnpike Lake and flows east under Route 152. Several hundred feet east of Route 152, this stream enters a small pond located adjacent to a private residence (Figure 2.5). Sawmill Brook is classified by the Massachusetts Department of Environmental Protection (DEP) as a Zone A surface water protection area (see Figure 2.6).

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- Sawmill Brook, Turtle Brook, and the braided channels within a broad wetland are classified by the NWI as palustrine, forested with broad-leaved deciduous trees, and seasonally flooded (USFWS, 2010; Appendix K). The dominant tree species is red maple, with some white pine also occurring on drier hummocks. Various woody species occur in the understory, especially blueberry. The herbaceous layer is dominated in most places by skunk cabbage.
- Under the State stream classification system, Sawmill Brook and Turtle Brook have been classified as Class B High Quality. According to the Code of Massachusetts Regulations Part 314, Chapter 4.05 (314 CMR 4.05), Class B waters "are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value."
- Sawmill Brook flows into Turtle Brook near the extreme northeastern corner of the study area and ultimately flow approximately one mile into Lake Mirimichi.

11.1.1.3 Natural Heritage Resources in the Study Area

The Massachusetts Division of Fisheries & Wildlife (MDFW) has developed online mapping capabilities "designed to guide strategic biodiversity conservation in Massachusetts over the next decade by focusing land protection and stewardship on the areas that are most critical for ensuring the long-term persistence of rare and other native species and their habitats, exemplary natural communities, and a diversity of ecosystems. MDFW BioMap2 is also designed to include the habitats and species of conservation concern identified in the State Wildlife Action Plan" (MDFW, 2010). Additionally, the Massachusetts Natural Heritage and Endangered Species program (NHESP, which is under the MDFW) offers a GIS viewer that shows the results of the 2008 Priority Habitats of Rare Species and Estimated Habitats of Rare Wildlife mapping efforts.

The BioMap2 maps (provided in Appendix K) indicate that the Study Area, in particular Turnpike Lake and the wetlands, are not considered NHESP Priority Habitats of Rare Species, NHESP Natural Communities, NHESP Estimated Habitats of Rare Wildlife, or Areas of Critical Environmental Concern, or core habitat or critical natural landscape.

11.1.1.4 Wildlife in the Study Area

The wildlife known or expected to occur in the Study Area are those typical of the geographic region, including terrestrial, aquatic, and aquatic-oriented mammals, birds, amphibians, fish, and invertebrates. These are generally discussed by major taxonomic group below. The characterization of wildlife in the study area is based on observational data obtained during multiple visits and records compiled by the Natural Resource Trust. Supporting information about wildlife is provided in Appendix K.

A broad range of birds, mammals, and herpetofauna characteristic of the geographic region are known to occur at or near the Study Area. A total of 38 bird species were observed during surveys of the Site. An additional 19 species of birds are known to occur in the study area based on records compiled by the Natural Resource Trust. A total of 8 mammalian species were observed either visually or by sign (e.g., tracks) during surveys of the Site and/or Study Area. An additional 7 species of mammals are known to occur in the study

area based on records compiled by the Natural Resource Trust. Seven species of amphibians and six species of reptiles are known to occur in the study area based on records compiled by the Natural Resource Trust.

The aquatic habitats of Turnpike Lake, Sawmill Brook, and Turtle Brook also provide habitat for a variety of aquatic wildlife . Although fish were sampled from Turnpike Lake and the small impoundment on Sawmill Brook as part of fish tissue sampling, fish population data were not collected. Fourteen fish species observed during tissue sampling or expected based on the Natural Resource Trust evaluations are listed in Appendix K.

Invertebrate surveys indicate that Turnpike Lake hosts populations of true flies (chironomids), worms (oligochaetes), amphipods, water fleas (ceriodapnia), isopods, mayflies (ephemeroptera), and dragonflies (odonates). Sawmill brook and the wetlands generally host the same types of invertebrates as Turnpike Lake (with the exception of water fleas), and also contain beetle larvae (coleoptera), bivalves, and stoneflies (plecoptera). More quantitative information about invertebrate populations is presented as part of the BERA.

11.1.1.4.1 Threatened and Endangered Species

Based on consultations with the U.S. Fish and Wildlife Service (USFWS), no federally-listed or proposed threatened or endangered species are known to occur within the study area vicinity with the exception of occasional transient bald eagles (*Haliaeetus leucocephalus*) and peregrine falcons (*Falco peregrinus*) (USFWS 1995). Both of these species have been proposed for removal from the federal list of threatened and endangered wildlife for some time (Federal Register - July 6, 1999 and August 26, 1998).

Based on consultations with the MADFW Natural Heritage & Endangered Species Program (MADFW 1995b), there are no records of state-listed threatened, endangered, or special concern species occurring in the study area. However, three bird species listed as occurring on Natural Resource Trust lands in the study area are on the state list (Appendix K). These include the American bittern (*Botaurus lentiginosus*), listed as endangered, the northern harrier (*Circus cyaneus*), listed as threatened, and the sharp-shinned hawk (*Accipiter striatus*), listed as special concern. Suitable habitats for the American bittern (large, densely vegetated emergent wetlands) and the northern harrier (large areas of emergent wetlands or open fields) do not occur in the study area vicinity. Potentially suitable habitat for the sharp-shinned hawk (relatively mature forest) does occur in the study area.

The USFWS Information, Planning, and Conservation System (IPCS) indicates that there are no listed species or national wildlife refuges in the Study Area (USFWS, 2010, Appendix K). Of the state listed species that may occur in Massachusetts, MDFW indicates that only marbled salamander, bridle shiner (fish), eastern box turtle, lion's foot (plant) are found in the Plainville area (MDFW, 2010, Appendix K). Habitat for the marbled salamander, bridle shiner, and eastern box turtle are present in Turnpike Lake and in the wetlands (MDFW, 2010, Appendix K). Habitat for lion’s foot is not present in the study area (Everett and Lepley, 2002).

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11.1.2 Screening-Level Effects Evaluation, Exposure Estimates and Risk Calculation

A SLERA includes a screening-level ecological effects evaluation, the derivation of screening-level exposure estimates and, finally, screening-level risk calculations (USEPA 1997c). This combined evaluation identifies the COPECs that should be retained and carried forward in the BERA. For the purposes of this streamlined SLERA, these three steps are presented concurrently in this subsection.

The ecological effects evaluation identifies the conservative ecological screening benchmarks (ESBs) that are used for each medium of interest (i.e., surface water, sediment, and soil). Because USEPA Region 1 has not issued guidance recommending specific screening values for use in SLERAs, screening values developed by other USEPA regions are used here. The preferential hierarchy reflects the robustness of the datasets and the breadth of coverage of different chemicals.

- Surface water screening benchmarks are summarized in Tables 11.1a and 11.1b. Surface water benchmarks are adjusted for hardness using a Site-average hardness of approximately 25 mg/L based on 2005 and 2010 supplemental data.

- Sediment screening benchmarks are summarized in Tables 11.1c. These are based on the preferential hierarchy from USEPA Region 3 Freshwater Screening Benchmarks (2010), USEPA Region 5 (2003a), and finally USEPA Region 4 (2001b).

- Surface soil screening benchmarks are summarized in Table 11.1d. The USEPA Ecological Soil Screening Levels (EcoSSLs) were used as the primary criterion. The lowest published benchmark for birds, mammals, plants, and invertebrates is used when multiple benchmarks are available. If no EcoSSL benchmark was available, then the selected benchmark is based on preferential selection from USEPA Region 5 (2003a) or USEPA Region 4 (2001b).

Maximum constituent concentrations are used as exposure estimates for the SLERA, as indicated for surface water (Table 11.2a), sediment (11.2b), floodplain soils (11.2c) and surface soil (11.2d). Data collected during sampling events conducted during the RFI process, from 1995-2010, are used to identify chemicals that should be carried forward in the BERA. For sediments and soils, only samples collected in the biologically active zone (i.e. top one foot of sediment or soil) were considered in the SLERA. Potential issues related to burrowing mammals and deeper sediments are addressed in the BERA.

The screening-level risk characterization is based on the comparisons of maximum detected concentrations with ecotoxicity screening values. Chemicals with maximum detected concentrations that exceed the designated ESBs are retained as COPECs for further evaluation in the BERA. Chemicals lacking ESBs are also retained for further evaluation in the BERA.

11.1.3 SLERA Conclusions

The SLERA provides a conservative evaluation of potential risks to wildlife through the comparison of maximum detected chemical concentrations in surface water, sediment, floodplain soil, and on-site surface soil to media-specific ESBs considered protective of wildlife. In this evaluation, a variety of metals, volatile organic compounds, polycyclic

aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) are identified as COPECs for consideration in the BERA because the maximum detected concentrations exceeded benchmarks or the benchmarks are not available. A summary of chemicals retained as COPECs in surface water, sediment, floodplain soil and on-Site soil for consideration in the BERA is provided in Table 11.3.

11.2 Baseline Problem Formulation

The third step of the eight-step ERA process is the baseline problem formulation. It builds upon the findings of the SLERA and establishes the breadth, focus, and goals of the BERA, as well as the specific ecological values to be protected. The main goal of problem formulation is to present the basis for decisions related to the scope of the BERA.

11.2.1 Conceptual Site Model

A conceptual Site model (CSM) is a written description and visual representation of predicted relationships between ecological entities and the stressors to which they may be exposed. This subsection provides a narrative description of the ecological CSM for the study area, and Figure 11.2 provides a visual depiction of the ecological CSM. This CSM builds upon the information presented in the environmental setting of the SLERA by providing discussion of the sources, ecological receptors (i.e., exposed wildlife), and the routes of exposures considered in the BERA.

11.2.1.1 Sources and Remedial Actions

Historical industrial operations at the BASF Site have resulted in the release of chemicals to groundwater, surface water, sediment, and surface soil, as indicated on Figure 11.2. The SLERA showed that VOCs, metals, PAHs, and PCBs, were detected at concentrations exceeding ecological benchmarks. The SLERA considered the maximum chemical concentrations from Phase I and Phase II sampling efforts (1995 and 1997), and supplemental sampling efforts (2005 and 2010). However, onsite activities (e.g. facility closure in 1993) and certain remedial measures implemented at the Site have diminished or eliminated some of the chemical transport pathways. Therefore, this BERA must take into account current (i.e., “baseline”) conditions so that these BERA results can inform further remedial management decisions for the Site. The following remedial measures were taken:

- a groundwater pumping and treatment system and barrier wall was installed along the eastern boundary of the Site to control the migration of VOCs in groundwater from the Site to the Sawmill Brook wetlands area in 1997. This has resulted in the reduction of VOCs in the wetlands;
- nine on-Site buildings were demolished in 1996, removing a significant source of metals to Turnpike Lake via runoff from roof drains; and
- the highest concentrations of metals in Site soils are known to exist in AOC B, and this area is designated for Stabilization per the Consent Decree.

This BERA considers data collected at the Site and in the surrounding area from a spatial and temporal perspective. Data are divided into aquatic and terrestrial exposure units (Turnpike Lake, Sawmill Brook wetlands, on-Site soils, wetland floodplain soils, and representative references for each habitat type) so that potential exposures within each unit

can be evaluated independently. Data are also considered over time to ensure that the consideration of current conditions is used for management decision-making.

11.2.1.2 Refinement of Chemicals of Potential Ecological Concern

The initial list of COPECs from the SLERA identifies those constituents that were detected in any medium at concentrations greater than the ESBs and also constituents lacking ESBs. The BERA serves to refine the list of COPECs in order to focus the assessment on those constituents most likely to pose ecological risk. The refinement of COPECs provided herein is consistent with USEPA guidance (USEPA 1989g, 1997c, 2001), including consideration of background concentrations, essential nutrients and electrolytes, and the frequency of detection as described in this section. The refinement of COPECs is provided in Tables 11.4a, 11.4b, 11.4c, and 11.4d for surface water, sediment, floodplain soil, and on-Site surface soil, respectively. The remainder of this section describes the elements of the refined screening for these media.

Fish tissue data were not evaluated in the SLERA, but these data reflect a critical component of the BERA evaluation of food web exposures. Therefore, Table 11.4e presents the identification of COPECs in fish tissues. Fish tissue data are presented on a whole body, wet weight basis, as calculated using data for fillet and remaining carcass (i.e., offal) tissue data. The fish whole body calculation method and supporting data are provided in Appendix K.

11.2.1.2.1 Comparison to Background Concentrations

USEPA (2001) identifies the refinement of COPECs based on consideration of background concentrations. The determination of whether or not a concentration is consistent with background follows the methodology of the Massachusetts Department of Environmental Protection (MADEP 1996), as follows:

- The chemical is retained as a COPEC if both the median and maximum concentrations in the Site dataset exceed those in the background dataset.
- The chemical is not retained as a COPEC if any of the following are noted:
  - both the median and maximum concentrations from the Site dataset are less than those in the background dataset, or
  - the median Site concentration is less than the background median concentration, and the Site maximum concentration is less than 50% higher than the background maximum concentration, or
  - the maximum Site concentration is less than the background maximum concentration, and the Site median concentration is less than 50% higher than the background median concentration.

The following chemicals were not retained as COPECs for further evaluation in the BERA based on the background screening for each medium:

- <u>Surface water</u>: barium, manganese, potassium, and nitrate
- <u>Sediment</u>: barium, beryllium, lead, p-cymene, and hydrocarbons (C11.C22) and hydrocarbons (C19-C36)
- <u>Floodplain soils</u>: antimony, lead, mercury, and selenium

- On-Site soil: iron, mercury, and selenium
- Fish tissue: barium, cobalt, selenium, and zinc

11.2.1.2.2 Essential Nutrients and Electrolytes

Calcium, iron, magnesium, sodium, potassium, and nitrates are the essential nutrients that are not retained as COPECs for further evaluation in the BERA (11.4a and 11.4b). Essential nutrients were not analyzed in floodplain soil, on-Site soil, or in fish tissues, so these nutrients are not considered further in the BERA for these media. Essential trace minerals, such as chromium, copper, iron, manganese, selenium, and zinc are not screened out based on nutrient status and are considered further in the BERA where detected greater than background and ESBs.

11.2.1.2.3 Frequency of Detection

Constituents that are rarely detected (less than 10%) are considered in the refinement of COPECs (USEPA 2001). Populations of ecological receptors will have relatively low exposures to these constituents. The following chemicals were not retained as COPECs for further evaluation in the BERA based on the frequency of detection screening for each medium:

- Surface water: mercury (detected in 1.5% of samples), selenium (detected in 7.9% of samples and the maximum detection was less than the ESB), silver (detected in 7.9% of surface water samples), carbon tetrachloride (detected in 2.4% of samples), and cyanide (detected in 4.5% of samples). Note that all metals in dissolved phase are considered further in the BERA. This COPEC refinement focuses exclusively on total metals screening.
- Sediment: thallium (detected in 2% of the samples), vinyl chloride (detected in 9.5% of the samples), and xylenes (detected in 2.4% of the samples)

No COPECs were excluded from further evaluation in the BERA based on the frequency of detection for floodplain soils, on-Site soils, or fish tissues.

11.2.1.2.4 Refined Effects Evaluation

The COPECs identified in Tables 11.4a, 11.4b, 11.4c, and 11.4d are evaluated further in Step 5 of the BERA on a case-by-case basis to determine whether there appears to be a low likelihood of adverse effects or other reasons to exclude or retain a detected chemical. This acknowledges that identification of COPECs to this point (Step 3) is based on conservative ESBs that may not take into account a greater understanding of potential toxicity based on Site-specific conditions. This evaluation may be considered to address those chemicals that are retained due to a lack of effects-based screening values, despite the availability of high quality studies that indicate low toxicity. For other chemicals, the refined evaluation may consider chemical form, bioavailability, partitioning behavior, or alternate analytical methods.

11.2.1.3 Transport Pathways

Historic transport pathways that potentially contribute to the distribution of COPECs detected in Site media are as follows:

- leaching of chemicals in soil to groundwater and subsequent discharge of groundwater to the wetlands;
- erosion of soil with deposition to sediment;
- partitioning of chemicals in porewater to sediment and surface water;
- uptake of chemicals in porewater, sediment, and surface water by biota; and,.
- direct discharge (e.g., via roof drain outfalls) to sediment and surface water.

11.2.1.4 Receptors and Exposure Pathways

Once COPECs are present in soil, sediment, and surface water, a variety of organisms may be exposed to them via different exposure pathways. Exposed organisms are commonly referred to as receptors.

A complete exposure pathway has five parts:

- a source of constituents (such as the original facility operations);
- an environmental medium and transport mechanism (such as particulates from the roof drains emptying into Turnpike Lake);
- a point of exposure (such as the wetlands);
- a route of exposure (such as a receptor touching, drinking, or eating contaminated sediment particles); and
- a population of receptors (such as a community of benthic invertebrates).

The exposure pathway is complete and potentially capable of causing unacceptable risks only when all five parts are present.

Identification of receptors initially relies on the identification of functional groups or feeding “guilds” that are representative of, or essential to, habitat function. Based on the environmental setting, the feeding guilds potentially exposed to Site-related constituents via complete exposure pathways and their dominant exposure routes are:

- aquatic and sediment dwelling invertebrates (direct contact with surface water or sediment);
- fish (gill exchange with surface water and diet);
- terrestrial plants and invertebrates (direct contact with soil or floodplain soil);
- omnivorous birds and mammals (diet, incidental ingestion); and
- piscivorous (i.e., fish eating) birds and mammals (diet).

Although populations of herpetofauna (reptiles and amphibians) are valued ecological entities, the current state of the art techniques for risk assessment are insufficient to adequately incorporate herpetofauna in risk analysis with acceptable levels of uncertainty (Sparling, Linder, and Bishop 2000, ESTCP 2009). Generalizations from fish (and benthic invertebrates) are somewhat applicable to the herpetofauna receptor group, so that the risks to herpetofauna are estimated by using other receptors as surrogates.

The evaluation of potential risks to burrowing mammals from VOCs via on-Site ingestion exposures is considered in the BERA through the use of a shrew as a surrogate. The evaluation of potential risks to burrowing mammals from VOC exposure via inhalation exposures is not considered in the BERA because the wetlands where the majority of VOCs have been detected is inundated so often that significant burrowing activity would be limited. Burrowing on-Site is also limited due to the disturbance and compaction of on-Site soils over areas where VOCs are present in groundwater. For example, most of the on-Site areas where VOCs are present in groundwater are covered with concrete foundations or asphalt paving. Finally, a groundwater treatment system was implemented in 1997 in efforts to control VOCs migration off-Site. Therefore, consideration of VOC exposure via inhalation will not lead to changes in risk management decisions.

11.2.2 Selection of Ecological Receptors of Interest

Most healthy ecosystems support a large number of individual species representing a variety of feeding guilds. However, it is not feasible to complete risk calculations for all potentially exposed species. Moreover, such an effort would be duplicative because of the similarity of exposure patterns among closely related species and among those with similar feeding guilds. For these reasons, receptors of interest (ROIs) are selected in this work plan to represent the different feeding guilds.

ROIs are selected based on six characteristics:

- economic and/or other value to humans;
- ecological relevance;
- potential for high exposure;
- toxicological sensitivity;
- expected presence at the study area; and
- availability of life history information and toxicological data.

Based on the ecological CSM (Figure 3-1) and the above considerations, ROIs pertinent to the study area are:

- benthic/epibenthic invertebrate community;
- bullhead catfish (*Ameiurus melas*), representing bottom-dwelling fish populations;
- bluegill sunfish (*Lepomis macrochirus*), representing water column dwelling fish populations;
- largemouth bass *(Micropterus salmoides),* representing piscivorous fish populations;
- terrestrial plant and invertebrate community;
- white-footed mouse (*Peromyscus leucopus*), short-tailed shrew (*Blarina brevicauda*) and red fox (*Vulpes vulpes*) representing herbivorous, carnivorous, and omnivorous mammals;
- mink (*Mustela vison*), representing piscivorous mammals;
- great blue heron (*Ardea herodias*) and belted kingfisher (*Ceryle alcyon*) representing piscivorous birds; and

- American robin (*Turdus migratorius*), representing omnivorous birds.

These ROIs are among the most highly exposed and ecotoxicologically sensitive (i.e., susceptible) of the species likely to inhabit or forage within the study area, so extrapolation of conclusions regarding these ROIs will be protective of other, less susceptible species. Catfish and sunfish serve as conservative surrogates for other fish species (eels, crappies, pickerel, sunfish, shiners, bass, pumpkinseed, suckers, and perch) and also reptiles and amphibians like frogs, toads, newts, salamanders, snakes and turtles. White footed mice, short-tailed shrew, and red fox serve as conservative surrogates for a variety of mammals that may be in the study area such as other mice, shrews, and foxes, but also chipmunks, rabbits, squirrels, weasels, raccoons, moles, skunks, opossums, voles, deer, and woodchucks. Robins serve as conservative surrogates for other small birds such as crows, finches, swallows, warblers, chickadees, and jays. Great blue heron and belted kingfisher serve as conservative surrogates for fishing and wading birds. Mink serve as conservative surrogates for other piscivorous and/or carnivorous mammals, such as otters, weasels, raccoons, and fishers.

11.2.3 Selection of Assessment Endpoints

Assessment endpoints are the explicit expression of ecological entities (e.g., mammal populations) and attributes (e.g., reproductive ability) to be protected (USEPA 1992e, 1997c, 2003b). The selection of assessment endpoints depends on knowledge about the receiving environment, chemicals released (including ecotoxicological properties and concentrations that cause adverse impacts), and the values that will drive risk management decision making (Suter et al., 1995). Assessment endpoints selected for evaluation in the BERA are:

- aquatic and sediment dwelling invertebrate community structure, survival and growth;
- survival and reproduction of fish populations;
- terrestrial plant and invertebrate community structure, survival and growth;
- survival and reproduction of bird populations; and
- survival and reproduction of mammal populations.

As described by Barnthouse et al. (2008), “regulations, policies, directives, and guidance documents frequently discuss the need for ecological risk assessments to consider risks to populations, not simply to individual organisms or organism-level attributes. The reason for this [need] is that, from a management perspective, the population-level attributes such as abundance, persistence, age composition, and genetic diversity are usually more relevant than are the health or persistence of individual organisms.”

The assessment endpoints listed above consider attributes that are tied to the population-level attributes of abundance and persistence, in that they consider both survival and reproduction. Decreased survival will result in smaller numbers of individuals, decreasing the population of that receptor. Similarly, decreased reproduction can result in smaller numbers of individuals over time, also decreasing the population of that receptor. Decreased growth of individuals, on the other hand, is not directly related to population-level effects. Consequently, ecotoxicological studies on growth endpoints cannot be tied to population-level impacts.

11.2.4 Selection of Measurement Endpoints

Measurement endpoints are measurable ecological characteristics that are related to the valued characteristics chosen as the assessment endpoints and are measures of biological effects. The measurement endpoints become lines of evidence that indicate the potential for risk to the ROIs. The selected measurement endpoints associated with each assessment endpoint are listed below.

Aquatic and sediment dwelling invertebrate communities are evaluated based on three measurement endpoints:

- abundance, richness, and composition of invertebrate assemblages, relative to reference stations of comparable habitat (“community structure”);
- sediment toxicity as measured in laboratory toxicity tests (“toxicity”); and
- measured concentrations of COPECs in surface water and sediment soil in relation to appropriate benchmarks and concentrations reported in the literature to be protective of invertebrates (“chemistry”).

Fish populations and community are evaluated based on two measurement endpoints:

- measured concentrations of dissolved COPECs in surface water in relation to appropriate surface water benchmarks and concentrations reported in literature to be protective of aquatic life (“water chemistry”); and
- measured concentrations of COPECs in whole body fish tissue in relation to critical body residue (CBR) concentrations reported in literature to be protective of fish (“fish tissue chemistry”).

Terrestrial plants and invertebrate communities are evaluated based on one measurement endpoint:

- measured concentrations of COPECs in surface soil in relation to effects-based benchmarks and concentrations reported in the literature for plants and invertebrates (“chemistry”).

Bird populations are evaluated based on one measurement endpoint:

- Comparison of modeled dietary intake of COPECs by three representative avian species (great blue heron, kingfisher, robin) to doses reported in the literature as toxicity reference value (TRV) thresholds for adverse effects on survival or reproduction (“bird hazard quotients”).

Mammal populations are evaluated based on one measurement endpoint:

- Comparison of modeled dietary intake of COPECs by four representative mammalian species (white-footed mouse, short-tailed shrew, mink, red fox) to doses reported in the literature as TRV thresholds for adverse effects on survival or reproduction (“mammal dose-based hazard quotients”).

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11.3 Baseline Exposure Assessment

Exposure assessment is the process of measuring or estimating the magnitude, frequency, and duration of ROI exposures to COPECs (USEPA 1992e). The exposure assessment builds upon qualitative descriptions presented in the CSM in order to quantitatively estimate COPEC exposures for each ROI. The exposure assessment reflects the exposures likely to occur in the ROIs evaluated, exposure routes specific to the Site, and the selected measurement endpoints. The methods of estimating exposure for each ROI differ, as detailed in the following subsections.

11.3.1 Exposure Assessment for Aquatic and Sediment Dwelling Invertebrate Community

Exposure of aquatic and sediment dwelling invertebrates to COPECs is evaluated based on several lines of evidence (LOEs): site-specific benthic community assessment and sediment toxicity testing, and consideration of COPECs in surface water and sediment using bulk chemistry. This section describes the methods of estimating exposure for each LOE and presents the exposure data considered in the BERA.

11.3.1.1 Benthic Community Assessment

Site-specific benthic community assessment is one LOE for estimating exposure to sediment dwelling invertebrates. The data used in this evaluation are those collected as part of the 2005 and 2010 Supplemental Investigations for locations in Turnpike Lake and the wetlands, as described in Section 6 and illustrated on Figures 6.4.1 and 6.5.1. The exposure associated with this LOE as determined from biological samples is considered in conjunction with the results of toxicity testing and measured sediment concentrations from co-located sediment samples collected concurrently. The evaluation of exposure using these LOEs also involves a comparison to reference conditions.

11.3.1.1.1 Benthic Community Habitat Assessments – 2005 and 2010

The habitats available in Turnpike Lake and Sawmill Brook are significantly different enough from one another that two reference locations were warranted. Turnpike Lake provides deep pooled water habitat; whereas, the braided channels within the wetlands provide relatively shallow slow moving densely shaded habitat with some deeper pools intermittently located along the channels. The two reference locations were selected to characterize background conditions for the benthic macroinvertebrates (Figure 11.4). Location SD-09A was included in the benthic macroinvertebrate community assessment to represent the lake habitats (noted as benthic macroinvertebrate survey area A in 2005; see Figure 6.5.1). An unnamed tributary to Sawmill Brook was selected as the reference location for Sawmill Brook (noted as benthic macroinvertebrate survey area B in 2005). The unnamed tributary to Sawmill Brook was selected because this tributary flows into Sawmill Brook from a portion of the watershed that is not impacted by flow from Turnpike Lake. Aerial photographs were reviewed and a reconnaissance was performed to determine land use and development upgradient from this unnamed tributary. There are three land uses within the influence of the tributary. The tributary flows through woodlands and wetlands, similar to the Sawmill Brook. Adjacent to the woodlands is a residential area. An elementary school is also present in the watershed, located within a mile upgradient from the reference location.

The habitat assessments conducted as part of the 2005 and 2010 benthic community assessments are provided in Appendix K. The results of these habitat assessments show

that the habitats at the reference location in Turnpike Lake (SD-09A) are comparable to the Turnpike Lake locations, and the reference location in the unnamed tributary to Sawmill Brook (SD-TRIB) is comparable to the Sawmill Brook locations. As part of the 2010 sampling effort, sediment samples from the reference location and adjacent floodplains were collected for chemical analysis. Those data were discussed in Section 9 of the RFI.

11.3.1.1.2 Benthic Community Assessment – 2005

The biological sampling was conducted using multi-habitat field sampling procedures (USEPA, 1999e). Standard kick and D-frame dip nets with 500 micron [µ] opening mesh were used to systematically collect benthic macroinvertebrates. A total of 10 subsamples comprised each single composite sample for each location. Subsamples were based on habitat types, and generally included the following, as habitat permitted (and substitutions were made to sample more frequently the dominant habitat if a habitat was not available): The samples collected at the Turnpike Lake locations consisted of a composite sample comprised of 5 net "sweeps" in narrowleaf submerged aquatic vegetation (SAV), 2 sweeps in broad leaf submerged aquatic vegetation, 1 leaf pack, and 1 cobble area. The samples collected at the Sawmill Brook locations consisted of a composite sample comprised of 1 riffle, 2 leaf packs, 2 vegetative sweeps, 2 undercut bank sweeps, and 3 coarse woody debris sweeps.

Benthic macroinvertebrates were partially field-picked and preserved in ethanol (i.e., organisms that could be separated from sand and other material were separated at the time of sampling and preserved for shipment to the lab). Remaining sampling material (e.g., sediment and organic material) was packed on ice. Samples were shipped to a taxonomic laboratory for identification to genus and species. Pennington and Associates, Inc., located in Cookeville, Tennessee, performed the taxonomic identification services for this effort.

11.3.1.1.3 Benthic Community Assessment – 2010

The 2010 benthic macroinvertebrate study focused on specific locations where 2005 chemistry data indicated elevated concentrations of constituents. Samples were collected to capture organisms in contact with the sediment so that the results of the benthic survey would capture potential effects on the benthos. The benthic macroinvertebrate community assessment was conducted at three locations in Turnpike Lake and four locations in Sawmill Brook using a petite ponar dredge to capture organisms at the sediment surface and in the upper few inches of sediment. The same two reference locations identified in 2005 were sampled again in 2010. The two lake samples collected at locations SD-43 and SD-44 in the South Embayment were selected to represent worst-case conditions. The Sawmill Brook samples were collected at locations SD-46, SD-214, and SD-202.

11.3.1.2 Toxicity Testing – 2010

Sediment samples collected for toxicity testing were evaluated against three different reference sample types: a laboratory control, a sediment control from Bearskin Lake, Minnesota and site-specific controls from both Turnpike Lake and the wetlands. The sample locations for toxicity testing were selected to reflect a range of chemical concentrations in sediment that captured peak concentrations from the Study Area as well as areas characterized by low levels of AVS based on data collected in 2005 (see Section 6). This pairing of conditions was intended to reflect areas where the bioavailability of metals would be highest.

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11.3.1.3 Bulk Chemistry Exposure Assessment

Exposure of aquatic and sediment dwelling invertebrates to COPECs is evaluated based on consideration of COPEC concentrations in surface water and sediment. Chemistry is widely used to characterize invertebrate exposures, generally due to the ease of comparison of such data to soil, sediment and surface water quality screening benchmarks. However, chemistry data often provide only limited information regarding the proportion of the total chemical measured that is bioavailable (i.e., able to be taken up by invertebrates). Therefore, the effects assessment considers bulk chemistry and bioavailable fractions of chemicals in surface water and sediment as part of the analysis. Evaluation of exposure of inorganics in surface water relies on dissolved (filtered) surface water data, since exposure via gill transfer is only possible for the dissolved fraction of inorganic analytes. This is acknowledged by USEPA, as the National Recommended Water Quality Criteria are based on dissolved phase data (USEPA 2009).

In considering chemistry data relative to potential effects on invertebrates, measurements at each sampling station are evaluated individually. That is, each sampling station is treated as a discrete exposure area or exposure unit. This practice reflects the relative immobility of invertebrates and facilitates the spatial analysis of sediment exposures. Surface water and sediment analytical results included in this BERA are provided on Tables 11.5a (total metals and other detected constituents), 11.5b (dissolved metals), and 11.5c (COPECs in sediment). Chemicals detected in sediment are also considered in terms of USEPA's equilibrium partitioning (EqP) approach on a location by location basis. Those exposure point concentrations are identified on Tables 11.5d and 11.5e, for divalent metals and PAHs, respectively. The application of the EqP approach for PAH is based on 17 PAHs.

11.3.2 Exposure Assessment for Fish Populations and Community

Exposure of fish to COPECs is evaluated based on concentrations of COPECs in fish tissue and in surface water. COPEC concentrations in fish tissue are considered on an individual basis so that the proportion of fish with tissue concentrations greater than a critical value can be evaluated to evaluate potential population- and community-level effects. Fish were sampled from the south embayment of Turnpike Lake, from the small impoundment along Sawmill Brook, and in a reference area (Old Mill Pond) during Phases I and II of the RFI. Three trophic levels of fish were sampled: (1) bottom-feeding species (bullhead); (2) game species (largemouth bass, pickerel, or yellow perch); and (3) prey species (bluegill). Prey species were analyzed as whole-body samples. Bottom-feeding and game species were filleted and submitted as two sets of samples (the fillet and the remainder of the fish [offal]). COPEC concentrations in fish tissue samples are compared to CBRs (define here and in list of acronyms) for each fish and the proportion of fish tissue sample concentrations greater than the CBRs is considered. Reporting the proportion of tissue samples that exceed CBRs allows a determination of whether a significant proportion of the populations (e.g., 20% or more) of each of the fish species that were sampled is predicted to be adversely impacted by COPECs, and among all species, whether the fish community as a whole may be adversely impacted. Because no threatened or endangered species are present in Turnpike Lake, Sawmill Brook, or Turtle Brook, protection goals that focus on population and community level impacts are appropriate.

Fish tissue data on a whole-body, wet weight basis is provided in Table 11.6. As noted above, the evaluation of exposure of inorganics in surface water relies on dissolved (filtered)

surface water data, since exposure via gill transfer is only possible for the dissolved fraction of inorganic analytes (dissolved surface water data are provided in Tables 11.5a and 11.5b).

11.3.3 Exposure Assessment for Terrestrial Plants and Invertebrate Community

Exposures for the terrestrial plant and invertebrate community are evaluated based on concentrations of COPECs in soil. Measurements at each sampling station are evaluated individually, similar to that described for aquatic and sediment dwelling invertebrates. That is, each soil sampling station is treated as a discrete exposure area or exposure unit. This practice reflects the relative immobility of invertebrates and facilitates the spatial analysis of soil exposures. On-site soil exposure data are provided in Tables 11.7a and 11.7b for the evaluation plants and invertebrates, respectively. Floodplain soil exposure data are provided in Tables 11.7c and 11.7d for the evaluation of plants and invertebrates, respectively.

11.3.4 Exposure Assessment for Bird and Mammal Populations

Exposures for birds and mammals are estimated from concentrations of COPECs in sediment and fish. For most wildlife ROIs, measurement endpoints focus on the comparison of estimates of dose (in units of mg/kg-day) to literature-derived dose-based TRVs.

11.3.4.1 Exposure Scenarios

Two exposure scenarios are considered – a realistic exposure scenario, and a reasonable worst case (RWC) exposure scenario. The realistic exposure scenario describes the more population-focused perspective for risk management decision making, while the RWC exposure scenarios help characterize the uncertainty in the overall analysis and risks posed to the most highly exposed individual organisms.

The exposure point concentrations (EPCs) reflect the long-term concentration of COPECs that the populations of wildlife ROIs contact throughout their lives as they live and forage within the study area. The typical concept of ecological exposure is that wildlife contact impacted media on a periodic and random basis. Because of the nature of such contact, wildlife exposures do not occur at a particular fixed location. Contact occurs at a variety of points throughout the ROIs' home range. Therefore, there is equal likelihood that contact with COPECs occurs at any given point within the exposure area on any given day.

Both realistic and RWC scenario exposure scenarios are presented for each receptor. The EPC for the RWC scenario is the maximum detected concentration of each analyte or the 95% upper confidence limit (UCL) of the mean, whichever is lower. The EPC for the realistic scenario is the average concentration, which more accurately represents receptors feeding throughout the study area.

Scenario	Chemistry Value EPC
Realistic Exposure	Average concentration
Reasonable Worst Case	The lesser of the maximum value or the 95% upper confidence limit of the mean

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11.3.4.2 Modeling Exposure Units

Two exposure units are considered for the terrestrial and the aquatic receptors – exposure on or near the Site and exposure in the rest of the Study Area (i.e., the Sawmill Brook "Wetland" exposure). Exposure values for the Site scenario are calculated using the water chemistry data from Turnpike Lake and the soil chemistry data for the Site. Exposure values for the Wetland scenario are calculated using water chemistry data from Sawmill and Turtle Brooks, and the private pond, and soil chemistry data for the floodplain soil.

Receptor	Model Exposure Units	Soil	Water
Mouse Shrew	Exposure in or near the Site	Site Soil	Turnpike Lake Water
Fox Robin	Exposure in or near the wetlands	Floodplain Soil	Sawmill Brook Water

The aquatic food web receptors are assessed assuming that they spend their time either near the Site in the South Embayment or within the "Wetland" (Sawmill Brook and private pond), with data from those units evaluated accordingly.

Receptor	Model Scenario	Fish Tissue	Water
Mink	Exposure in or near the South Embayment	South Embayment	Turnpike Lake
Heron Kingfisher	Exposure in or near the Private Pond	Private Pond	Sawmill Brook Water

11.3.4.3 Dose Estimates

The exposure assessment yields estimates of total daily intake (TDI) of COPECs for the wildlife ROIs (white-footed mouse, short-tailed shrew, red fox, mink, great blue heron, and belted kingfisher) via diet and incidental ingestion of sediment while foraging or preening/grooming.

TDIs are calculated, based on the methodology described by USEPA (1993b). TDI are estimated as a function of an EPC, food ingestion rate, composition of diet, body weight, and area use factor (AUF). Dietary intakes are calculated for each upper trophic level receptor species using the following equation (USEPA 1993b, USEPA 1994g):

$$\text{Exposure} = \text{AUF x} \left[\frac{IR_{water} \text{ x } C_{water} + IR_{soil} \text{ x } C_{soil} + IR_{food} \text{ x } \sum \left(FIR_{fooditem} \times C_{fooditem} \right)}{BW} \right]$$

Where:

Exposure = Oral intake of constituent in diet (mg/kg-d)
AUF = Area Use Factor (unitless percentage) (literature)
IR_{water} = Ingestion rate of water (L of water/individual/day) (literature)
C_{water} = Concentration of constituent in water (mg COPEC/L water) (measured)

IR_{soil} = Ingestion rate (kg fresh weight of soil/individual/day) (literature)
C_{soil} = Concentration of constituent in soil (mg COPEC/kg soil) (measured)
IR_{food} = Ingestion rate (kg fresh weight of food/individual/day) (literature)
$FIR_{fooditem}$ = Fractional ingestion rate of a food item (unitless percentage) (literature)
$C_{fooditem}$ = Concentration of constituent in a food item (mg COPEC/kg fresh weight) (calculated for invertebrates, plants, and mammals, measured for fish)
BW = Body weight (kg) (literature)

The concentration of constituents in food and prey items (plants, invertebrates, small mammals) are estimated using COPEC concentrations in Site media and literature-derived bioaccumulation factors (BAFs). As the primary COPECs are metals, the uptake calculations are based on the EcoSSL guidance (USEPA, 2007, attachment 4-1, "Exposure Factors and Bioaccumulation Models for Derivation of Wildlife Eco-SSLs".) The uptake equations for terrestrial plants, invertebrates, and small mammals are presented in Table 11.8a.

The TDI equation relates the estimated intake of constituents via food to the constituent concentration in each prey item consumed by the particular receptor. Each dietary food component is weighted by its relative contribution to the total diet (as a proportion). Incidental ingestion of soil is also included as is direct ingestion of drinking water. Dietary dose for food is obtained by multiplying the constituent concentration in each dietary item by the food ingestion rate, dietary dose for water is obtained by multiplying the constituent concentration in drinking water by the water ingestion rate, and dietary dose for incidental ingestion of soil or sediment is obtained by multiplying the constituent concentration in surface soil or sediment by the soil/sediment ingestion rate. Total dose is the sum of the individual dietary doses for food, water, and soil ingestion. This total dose is then standardized by dividing by the body weight of the receptor. The receptor parameters (such as dietary composition, body weight, food, water, and soil intake rate) are consistent with USEPA guidance (USEPA 1994g) and are presented in Table 11.8b.

Absorption factors and area use factors (AUFs) are also a component of the TDI. A conservative default value of 1.0 is used as the absorption factor (i.e., the fraction of chemical ingested that is absorbed into the system). This assumption likely overestimates the TDIs, as laboratory toxicity tests often use highly available forms of the test chemical, whereas actual bioavailability under natural conditions is considerably lower. AUFs are the estimation of dose to account for the possibility that some wildlife ROIs may obtain some food from outside of the study area. An AUF is the ratio of the animals' home range divided by the area of the Site (or wetlands, as appropriate given the scenarios considered). Receptor-specific AUFs are estimated on Table 11.8b.

Calculated TDIs are presented in Tables 11.9a and 11.9b for piscivorous birds and mammals for Turnpike Lake and Sawmill Brook, respectively. Calculated TDIs are presented for terrestrial mammals and birds in Tables 11.10a, 11.10b, and 11.10c for Sawmill Brook wetlands soils and for on-Site soils (with and without AOC B), respectively.

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11.4 Baseline Effects Assessment

The effects assessment evaluates the potential for COPECs to cause adverse effects in ROIs and estimates the relationship between the extent of exposure and severity of effects. For measurement endpoints based on direct observations (i.e., benthic invertebrate toxicity, benthic community structure), the effects assessment describes the metrics that are considered and the scoring approach that is used in the risk characterization for interpreting these lines of evidence. For all other measurement endpoints, the effects assessment is the review and selection of TRVs that are used to interpret the potential for adverse effects. TRVs are the literature-derived concentrations or doses, below which adverse effects are unlikely. Described below are the methods used to characterize effects for each receptor group, as well as the outcomes of those analyses.

11.4.1 Effects Assessment for Aquatic and Sediment Dwelling Invertebrate Community

The effects assessment for invertebrates relies on three lines of evidence: biological community assessment, toxicity testing, and chemical analysis, known as the “sediment quality triad”. Sediment quality triad analysis involves collection of complementary measures of sediment chemistry, sediment toxicity and benthic community structure to characterize the risk of harm to benthic invertebrates from potential exposures to contaminated sediments. The effects assessment for chemistry is a comparison to ESBs on a location-specific basis. Surface water, sediment, and soil benchmarks are used as effects metrics for the measurement endpoint of surface water, sediment, and soil chemistry. Site-specific toxicity test results are used as the effects metrics for the measurement endpoint of toxicity (i.e., sediment toxicity to two species of invertebrates, as measured in laboratory toxicity tests). Site-specific community structure metrics are used as the effects metrics for the measurement endpoint of community structure (i.e., abundance, richness, and composition of invertebrate assemblages, relative to reference stations of comparable habitat). Methods that are used in the BERA to assess each type of effects metric for invertebrates are described below.

11.4.1.1 Site-specific Benthic Community Assessment

The potential for effects at any location is based on biological community observations (metrics) as they relate to reference locations. The quantitative habitat assessment method was used (USEPA 1989g, 1999e), and the rationales for reference location selection are provided. Results are presented in Appendix K. The metrics used to evaluate the biological community and the methods for scoring compared to reference locations are provided below.

11.4.1.1.1 Quantitative Habitat Assessment

Quantitative evaluation of habitat quality was performed at each benthic macroinvertebrate sampling location evaluated in 2005 and 2010. The information obtained provides a basis for comparison of communities between sampling locations to distinguish differences in the community structure due to habitat variability or chemical exposures (USEPA, 1989g; 1999e). The habitat assessment forms are provided in Appendix K. Grain size data for sediment grab samples collected in 2010 are also provided in Appendix K.

11.4.1.1.2 Biological Community Structure Metrics

Site-specific community structure metrics are used to evaluate effects for the measurement endpoint of community structure. Two benthic macroinvertebrate surveys were completed in the study area in 2005 and 2010. The 2005 survey followed standard USEPA Rapid Bioassessment Protocols for multi-habitat collection and the 2010 survey was based on sediment grab sampling techniques. The approaches for evaluating effects are based on benthic community assessment metrics and scoring criteria, as defined in Tables 11.11a and 11.11b. The metric results are provided in Table 11.11c and the overarching scoring compared to reference conditions is provided in Table 11.11d. The full set of taxonomic data for 2005 and 2010 studies are provided in Appendix K. The following ecological metrics are used:

- Taxa Richness – This metric reflects the health of the community through a measurement of the variety of taxa (total number of genera and/or species) present. Greater richness (i.e., diversity) indicates higher water quality.
- Biotic Index – The biotic index used is the index initially developed by Hilsenhoff to summarize the overall pollution tolerance of the benthic arthropod community with a single value (USEPA 1989g). Tolerance values are updated to reflect those used by Massachusetts (MADNR, 2005). North Carolina tolerance values are used in this calculation when Massachusetts values are unavailable (North Carolina Department of Environment and Natural Resources [NCDENR], 2001). Biotic indices increase as water quality decreases.
- Ratio of Scraper and Filtering Collector Functional Feeding Groups – The scraper and filtering collector ratio reflects the riffle/run community food base and provides insight into the nature of potential disturbance factors. Filtering collectors are sensitive to toxicants bound to fine particles and may decrease in abundance when exposed to bound toxicants. However, habitat for scrapers and filterers is very limited in sediment grab samples so this is not a very important metric in the evaluation of sediment grab samples.
- Percent Contribution of Dominant Taxon – The percent contribution of the numerically dominant taxon to the total number of organisms is an indication of community balance at the lowest positive taxonomic level. A community dominated by relatively few species could indicate environmental stress.
- Ephemeroptera, Plecoptera and Trichoptera (EPT) Index – This index measures the abundance of pollution sensitive taxa (common names, mayfly, stonefly and caddisfly, respectively). The EPT Index generally increases with increasing water quality. The EPT Index is the total number of distinct taxa within the orders' EPT. This value summarizes taxa richness within the insect orders that are generally considered to be pollution sensitive. Similar to that described for the ratio of EPT and Chironomidae Abundances, this metric is less meaningful for the interpretation of sediment grab samples given the general lack of preferred habitat for most of the EPT species.
- Ratio of EPT and Chironomidae Abundances – The EPT and Chironomidae abundance Ratio uses relative abundance as a measure of community balance. Skewed populations having a disproportionate number of the generally tolerant chironomidae relative to the more sensitive insect groups (i.e., EPT) may indicate environmental stress. With the exception of some burrowing species, EPT preferred habitat is often

space within cobble or epibenthic, so this metric is less meaningful for sediment grab samples than it is in a multi-habitat sampling approach.

- Community Loss Index – This metric measures the loss of benthic species between a reference station and the station of comparison. The Community Loss Index is more aptly described as an index of dissimilarity, as it also indicates an increase in community. Values range from 0 to infinity. As the index value decreases toward 0, the communities of the two locations are more similar. Conversely, as the index value increases the degree of dissimilarity from the reference station increases. When two communities are identical, the community loss index is 0. If there are no species in common but both sites have an equal number of species, the value is 1. When species richness downstream is greater than the upstream, the value is less than 1.
- Ratio of Shredder Functional Feeding Group and Total Number of Individuals Collected – Also based on the functional feeding group concept, the abundance of the shredder functional group relative to the abundance of all other functional groups allows evaluation of potential impairment as indicated by the course particulate organic material (CPOM)-based shredder community. Shredders are sensitive to riparian zone impacts, and are particularly good indicators of toxic effects.
- Total Number of Organisms – The total number of organisms reflects the number of individuals present at a location. Large numbers of organisms can indicate high quality; however, if they are dominated by a few taxa, this may indicate impairment. This metric is not scored directly as part of the RBP methodology because it is included as part of many of the other metrics that are scored. Thus, drawing conclusions on the total number of organisms is misleading and inappropriate.

It is noted that the effects evaluation for the 2010 benthic community assessment was intended to include a nested analysis of variance (ANOVA), considering metrics such as abundance, taxa richness, and percent dominant taxa (ENVIRON, 2010). An evaluation of variability was planned for 2010 sampling so that statistically significant differences of integrated metrics could be evaluated and the power of the measurement of differences could be understood. However, these three replicate samples for each location were mistakenly composited at the taxonomic laboratory, and therefore the results were provided as a single sample per location. The purpose of the 3 individual samples at each sample location was to provide an estimate of variability among the metrics and locations which could be characterized and used in statistical testing of differences between locations. The compositing of the 3 replicates into a single sample limits the ability to perform statistical testing, yet useful information is still provided by the data. This is discussed further as an uncertainty to the risk characterization.

11.4.1.2 Site-Specific Sediment Toxicity Tests

The effects metric for the “toxicity” measurement endpoint (sediment toxicity as measured in laboratory toxicity tests) is a comparison of toxicity tests from the Study Area sediments versus the reference area sediments. Toxicity testing provides a direct means of characterizing the response of benthic invertebrates to cumulative COPEC exposure. Whole sediment toxicity testing predicts whether chemical or physical properties of Site sediments may adversely affect invertebrates. Test organisms in a toxicity test were exposed to field-collected sediment under controlled laboratory conditions and specific biological endpoints (e.g., mortality and growth) were monitored to assess the response of the test organisms to chemical exposures. The first step in the assessment of effects using this LOE is the

comparison of Site-specific background results to laboratory controls and Bearskin Lake controls to evaluate if the biological responses of the Site-specific background are acceptable. The second step in the effects evaluation is the comparison of Turnpike Lake and wetlands locations within the influence of the Site to background Turnpike Lake and wetlands locations, to evaluate if statistically significant differences are measured, and if so, if those differences are biologically relevant (e.g., greater than 20% difference). The sediment toxicity testing results are presented in Table 11.12.

11.4.1.3 Bulk Chemistry Screening Benchmarks

For the "chemistry" measurement endpoint, concentrations of COPECs in surface water, sediment, and soil are compared to appropriate benchmarks and concentrations reported in the literature to be protective of invertebrates. The effects benchmarks are ultimately compared to COPEC concentrations to calculate hazard quotient (HQs), which are the metrics used in the risk characterization. Due to their simplicity and availability, literature-derived benchmark concentrations based on bulk chemistry concentrations are widely used in BERAs, despite their acknowledged limitations (e.g., differing methodologies, varying field conditions, etc.). In the interest of completeness and to ensure the conservatism of the overall analysis, these benchmarks are included as the effects metric for the chemistry measurement endpoint.

Sediment benchmarks for organics used in the location-by location evaluation of potential impacts to invertebrates exposed to sediment considers EqP-based benchmarks, as noted on Table 11.5c, 11.5d, and 11.5e, for non-ionic organics in sediments, divalent metals, and PAHs, respectively. The following details are provided:

- For PCBs, Fuchsman et al. (2006) reviewed sediment-associated effects on benthic invertebrates, focusing on cause-effect, concentration-response relationships. LOEs considered by Fuchsman et al. (2006) included: 1) application of the EqP approach (Di Toro et al. 1991) using aquatic toxicity data for invertebrates and chemical partitioning data for various PCB compounds; 2) spiked sediment toxicity studies; and 3) toxicity tests or benthic community surveys at sites contaminated primarily with PCBs. Sediment quality benchmarks for PCBs, including those of MacDonald et al. (2000) and USEPA (2003a), were found to be inconsistent with information capable of characterizing cause-effect relationships, most likely because the data underlying those benchmarks represented Sites where chemicals other than PCBs were the primary sources of toxicity. These findings are corroborated by findings presented in Becker and Ginn (2008). To correct this inconsistency, Fuchsman et al. (2006) calculated EqP-based benchmarks for various Aroclor mixtures, and provided a methodology for deriving benchmarks based on Site-specific PCB composition. These benchmarks are used in the BERA, adjusted to 5% total organic carbon (TOC), which is a very conservative estimate of TOC for BASF. As described in Appendix K, the Site-specific TOC average is above 10%.
- For non-ionic organics, USEPA (2008) EqP guidance was used (PCE, TCE, and 1,1,1-TCA) based on a conservative estimate of 5% TOC, as these narcosis-based criteria are available in the guidance without the need for TOC adjustment. The premise of the USEPA's 2008 EqP criteria is similar to those described above for PCBs.
- For additional VOCs, where USEPA (2003b) used the EqP approach for the derivation of ESBs considering 1% TOC, these values were adjusted to 10% Site-specific TOC.

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Sediment quality is also considered using an EqP approach for divalent metals (cadmium, copper, nickel, lead, and zinc) on the basis of the relationship between SEM and AVS, which assumes that the bioavailability of metals is related to the amount of sulfide in the sediment. This EqP approach also considers TOC using the location-specific TOC measurements conducted concurrent with the simultaneously extracted metals (SEM) and acid volatilized sulfides (AVS) measures. According to USEPA EqP theory for metals (2005a), the following thresholds for potential toxicity exist:

- When AVS exceeds SEM, this indicates that the metals are not bioavailable because they are tightly bound to excess sulfide.
- When AVS is less than SEM, two considerations are needed to understand potential toxicity:
    - Toxicity is likely when the ΣSEM-AVS difference is greater than 120 µmol/g, uncertain when the difference is from 1.7 to 120 µmol/g, and not likely when the difference is less than 1.7 µmol/g.
    - Toxicity is likely when the ΣSEM-AVS divided by the fraction of organic carbon (fOC) is greater than 3,000 µmol/gOC, uncertain when the concentration is between 130 and 3,000 µmol/gOC, and not likely when the concentration is <130 µmol/gOC

For PAHs, the effects assessment for invertebrates will be defined with respect to a cumulative, Site-specific EqP sediment benchmark toxic unit (ESBTU). The ESBTU approach uses EqP theory to generate toxic units for mixtures of PAHs in sediment (USEPA 2003b) and is applicable to a wide range of aquatic organisms. ESBTUs are defined for individual PAHs, and then summed on a sample-specific basis.

11.4.2 Effects Assessment for Fish Populations and Community

The effects assessment for fish relies on two types of effects metrics: surface water quality benchmarks and CBRs expressed as concentrations of COPECs in whole body fish tissue. Surface water benchmarks are used as effects metrics for the measurement endpoint of surface water chemistry (i.e., concentrations of COPECs in surface water in relation to appropriate water quality benchmarks and concentrations related in the literature to be protective of fish). Surface water benchmarks are considered in the context of dissolved concentrations of constituents, as dissolved constituents are most readily able to cross through the gill and are an appropriate exposure route.

COPEC concentrations in fish tissues are evaluated in two ways. First, fish from Turnpike Lake and the private impoundment are compared to body residues from the Mill Pond reference area. For those chemicals exceeding reference area concentrations, fish CBRs are considered. Fish tissue-based CBRs are used as the effects metrics for the measurement endpoint of fish tissue chemistry (i.e., concentrations of COPECs in fish tissue in relation to concentrations reported in the literature to be protective of fish). Fish tissue-based CBRs are literature-derived chemical concentrations in the tissue of fish that are protective of fish. Fish tissue-based CBRs integrate exposures across multiple pathways (e.g., gill transfer, sediment ingestions, diet) and reflect the bioavailable fraction of COPECs in the environment. Fish tissue-based CBRs considered in this BERA are based on Jarvinen and Ankley (1999), as identified in Table 11.12a.

11.4.3 Effects Assessment for Terrestrial Plant and Invertebrate Community

The effects assessment for terrestrial plants and invertebrates focuses on ESBs that are specific for plants and invertebrates. A range of potential effects-based benchmarks for plants and invertebrates were considered using USEPA's EcoSSL data, as described in Appendix K. The very conservative EcoSSLs were considered, and additional data from the EcoSSL documents were used as well. For chemicals lacking EcoSSLs, additional scientific literature is cited as the basis of ESBs (e.g., Efromyson et al. 1997).

11.4.4 Effects Assessment for Bird and Mammal Populations

The effects assessment for wildlife is based on TRVs that relate ingested daily dose to ecotoxicological endpoints. TRVs are literature-derived concentrations or doses, below which adverse effects are unlikely (e.g., Sample et al., 1996). No observed apparent effect level (NOAEL) TRVs are indicative of doses of constituents that have had no deleterious effects on a wildlife receptor. Lowest observed apparent effect level (LOAEL) TRVs are the minimum doses of constituents where deleterious effects are apparent. The NOAEL TRVs is used as the RWC measure of effect and the LOAEL TRV is used as the realistic measure of effect. The TRVs that are used in the BERA are summarized in Table 11.12b. This approach provides a basis for understanding potential effects to individual birds and mammals. Understanding potential effects to populations requires some consideration of the spatial scale of effects.

11.5 Baseline Risk Characterization

Risk characterization involves the integration of the exposure assessment and effects assessment to evaluate the likelihood, severity, and spatial distribution of predicted or observed effects. Risk characterization is conducted for each measurement endpoint identified in Section 11.2.4. Estimates of risk are characterized based on a comparison to reference conditions for measurement endpoints based on observations of biological effects (i.e., benthic community structure and toxicity testing). Risk characterization for all measurement endpoints also involves mathematical comparison of exposure and effects estimates for each measurement endpoint. Exposure estimates that are below the relevant effects metric (i.e., surface water quality benchmark, sediment quality benchmark, tissue-based benchmark, or TRV) indicate that adverse effects to a given ROI are unlikely. Exposure estimates that exceed the relevant effects metric indicate that further investigation is warranted to define the potential for adverse effects at the population level, as well as the spatial extent and severity of any such adverse effects (Barnthouse et al. 2008).

Evaluation of key uncertainties and the evaluation of the weight of evidence (WOE) provided by each LOE are important elements of the risk characterization. Therefore, risk characterization includes a discussion of the sources of uncertainty in the BERA and the effects of that uncertainty on the risk conclusions (i.e., whether each source of uncertainty is likely to lead to an overestimation or underestimation of the HQ). In many cases, unavoidable uncertainty in a BERA is balanced by purposefully conservative assumptions. Therefore, sources of conservatism in the BERA are discussed. A WOE evaluation is performed where multiple LOEs are evaluated for a given assessment endpoint and at least two outcomes conflict. A WOE evaluation rapidly communicates the findings in an integrated manner to highlight an understanding of the quality, applicability, and uncertainty associated with each LOE (EC and MOE 2008), in order to better understand the likelihood of adverse effects in the face of conflicting evidence.

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The remainder of this section provides the risk characterization for assessment endpoints as follows:

- aquatic and sediment dwelling invertebrate community structure, survival and growth;
- survival and reproduction of fish populations;
- terrestrial plant and invertebrate community structure, survival and growth;
- survival and reproduction of bird populations; and
- survival and reproduction of mammal populations.

11.5.1 Risk Characterization for Aquatic and Sediment Dwelling Invertebrate Communities

The risk characterization for aquatic and sediment dwelling invertebrate communities is based on three LOEs: benthic community structure, toxicity testing, and chemistry. A risk characterization summary and WOE evaluation is provided after all lines of evidence are discussed.

11.5.1.1 Benthic Community Analysis

The benthic community assessment results for 2005 and 2010 are summarized in Tables 11.11c and 11.11d, with metric results illustrated on Figure 11.3. The results for 2005 and 2010 show that locations in Turnpike Lake and Sawmill Brook scored as “nonimpaired” based on the USEPA scoring criteria. This evaluation of impairment status is based on multiple metrics as described in Section 11.4.1. Several additional observations about benthic metrics are worth noting:

- Taxa richness is one of the most important metrics because this indicates diversity. Greater taxa richness was observed in 2005 compared to 2010. Differences in study design and sampling methodologies likely explain this finding. In 2005, the USEPA’s multi-habitat sampling approach was used because the study was intended to inform an understanding about sediment and surface water impacts to these organisms. In 2010, a more focused sediment grab sampling program was implemented. Samples collected reflect a narrow range of habitats within which the overall community lives. The taxa richness in 2010 shows that location SD-43 and SD-44 had two of the top three highest taxa richness measures from any location. Locations SD-43 and SD-44 were within the Location F multi-habitat sampling area from 2005 and this area also had the highest diversity of any location sampled in 2005 (Figure 11.3).

- Abundance is not a metric that is scored directly because it is a component of other metrics that are scored. It is noted that while SD-43 had one of the highest diversity measures in 2010, it also had the lowest abundance measured in 2010. Figure 11.3 allows a quick view of abundance estimates for all locations, and it can be seen that the Tributary to Sawmill Brook had the highest abundance of any location. Location F had one of the highest abundance measures in 2005.

- Scrapers and EPT were not seen at every location sampled in 2010, likely due to that sampling program’s use of sediment grab samples in a single habitat that is not necessarily preferred by most of the scraper and EPT species. These taxa are better represented in multi-habitat sampling approaches.

The results from the benthic community assessments are discussed further below as part of a WOE evaluation. It is noted that an evaluation of variability was planned for 2010 sampling so that statistically significant differences of integrated metrics could be evaluated and the power of the measurement of differences could be understood. Since variability estimates are not available, this testing could not be performed. This limitation is discussed further in the WOE analysis.

11.5.1.2 Toxicity Tests

Sediment was collected for toxicity testing in June 2010 using a tiered approach that consisted of two phases, with the need for a second phase dependent upon the results of the first, as described in the QAPP (ENVIRON, 2010). The results from both phases of testing are presented in detail in Table 11.12. A brief description of the phased approach is described below:

The initial phase of testing involved three comparisons of biological responses:

- Comparison of Site-Specific Background to Controls. The use of Site-specific references was verified to be appropriate based on a comparison to laboratory controls. Site- specific references (SD-09A and Tributary to Sawmill Brook, referred to as SD-TRIB) are compared to the laboratory controls (Bearskin Lake, a typical lake sediment from pristine area in Minnesota and a laboratory control using glass beads (GB)). This comparison shows that the biological responses associated with the Site-specific references are comparable to the laboratory controls and therefore acceptable for use in site-specific evaluations of potential toxicity compared to these references.

- Comparison of Turnpike Lake Samples to Site-Specific Background. Survival and growth results for locations collected from Turnpike Lake are compared to the Turnpike Lake reference. The results of the comparison showed significant toxicity at location SD-43, resulting in no survival. Although survival was not significantly reduced at SD-44, growth and biomass endpoints were significantly reduced relative to the Turnpike Lake reference location. As indicated on Table 11.12, growth and biomass measures were approximately 32% and 38%, respectively, less than the Turnpike Lake reference location results.

- Comparison of Sawmill Brook Samples to Site-Specific Background. Survival and growth results for locations collected from Sawmill Brook locations were compared to the Sawmill Brook reference area. There were no statistically significant differences in biological responses from any of the Sawmill Brook locations.

The second phase of toxicity testing was completed in September of 2010, and included the following samples:

- SD-47 and SD-48, and the SD-TRIB As planned in the QAPP, initial toxicity testing did not include locations SD-47 and SD-48 because the suite of samples identified for toxicity testing were expected to cover a range of detected metals that would include the range detected at SD-47 and SD-48. However, because SD-47 and SD-48 had higher concentrations of cadmium than most of the other samples in Sawmill Brook that were included in the sediment toxicity testing, these samples were ultimately included in a second round of toxicity testing, which included SD-47, SD-48, and the Sawmill Brook background location (SD-TRIB). Neither of these

locations showed survival or growth responses that were statistically different from the reference location.

Overall the sediment toxicity testing showed impaired survival at SD-43 (no survival and therefore no growth) and impaired growth and biomass at SD-44. Both stations are located in the South Embayment of Turnpike Lake. All other locations tested showed no statistically significant effects. The results from the toxicity testing are discussed further as part of a WOE evaluation.

11.5.1.3 Chemistry

The evaluation of chemistry as part of the assessment of risks to aquatic and sediment dwelling invertebrates compares concentrations of COPCs in surface water and sediment to benchmarks, in an effort to elucidate the cause(s) of community structure impairment and toxicity observed in the other two legs of the sediment quality triad.

The risk characterization using chemistry results is based on the HQ, which is the ratio of measured concentrations and ESBs:

$$HQ = \frac{C_{media}}{ESB_{media}}$$

Where:

C_{media} = concentration in medium of interest
ESB_{media}= ecological screening benchmark appropriate for that medium

The surface water evaluation includes both total metals and dissolved metals analyses. It is noted, however, that dissolved metals analytical results are most appropriate for consideration because water quality criteria are based on dissolved values and dissolved metals are the fraction that are biologically available. The evaluation of sediment includes bulk sediment benchmarks and benchmarks based in EqP theory, as was described in Section 11.4.1. This analysis includes 1995, 1997, 2005, and 2010 data, as available, so a comprehensive evaluation of HQs over time can be considered. In terms of understanding current conditions, the 2005 and 2010 data are the most applicable for assessment of baseline conditions, particularly because remedial measures were implemented at the Site in the mid-1990s. The remainder of this section discusses these findings with regard to potential risks for aquatic and sediment dwelling invertebrates in terms of HQs, where HQs that exceed a threshold value of 1 indicate that potential adverse impacts may occur. For this risk characterization, HQs are evaluated on a location-by location basis so that the magnitude and spatial distribution of elevated VOCs can be considered with regard to potential impacts to exposures and potential risks to aquatic and sediment dwelling invertebrates. These findings are considered along with other LOEs in a WOE evaluation at the end of this section.

11.5.1.3.1 Surface Water Chemistry: Total and Dissolved

The refined COPEC analysis indicated that 9 metals and 3 VOCs required detailed evaluation in the BERA. Surface water analytical results and HQs are presented on a location-specific basis in Table 11.5a (total metals and VOCs) and Table 11.5b (dissolved metals).

HQs from the 2005/2010 sampling efforts are much lower than those observed from the 1995/1997 sampling efforts:

- HQs are less than 1 or constituents were not detected at many locations where sampled in the 1995/1997 dataset, but those HQs greater than 1 range from 2 to 10 for VOCs (1,1,1-TCA, PCE, and TCE) and HQs range from 2 to 600 for metals (aluminum, cadmium, copper, lead, zinc). The most elevated metals in surface water during the 1995/1997 sampling event were observed immediately following significant rainfall events. This sampling was intended to evaluate the influence of roof runoff on surface water conditions. Since this time, nine buildings were removed as part of measures to control roof runoff as an source of metals to surface water.
- Historical perspective for VOCs (i.e., 1995/1997): VOCs were detected at the greatest concentrations at location SW-02 from the 1995/1997 dataset, which is in Sawmill Brook near the confluence of several braided tributaries. A groundwater pumping and treatment system and barrier wall was installed in 1997 to control the migration of VOCs in groundwater from the Site to the Sawmill Brook wetlands area. VOCs were detected at SW-02 in 2005 at lower concentrations yielding HQs less than 1.
- Current data for VOCs (i.e., 2005/2010): Only one VOC (1,1,1-TCA) was detected at concentrations yielding HQs of 2 at locations SW-15 and SW-202. Both SW-15 and SW-202 are located at or immediately downstream an area where contaminated groundwater seeps from the ground surface. The significance of this potential source area likely depends upon a number of factors including the time of year, depth of the water table, and antecedent rainfall rates. It should be noted that many of the locations along the main channel of Sawmill Brook, which get diluted with runoff from Turnpike Lake, such as SW-02, showed that VOCs were not detected or were detected at low concentrations yielding HQs less than 1. Thus, the areas exceeding chronic criteria appear to be limited to the tributary fed by the groundwater seep area. The exceedance of a criterion alone does indicate harm to wildlife. This is illustrated further in the discussion of cadmium in dissolved phase below.
- Historical perspective for metals: The highest HQ (600 for cadmium) was seen at location SW-06 in the South Embayment at a time when roof drain runoff to Turnpike Lake was an active transport pathway in the 1995/1997 dataset. In contrast, no cadmium was detected in surface water collected from SW-06 in 2005, after many of the onsite buildings were removed and roof drain runoff to Turnpike Lake was eliminated. Other chemicals with HQs greater than 1 at this location in 1997 (e.g., copper, lead, and zinc) were also not detected or were detected at low concentrations yielding HQs less than 1 in 2010.
- Current data for metals: HQs greater than 1 range from 2 to 20 for cadmium at 16 locations and HQs range from 2 to 10 for lead at 12 locations considering just the 2005/2010 dataset. However, in order to understand potential risks related to metals, dissolved metals must be considered. Table 11.9b shows that lead was not detected in dissolved phase at any location at a concentration that yields an HQ greater than 1. Dissolved cadmium was detected at 5 locations with HQs that range from 7 to 9 (SW-02, SW-15, SW-19, SW-202, and SW-19). Three of these locations are in wetlands portion of Sawmill Brook . Location SW-19 is located in the private pond in Sawmill Brook, upgradient from the other three locations.

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- Dissolved phase cadmium is biologically available and can pose a potential risk to aquatic life; therefore, a greater understanding of potential effects from dissolved phase cadmium is needed. HQs greater than 1 do not indicate toxicity to all receptors coming in contact with the measured concentration of dissolved cadmium. A species sensitivity distribution (SSD) is provided in Figure 11.4 to illustrate this point. This figure shows that the hardness adjusted criterion used to calculate HQs for the site is well below any measured or chronic adjusted toxicity value for any species in USEPA's ECOTOX database. The measured concentrations shown on Figure 11.4, which exceed the hardness adjusted criterion, yield HQs from 7 to 9, but this really means that the concentrations exceed chronic adjusted toxicity values seen from 2 studies out of 176 studies compiled by USEPA, or 1.1% of the studies. The data used to derive this SSD is provided in Appendix K. Water quality criteria are derived to protect 95% of the species 95% of the time. As such, these limited exceedances for cadmium do not appear to present an unacceptable risk to invertebrates.
- These data support a conclusion that VOCs and metals in surface water do not pose an unacceptable risk to aquatic invertebrates. A discussion of the co-location of elevated surface water constituents is provided in the summary of this section which discusses the multiple LOEs in relation to one another.

11.5.1.3.2 Sediment Chemistry: Bulk Sediment and AVS-SEM

The refined COPEC analysis indicated that 10 VOCs, 11 metals, 12 PAHs, and 2 PCBs required detailed evaluation in the BERA. Sediment HQs are presented on a location-specific basis in Table 11.5c. Trends over time for sediment data are not as clear as for surface water, so the data are discussed generally for each class of compounds. HQs exceed a value of 1 for VOCs, metals, PAHs, and PCB, and the following observations and additional analysis is provided:

- VOCs: VOCs were detected at many locations within Sawmill Brook which serves as a discharge zone for groundwater originating onsite. A Stabilization measure to limit offsite migration of contaminants in groundwater was implemented in late 1997 and has had a significant effect at reducing VOC concentrations in groundwater east of Route 152, yet TVOCs remain at concentrations of approximately 4 ppm in the bedrock groundwater plume extending off-Site into the wetlands.
    - The VOCs with connection to the Site (1,1,1-TCA, TCE, and PCE) are all detected at concentrations with HQs well below a value of 1 using EqP based criteria from USEPA (2008) considering 5% TOC, which is less than the measured TOC known to exist in field measures of Turnpike Lake and Sawmill Brook. TOC ranged from 8% to 26%, as described in detail in Appendix K. This indicates that aquatic and sediment dwelling invertebrates are not exposed to concentrations of Site-related VOCs that pose an unacceptable risk.
    - Other VOCs (1,1-DCA and acetone) have HQs greater than 1, but acetone had only very limited use at the Site and these HQs for both VOCs are considered overestimated. Specifically, only 1,1-DCA was detected at concentrations with HQs greater than 1, and those were at 1 location in 2005 (SD-214, with an HQ of 2 in the sample and it's duplicate) and 1 location in 1995 (SD-02, with an HW of 5). 1,1-DCA is a breakdown product of Site-specific VOCs and these low HQs indicate that in isolated areas, there may be some isolated, low-level impacts to invertebrates due to VOC exposures. Acetone is the only VOC consistently detected with HQs

greater than 1, but the presence of acetone in sediment is puzzling. Acetone was reportedly used at the facility and has been detected at low levels in groundwater. However, the detections of acetone in sediment exceed what would be expected based on concentrations seen in groundwater. Although, analytical results for acetone in 2010 were based on an unstable calibration (see data validation report in Appendix G) acetone was also detected in Sawmill Brook sediments in 2005. During the 2006 ground water sampling event, acetone was detected in only two wells: MW40B at 690 µg/L and MW42 at 6.9 µg/L. Both of these wells are located offsite with MW40B located across Route 152 on the edge of the wetland area and MW42 (a recently installed deep bedrock well) located about 1,000 feet north-northeast of the former Drive-In property. The level of acetone detected in MW42 is consistent with laboratory contamination; however, the higher concentration detected in MW40B suggests an offsite source of this constituent. .

- Metals: HQs range from 2 to 800 for metals when considering bulk sediment (Table 11.5c), but divalent metals are more appropriately addressed using USEPA's EqP approach for metals (Table 11.5d), further discussed below.
- PCBs: Where PCBs were sampled, HQs are less than the threshold value of 1 based on EqP based criteria, with the exception of 1 location at an HQ of 5 seen at location SD-21 in Turnpike Lake in 1995.

USEPA (2005a) recommends assessing the risk of sediment toxicity due to mixtures of divalent metals (cadmium, copper, lead, nickel, and zinc) based on an understanding of the primary factors controlling the bioavailability, as was described in detail in Section 11.4.1.3. Most divalent metals that are complexed with AVS are not available for uptake by benthic invertebrates and, thus, are less likely to be toxic to those invertebrates (Ankley et al. 1996, USEPA, 2005a). The relationship of AVS and SEM in samples from the Site is provided in Table 11.5d, and the following observations are provided:

- Table 11.5d summarizes the data and the relationship of AVS and SEM for sediment samples taken in 2005 and 2010. The majority of locations show that the relationship between AVS and SEM is such that metals are tightly bound to AVS and therefore not bioavailable. Some locations showed that SEM exceeded AVS. The highest ΣSEM relative to AVS value was in location SD-43 in the South Embayment of Turnpike Lake where the relationship of SEM-AVS was 8.56 µmol/g, which is in USEPA's uncertain range for potential effects. However, as was described in Section 11.4.1.3, the ratio of SEM-AVS to the fraction of organic carbon (fOC) is also a component used in understanding bioavailability. According to USEPA, the (SEM-AVS)/fOC value of 130 µmol/gOC is a threshold above which adverse impacts due to divalent metals are likely to occur. The value for SD-43 was 65.4 µmol/gOC, which is below the USEPA threshold of toxicity, but it is in the range where toxicity is uncertain.
- The SEM-AVS values for the majority of locations are well below the USEPA's threshold indicating toxicity is unlikely (i.e., 1.7 µmol/g). The SEM-AVS/fOC values for locations other than SD-43 were below 38 µmol/gOC, with most being less than 10 µmol/gOC. This indicates that the levels of AVS and organic carbon found in sediments near the Site serve to limit the bioavailability and toxicity of divalent metals.

PAHs were evaluated using the USEPA's EqP in Table 11.5e. Toxicity is predicted when the ESBTU exceeds the threshold value of 1.

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- Location-specific HQs calculated using EqP based criteria show that ESBTUs calculated based on 17 PAHs are less than the threshold value of 1 at all locations. The ESBTUs range from 0.2 to 0.9 for the 17 PAH analytical suite, with location SD-43 having both the highest ESBTU and the highest number of detected PAHs. In fact, most locations had no detected PAHs or only few of the 17 PAHs detected. It is noted that a full ESBTU evaluation can include 34 PAHs and this analysis could only be conducted with the 17 PAHs typically provided in the USEPA SW846 8270 semi-volatile analysis method used during the sampling. The additional 17 alkylated PAHs are not a typical part of PAH analysis unless specifically deemed warranted. These results indicate that PAHs are unlikely to pose a risk at most of the locations where analyzed, with the exception of location SD-43. It is likely that given the number of non-alkylated PAHs present at location SD-43, that some alkylated PAHs are also present at this location. Therefore, it is possible that PAHs could be present at a level that could contribute to toxicity at location SD-43.
- These data support a conclusion that VOCs and metals in sediment do not pose an unacceptable risk to invertebrates, with some uncertainties in the data for Turnpike Lake (metals and potentially very isolated PAHs) and Sawmill Brook (isolated VOCs). The 2010 samples were co-located with sediment toxicity testing and biological community samples allowing for a more detailed assessment of potential toxicity based on all three LOE.

11.5.1.4 Risk Characterization Summary for Aquatic and Sediment Dwelling Invertebrate Communities

Benthic invertebrate community assessment, sediment toxicity testing, and chemistry evaluation are three lines of evidence considered in the assessment of risks for aquatic and sediment dwelling invertebrates.

- Two benthic community assessments were conducted using two types of sampling methods (multi-habitat and sediment grabs). Based on USEPA scoring criteria, the results of the benthic community assessments performed in 2005 and 2010 indicate that locations in Turnpike Lake and Sawmill Brook are “nonimpaired.”
- The results of the sediment toxicity testing showed that most locations did not exert a toxicity response on tested organisms. However, significant toxicity was observed at location SD-43, resulting in no survival. This location also had the highest SEM concentration, in excess of the AVS. SD-44, which showed elevated metals compared to other locations but was less than SD-43, did not show significantly reduced survival, but did show statistically significant reductions in growth and biomass endpoints in comparison to the Turnpike Lake reference location. In combination with absence of impairment observed in the benthic community, the findings from the toxicity testing indicate that toxicity is expected to be extremely localized in the vicinity of only these two sampling stations.
- The chemistry analysis considered surface water (total and dissolved phase) and sediment (bulk sediment and EqP approaches) for the calculation of HQs. The results for the surface water evaluation of HQs data support a conclusion that VOCs and metals in surface water do not pose an unacceptable risk to aquatic invertebrates. The results from the sediment evaluation support a conclusion that VOCs and metals in sediment do not pose an unacceptable risk to invertebrates, with some uncertainties in

the data for Turnpike Lake (metals and very isolated PAHs) and Sawmill Brook (acetone).

A WOE evaluation provides an opportunity to integrate multiple lines of evidence to identify concurrence and conflicting information among the LOEs summarized in Table 11.13. As indicated on Table 11.9e, the most uncertainty exists for locations SD-43 and SD-44 in Turnpike Lake based on chemistry, but the toxic response is clearly observed in the toxicity testing (no survival at SD-43 and reduced growth and biomass at SD-44). There is also some uncertainty about the sediment chemistry for VOCs in the wetlands, but toxicity testing showed biological responses for locations in the Sawmill Brook and Turtle Brook locations that were comparable to reference locations. The benthic community assessment showed comparable results for both years of study, but there is no ability with the current data set to perform statistical testing. This LOE is generally the most relevant in that it measures the exact community of interest, but it is the weakest from a mathematical sense.

Therefore, the conclusion is that the Site does not pose an unacceptable risk to invertebrates, with some possible exceptions in the South Embayment in the vicinity of SD-43 and SD-44. It is noted that these two locations represent by a significant margin, the highest measured concentrations of metals, and were purposely selected to evaluate the worst-case conditions in Turnpike Lake, and the Study Area as a whole. In this localized area of impacted sediments in the South Embayment, divalent metals and potentially PAHs appear to be causing the impaired survival and growth observed through toxicity testing. Specifically, total cadmium and zinc concentrations were 780 mg/kg and 550 mg/kg, respectively, at location SD-43 and at SD-44 cadmium and zinc concentrations were 170 mg/kg and 318 mg/kg, respectively. Toxicity testing using sediment from location SD-47 which showed no toxic response, at concentrations of 96.5 mg/kg for cadmium and 143 mg/kg for zinc These could be considered Site-specific thresholds (i.e., “safe” levels). Future monitoring of the biological community using statistically robust measures should be conducted because the uncertainty in the LOEs suggest that the biological community may be robust and tolerant of many residual chemicals.

11.5.2 Risk Characterization for the Fish Populations and Community

The characterization of risks for fish involve two lines of evidence, surface water chemistry and the evaluation of chemicals in fish tissues relative to CBRs, as described in Section 11.4. Much of the discussion related to surface water chemistry presented for invertebrates applies to the discussion for fish as well. The SSD for cadmium was expanded to include fish (Figure 11.5). These results show that 95% of species are unlikely to be adversely affected by the range of cadmium concentrations present in surface water at the site.

The second line of evidence for fish is the comparison of concentrations of chemicals measured in fish tissues to CBRs, as illustrated Table 11.6. The following observations are note-worthy:

- There are no exceedances of the CBRs for cadmium, lead, vanadium, Aroclor 1254, Aroclor 1242, Aroclor 1260, or the sum of the PCBs.
- The only exceedance of CBRs is for silver in two individual fish samples, resulting in HQ values of 3 and 2 for brown bullhead catfish and bluegill sunfish, respectively. Both fish were collected from the South Embayment in 1996, and as noted previously,

remedial actions on-Site have significantly reduced or eliminated the transport of metals like silver into the lake.

It is important to understand the basis of the CBRs to understand if HQs greater than 1 indicate potential effect. CBRs were described in Table 11.12a, and for silver, the CBR is a no observable adverse effect level, where juvenile bluegills exposed to silver nitrate for 180 days showed no adverse effects on growth or survival at whole-body tissue residue levels of 0.06 mg/kg on a wet-weight basis (Jarvinen and Ankley 1999). There are no data showing an effect level for silver. Thus, the detected body residues in two fish samples slightly exceed a value known to cause no effect; it is not known whether those concentrations exceed an effect threshold because no such threshold has been identified for silver. Therefore, the concentrations of silver in fish do not pose an unacceptable risk to individual fish. In the absence of adverse effects in individual organisms, adverse effects in fish populations or the fish community also are not expected.

The two lines of evidence for fish, water chemistry and fish tissue chemistry, both support a conclusion that conditions in Turnpike Lake and Sawmill Brook do not pose an unacceptable risk to fish populations or the fish community.

11.5.3 Risk Characterization for Terrestrial Plant and Invertebrate Communities in on-Site and in Floodplain Soils

The evaluation of potential risks for terrestrial plants and invertebrates relies on a single line of evidence: comparison of COPEC concentrations in on-Site soils and floodplain soils to effects based soil benchmarks for plants and invertebrates (i.e., ESBs). Location specific HQs are provided on Tables 11.7a and 11.7b for on-Site soils (plants and invertebrates, respectively) and 11.7c and 11.7d for floodplain soils (plants and invertebrates, respectively). No HQs exceed a value of 1 for plants or invertebrates in floodplain soils. Some HQs exceed a value of 1 on-Site for plants and invertebrates, predominantly for cadmium and exclusively in soils from AOC B (i.e., there are no HQs greater than 1 outside AOC B). The HQs for plants exposed to cadmium in AOC B range from less than 1 to 50. With the exception of two copper HQs with values of 8, all other HQs for plants are less than 4 and many are less than 1. HQs greater than 1 are less frequent for invertebrates than plants, showing only three locations with HQs from 10 to 20, and all other HQs are less than a value of 9 in AOC B, and many of those with HQs less than 1. These HQs show that outside of AOC B (Figure 11-6), there are no unacceptable risks for plants or invertebrates, and therefore, the plant and invertebrate community is not at risk. Within AOC B, there is some uncertainty regarding the relevance of elevated HQs because AOC B is highly disturbed from physical impacts, such as paving and concrete foundations and spreading of soils from on-Site construction and maintenance activities. Also, regardless of the physical impacts to the landscape, plants are colonizing AOCB in a manner considered to be typical and apparently unimpaired by chemical constituents. Distinguishing the impacts of physical disturbance from the chemical disturbances (if any) will be difficult to discern.

The conclusion that can be drawn for this assessment endpoint is that there are no unacceptable risks to plants or invertebrates in the wetlands or on-Site, with the possible exception of AOC B soils, where some possible risks due to chemical impacts or physical disturbances cannot be ruled out.

11.5.4 Risk Characterization for Bird and Mammal Populations

The characterization of risks for wildlife involves food web modeling using surface water, sediment, soil, and fish tissue chemistry results and comparison to protective TRVs as described in Sections 11.5 and 11.6. Food web modeling results are provided for fish eating wildlife for Turnpike Lake (Table 11.9a) and Sawmill Brook (Table 11.9b) and for terrestrial wildlife exposed on-Site (Table 11.10a and 11.10b) and in the Sawmill Brook wetlands (Table 11.10c). The following observations are made:

- Food web modeling for fish eating wildlife (great blue heron, belted kingfisher, and mink) does not show any HQs greater than 1 for Turnpike Lake or Sawmill Brook.
- Food web modeling for on-Site wildlife (American robin, white footed mouse, short-tailed shrew, and red fox) shows that only the robin and the shrew have HQs greater than 1 for the Site as a whole, excluding AOC B, and only when the reasonable worst case exposure scenario is considered (11.16a). The maximum exposure scenario reflects only the most highly exposed individual organisms and generally does not reflect exposures to populations as they forage throughout their home ranges and throughout their lifetimes. For the most highly exposed robin, HQs range from 2 to 3 for cadmium, lead, and zinc. For the most highly exposed shrew, an HQ of 2 results for cadmium. Both the robin and the shrew have HQs less than 1 when more realistic exposure assumptions and TRVs are considered. These results indicate that, although adverse effects are possible in the most highly exposed individual robins and shrews, given that neither species is threatened or endangered, the Site is not expected to pose unacceptable risks to mammal or bird populations.
- Food web modeling for on-Site wildlife using a dataset including samples collected from AOC B is provided on Table 11.6b. These results show that HQs range from 3 to 50 for the robin and shrew using the most conservative assumptions and range from 2 to 3 for cadmium and lead for the robin and shrew using more realistic assumptions. These theoretical results indicate that the most highly exposed individual birds or shrews may be adversely affected by long-term, ongoing exposure to AOC B soils. However, the spatial scale of AOC B and the habitat associated with this area must be considered in order to evaluate whether risks to even individual robins or shrews may occur. Figures 11.6 and 11.7 show the approximate boundary and characteristics of AOC B. AOC B is only slightly greater than 1 acre, most of which is covered with concrete, gravel or pavement. Robins preferentially feed in open grassy areas, and while they may forage in AOC B on occasion, there is no evidence or reason to believe that even individual robins would preferentially feed in AOC B. Further, shrews require floodplain, forest, or dense grassland habitat. AOC B provides very little of this type of habitat and only on the fringe of the AOC B boundary (Figure 11.6). Therefore, the spatial extent of AOC B that provides any habitat for shrews is only a fraction of an acre, meaning that very few, if any, shrews would actually be exposed to the AOC B elevated concentrations. Taking these habitat constraints and spatial scales into account, it is unlikely that even individual birds and shrews would be adversely impacted by AOC B. Even if some individual birds or shrews were adversely impacted, the scale and habitat constraints are such that population-level impacts cannot occur.
- Food web modeling for wildlife in the floodplain soils east of Route 152 indicates that HQs range from 3 to 4 for zinc and cadmium for the most highly exposed robin and shrew in the most conservative exposure scenario, but are less than a value of 1 for the

more realistic scenario. Therefore, the floodplain soils do not pose an unacceptable risk to wildlife.

The food web modeling shows that the Site does not pose an unacceptable risk to mammal and bird populations, even if no action is taken for AOC B.

11.5.5 Uncertainties

Uncertainty can be introduced into a BERA at every step in the process, as information of varying quality is gathered from diverse sources in order to be integrated into a complex framework. The analytical data collection effort for this BERA was designed to minimize uncertainties related to COPEC bioaccumulation and bioavailability. However, some uncertainty in the BERA process is unavoidable. Conservative assumptions are generally employed to compensate for that uncertainty, to ensure the protectiveness of the overall assessment. The major sources of uncertainty and their expected effects on risk estimates are described in Appendix K. The primary sources of uncertainty in this BERA discussed in greater detail in Appendix K are:

- Uncertainty associated with aquatic invertebrate assessment, including:
  - Incomplete availability of benchmarks for all constituents.
  - Benchmarks that do not reflect the bioavailability of constituents in Site media, that do not account for the effects of cumulative exposure to all constituents at the Site simultaneously, and that were estimated using laboratory model organisms in controlled laboratory conditions and not the ROIs in Site conditions.
  - Insufficient data for statistical analysis of the benthic community data.
  - Insufficient information about the applicability of sediment toxicity tests to the actual conditions at the Site which may include tolerance and adaption of the local organisms as well as limited tolerance of the test organisms for Site sediments due to grain size and organic carbon.
  - Limited data for SEM-AVS analysis and PAH TU analysis.
- Uncertainty associated with plant and terrestrial invertebrate assessment, including:
  - Incomplete availability of appropriate plant and invertebrate benchmarks for all constituents.
  - Uncertainty about the benchmarks (as above).
  - Variability between sampling intervals with respect to instrumentation and analytical methods.
- Uncertainty associated with the fish assessment, including:
  - Estimation of whole body concentrations from fillet and offal concentrations.
  - Lack of dissolved-water concentrations for all constituents during all sampling efforts.
  - Uncertainty in the surface water TRVs and fish tissue CBRs used to evaluate risk (as above for invertebrate benchmarks).
- Uncertainty associated with the wildlife assessment, including:

  - Hazard quotients that indicate that risks are greater than “no effect” concentrations but less than “low effect” concentrations.
  - Examination of high-end reasonable worst case exposure estimates that are unlikely to be reflective of population or community level effects.
  - Use of standardized receptor parameters that may not be reflective of the actual body weights, intakes, or dietary preferences of organisms at the Site.
  - Area use factors that may not reflect actual organism use of the Site, particularly given human disturbances at the Site.
  - Uncertainty about the TRVs (as above for invertebrate benchmarks).
- Additional sources of uncertainty are:
  - Chemicals that are unlikely to contribute significant ecological risk because they are common minerals were retained in the risk assessment (for example, aluminum in sediment and surface water).
  - Appropriateness of background locations.
  - Variability between sampling intervals with respect to instrumentation and analytical methods, including some detection limits that are greater than the benchmarks.
  - Unknown bioavailability of COPECs.
  - Uncertainty about the effects of multiple stressors on the ROIs.
  - The links between effects on individual organisms and populations or communities of those organisms are unknown.
  - Use of surrogate ROIs to account for risks to amphibians and reptiles.
  - Overestimation of central tendency risks by treating non-detect concentrations as a detect at one-half the detection limit.

11.6 Scientific Management Decision Point

This BERA evaluated risks for the following ROIs:

- aquatic and sediment dwelling invertebrate community;
- fish populations;
- terrestrial plant and invertebrate community;
- bird populations; and
- mammal populations.

With limited exception, the BERA supports a finding that conditions at the Site do not pose an unacceptable risk to these ROIs. The exceptions include the following:

- Potential risks to sediment dwelling invertebrates in limited areas in the South Embayment (in the vicinity of SD-43 and SD-44) cannot be ruled out because there is some uncertainty and conflicting information among the multiple lines of evidence. Future monitoring of the biological community using statistically robust measures is recommended because the uncertainty in the LOEs suggests that the biological community may be robust and tolerant of residual chemicals.

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- The conclusion that can be drawn for this assessment endpoint is that there are no unacceptable risks to the plant and invertebrate community on-Site, with the possible exception of AOC B on-Site, where some possible risks due to chemical or physical disturbances cannot be ruled out. There are no unacceptable risks to the invertebrate community in Sawmill Brook and associated wetlands, with some uncertainties related to acetone.
- The food web modeling shows that the Site does not pose an unacceptable risk to mammal and bird populations, even if no action is taken for AOC B.

12 Comparison To Media Protection Standards – (to be completed)

Section 12 will be completed following a decision on the Future Land Use Proposal and preparation of the Human Health Risk Assessment for the Site.

13 Stabilization and Interim Measures Implementation and Performance Evaluation

13.1 Introduction

This Section presents a discussion of the RCRA Stabilization Measures conducted at the Site, and evaluates whether additional measures would be warranted based on Site conditions observed during the RFI. As part of the ACO with the USEPA, BASF was required to propose four specific Stabilization Measures for the Site and determine if any additional measures would be warranted based on Site conditions observed during the RFI. The proposed Stabilization Measures were presented in the *Stabilization Plan for the Engelhard Corporation Facility in Plainville, Massachusetts*, dated August 17, 1994 and submitted to USEPA (ENVIRON, 1994b) and include: roof drain runoff affecting AOC 13; access restrictions along the south embayment of Turnpike Lake; stabilization of soils at AOC B; and ground water stabilization. A discussion of the status and evaluation of the performance of each of these measures is presented below.

13.2 Roof Drain Runoff into AOC 13

Historically, storm water runoff from the roofs of a number of the buildings in the central and southern portions of the Facility discharged directly (i.e. former Building Nos. 1, 2, 5, 6, 7 and 9) or indirectly (i.e. former Building Nos. 3 and 12) into the south embayment of Turnpike Lake (AOC 13) via subsurface drains or from downspouts with indirect surface runoff. Portions of this runoff contained elevated concentrations of metals, which accumulated on the roof surfaces from the ventilation of furnace (metals melting) operations in former Buildings 2 and 6. The purpose of stabilization of roof drain runoff at AOC 13 was to eliminate the source of metals in runoff into the south embayment of Turnpike Lake. In 1996 and 1997, all of the buildings discharging roof runoff into the south embayment were demolished.[63] In the process, this source of metals impacting the Lake (AOC 13) was removed, thereby completing this Stabilization Measure. Stabilization was implemented in accordance with the amended schedule agreed upon by USEPA.

13.2.1 Public Access at AOC 13

Historically, runoff from the courtyard area (AOC 7) and from the vicinity of air pollution control equipment (scrubbers/bag houses) in AOC B along the southern, external walls of former Buildings 2 and 6 caused the contamination of soils in the area bordering the south embayment of Turnpike Lake. To prevent any exposure to contamination in soils in this area, and also to reduce the potential for public access along the shoreline to the adjoining areas of Turnpike Lake (AOC 13), BASF was required to improve access restrictions along the south embayment of Turnpike Lake by extending the security fencing that already enclosed much of AOC B to the lake shoreline and posting “No Trespassing” signs on the fence at 100-foot intervals. These access restrictions were completed in December 1995 in accordance with the schedule agreed on by BASF and USEPA, and continue to be maintained by BASF today, thereby ensuring continued achievement of the performance standard for this Stabilization Measure.

63 Several other buildings (Nos. 8, 10, and 11) remain at the Facility today; however, runoff from these roofs discharges into onsite storm water percolation ponds or onto the ground surface where it will infiltrate or runoff indirectly into Turnpike Lake, yet not into AOC 13. Also BASF has not conducted metal melting operations since 1993, which were the original processes contributing to the deposition of metals onto roof surfaces at the Facility. The potential exists for continuing release of heavy metals and other COCs to AOC 13 via overland runoff of surface soils containing these COCs, although the levels of COCs are expected to be much lower than historical roof runoff concentrations and mass.

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13.3 Soils at AOC B/7

Soils in AOC B/7[64] are contaminated with metals, PCBs, and radionuclides - residues from releases and/or runoff from the past operations at the Facility in adjoining buildings/AOCs. The ACO requires BASF to stabilize the soils in this area to reduce the potential for on-site exposure to contamination and to eliminate pathways for the migration of contaminants into off-site areas via windblown dust and surface water runoff or sediment. The specific objective for the stabilization of soils at AOC B is to remove, treat and/or isolate by capping soils located in AOC B/7 which could pose a threat to current or future maintenance workers at the Site or pose a threat to human health or the environment via migration of contaminated soils into off-site areas. Specific Stabilization Measures and concentration-specific Stabilization performance standards for these soils were originally proposed in the *Stabilization Plan for the Engelhard Corporation Facility* (ENVIRON, 1994b). The focus of this Stabilization Plan was on metals and PCBs.

Subsequent to submittal of the Stabilization Plan, BASF conducted evaluations of the potential options for the stabilization of soils in this AOC and adjoining areas of the south embayment of Turnpike Lake, and also to address the presence of radionuclides in these soils (see *Preliminary Design Report for Soil Remediation Project*, Marin Environmental, 2001).[65] This additional work was required to: 1) quantify the type and extent of impacted soils, and support the design of an on-site, above-grade soil cell which would contain both RCRA soils <50 ppm PCB TSCA-regulated soils, and low-level radiologically impacted soils, excavated from AOC B/7; 2) provide revisions to earlier work plans, to meet new EPA waste cell closure requirements, such as providing a bottom liner with leak detection capability, in addition to a top liner; 3) incorporate separate plans submitted separately to the appropriate agencies responsible for regulating radionuclides; and 4) provide necessary details demonstrating conformance to state and federal closure and/or decommissioning rules for RCRA, TSCA and former nuclear manufacturing facilities.

More specifically, the Preliminary Design described the construction of an on-site cell within which impacted soils, which would be physically-chemically stabilized as needed to immobilize COCs, would be permanently entombed. The Design detailed options for removal of a more narrow range of highly contaminated soils for off-site treatment/ disposal. BASF also completed additional field investigations on the Upper Courtyard Area (the Courtyard is the area bounded by former Buildings 1, 2, 5 and 6) of AOC 7 (in its northernmost “courtyard” area, bounded by former Buildings 1, 2, 6, 9, and 12), which are documented in the *Supplemental Design Investigation Courtyard Area* (ECS, 2004). This report also determined the geotechnical suitability of this area for construction of the on-site cell and what, if any, additional remedial measures were needed to address contamination

64 It is noted that the ACO specifically refers to the stabilization of soils in AOC B, not AOC 7. The investigations during the RFI have revealed, however, that there is a continuum of soil contamination in this area that extends beyond the original northern boundary of AOC B (an arbitrary line drawn at the time of ACO negotiations between the southern-most corners of Buildings 2 and 6) which is related to the former use of this area for equipment storage and external operations of air pollution control devices. Although AOC 7 is fully paved, unlike AOC B, which is partially unpaved, particularly south of former Buildings 1, 6and 7 and the intervening area along the edge of the south embayment, the same potential concerns exist in both areas related to the potential for exposure to onsite workers involved in subsurface utility maintenance activities. It is anticipated, therefore, that the stabilization of soils in AOC B would also be extended to include the adjoining areas of AOC 7 which exhibit the same contaminant characteristics as are found in AOC B.

65 Radionuclides were addressed in a series of separate work plans and cleanup activities issued beginning in 1989 (see Appendix O), due to their regulation by a different federal agency, the US Nuclear Regulatory Agency. After 1997, the MA Department of Public Health assumed responsibility for these COCs.

prior to cell construction. During the course of these investigations, a significant source of VOCs in ground water was discovered. Investigations were undertaken involving the drilling of numerous soil borings, construction of additional monitoring wells, and sampling/testing soil and ground water for contaminants. The results of these investigations have been previously reported to the MADPH and USEPA, and the associated data have been incorporated into this RFI report.

Currently the final stabilization of soils in AOC B is not complete, pending a final decision by BASF and subsequently regulatory agencies, on the most appropriate plan for this area. Two options are currently under consideration:

- Placement of low-level, impacted soils/sediments in a lined on-site cell constructed in the Courtyard area of AOC 7 and removal and disposal of high-level, impacted soils off-site at a licensed facility; or
- Removal of all impacted soils/sediments for off-site disposal.

BASF anticipates presenting a final recommendation for the stabilization of this area soon after completion of the HHRA and submittal of a Media Protection Standards Proposal for the Site. A decision on this industrial use classification by the USEPA will be based on its review of the final version of a document being submitted separately with the HHRA, the Future Land Use Proposal Application.

13.4 Control of Contaminated Ground Water

The fourth Stabilization Measure was an on-site ground water migration control system to reduce the migration of contaminated ground water from the Facility into the downgradient areas, east of Route 152. The primary constituents of potential concern for ground water migration are chlorinated VOCs (CVOCs)[66], which originate from various on-site AOCs associated with former degreaser operations or subsurface waste disposal areas (e.g. dry wells or leach fields). The performance standards for ground water Stabilization focus on migration control, and are two-fold:

- Reduce the off-site migration of COPCs by reversing the hydraulic gradient along the eastern boundary of the Site (bordering Route 152) through pumping; and
- Treatment of extracted ground water to applicable discharge standards.

To achieve these performance standards, a Groundwater Stabilization Measure (GSM) was installed in 1997 in accordance with the schedule agreed to by USEPA. BASF has operated the GSM since that time, with only minor interruptions for service/maintenance requirements or weather-related disturbancs. A further evaluation of the success of this GSM in achieving the performance standards of the ACO is provided below.

13.4.1 Description of the Groundwater Stabilization Measure

The GSM consists of a pump-and-treat system and a containment wall. The GSM was constructed in December 1997 by Foster Wheeler Environmental Corporation (Foster Wheeler) in accordance with a design that was approved by USEPA. The pump and treat/containment wall system is constructed along a line, established in the ACO, which

66 Low levels of metals and PCBs have also been found in onsite ground water, although these COCs do not appear to be migrating either onsite or into offsite areas.

measures approximately 540 feet bordering the eastern portion of the Site along Route 152 (see Figure 3.1), and currently consists of the following components:

- Six ground water extraction wells originally drilled to a depth of up to 200 feet bgs.[67] Three of these wells (EW01, EW03 and EW05) are screened through both the overburden and upper bedrock zone with 8-inch diameter stainless steel screen extending approximately 35 to 50 feet bgs. Below the screened interval, these wells contain 6-inch diameter open borehole. The remaining three wells (EW02, EW04, and EW06) have 6-inch diameter stainless steel casing grouted into the upper bedrock, at approximately 30 feet bgs. Below the cased interval, these wells contain a 6-inch diameter open borehole.
- A high-density polyethylene (HDPE) barrier wall, installed in a trench through the overburden and keyed into the top of bedrock, approximately 75 feet east of the line of extraction wells. This wall is intended to prevent downgradient migration of ground water from the Facility to the east in the overburden zone;
- A performance monitoring network consisting of 35 piezometers (15 piezometer nests with two piezometers in each, screened in the overburden and shallow bedrock, and five additional piezometers installed east of Route 152), and 9 monitoring wells (three well nests, each with an overburden, shallow bedrock and deep bedrock well); and
- A ground water treatment plant consisting of a flow equalization tank; a metals removal system (consisting of chemical feeds (sodium hydroxide, ferrous sulfate, and polymer), a rapid mix/flocculation chamber, and a clarifier)[68]; an aqueous phase air stripper; a bag filter system for removing particulates from water; a liquid-phase carbon adsorption unit; a vapor-phase carbon adsorption unit; and pH adjustment. The GSM treatment plant is located in Building 11. The treatment system currently discharges treated ground water into Turnpike Lake under a USEPA Remediation General Permit (RGP). The Facility previously operated under a National Pollution Discharge Elimination System (NPDES) permit exclusion.

The construction of the GSM was documented in the *Final Stabilization Report* (Foster Wheeler, 1998), which was previously submitted to the USEPA. This report also included an assessment of initial effectiveness of the GSM in achieving the Stabilization performance standards, which concluded that the GSM had achieved the performance standards prescribed by the ACO by significantly reducing the migration of CVOCs offsite, by lowering the water table sufficiently to capture ground water flowing east from the Facility across Route 152.

13.4.2 Historic GSM Performance Evaluations

Prior to the startup of the GSM in early 1998, ground water quality had been measured repeatedly in the four principal monitoring well nests (MW03/14/16; MW04/15/17; MW05/18

67 Extraction well EW02 has subsequently been deepened to a depth of approximately 302 feet bgs in September 2010.
68 Because influent concentrations of metals are low, no polymer or coagulant is currently added in the metals removal system.

and MW25A/B) located in this area. Elevated concentrations of CVOCs (well in excess of 10,000 µg/L) had been found in the south central portion of the GSM in the vicinity of the MW04/15/17 monitoring well nest (located about 75 feet east, downgradient of extraction wells EW02 and EW03).[69] Concentrations of CVOCs in the northern portion of the GSM were somewhat lower, and have been typically in the range of 1,000-10,000 µg/L. The principal CVOCs found in ground water were PCE and TCA, solvents used for degreasing operations at the Site at different times. TCE was also used as a degreasing solvent and has been routinely detected in groundwater along with degradation byproducts of these solvents including cis-1,2-DCE, 1,1-DCA and 1,1-DCE.

Concentrations of CVOCs in this range (particularly above 10,000 µg/L in the south/central portion of the GSM) are potentially indicative of the historic migration of CVOCs in the fractured bedrock and overburden into this area from upgradient AOCs 7/22/26. Although concentrations of individual CVOCs subsequently declined to some degree by 1997 in some monitoring wells, upon the startup of the GSM, both PCE and TCA significantly rebounded to concentrations that again may be indicative of DNAPL conditions in both the overburden and bedrock zones.[70] A particularly large increase in the concentration of TCA was observed in monitoring well MW17.[71] This rebound phenomena could be the result of the increased circulation of water through the more poorly flushed portions of the overburden and bedrock aquifers with the onset of pumping, which triggered the release of concentrated CVOCs that had been trapped in the aquifer in this area. Over time, this rebound in concentrations has gradually subsided as the flushing of the more highly contaminated water progressed, although concentrations of CVOCs in monitoring wells and piezometers in the GSM area today remain well above 1,000 µg/L. An illustration of the history of CVOCs in the monitoring well nests near the GSM is shown in Figure 13.1a.

Total VOC concentrations have been measured in individual extraction wells on a quarterly basis beginning in June, 2008. Results are presented in Figure 13.1b. Average concentrations detected in each well since June 2008 range from a high value of 10,243 µg/L in EW02 to a low value of 497 µg/L in EW06.

After approximately five years of operating the GSM, BASF commissioned an evaluation of its continued performance. This resulted in the preparation of two reports: the Groundwater Stabilization Measure Report (ECS, 2004); and the Groundwater Stabilization Measure (GSM) Upgrade Report (ECS, 2005). Both of these reports have been previously provided to the USEPA.

There were two potentially significant findings from the updated evaluation of GSM performance. First, pump tests were conducted for each extraction well to demonstrate the rate of feasible ground water extraction and to establish the drawdown and capture zone of each well. Mapping of the drawdown in the bedrock zone from these tests demonstrated that the area of the GSM is traversed by two bedrock fracture zones.[72] One extensive

69 Prior packer tests of the production wells in the southern area of the GSM (in particular the results from EW01 and EW02) also confirm that concentrations of CVOCs throughout the bedrock zone were well in excess of 10,000 µg/L at the start of GSM operations (see Appendix M).

70 The presence of aqueous concentrations detected at 1% to 10% of the effective solubility limit is often used as a rule of thumb to indicate the presence of residual DNAPL.

71 MW17 had an open borehole construction, from 61.5 to 76.5 feet bgs; however, downhole geophysical logging of MW17 in 2008 indicated a break in the steel well casing at approximately 30.7 feet bgs so the well was subsequently decommissioned and replaced by MW17R in 2009.

72 Maps of the observed drawdown in the bedrock during these pump tests and a cross section illustrating the

fracture in bedrock extends from the west side of the Facility near former Building 4 across the Facility to the east beneath AOCs 7, 22 and 26 (where high levels of CVOCs have been observed in soil gas and ground water samples), eventually tracing to the east between extraction wells EW01 and EW02 (see Figure 13 of Appendix M). Monitoring well nest MW04/15/17 is in the northern portion of this fracture zone and piezometer nest P13/13a is centered within the fracture zone, both of which have historically shown high concentrations of CVOCs. This information is consistent with an interpretation that this fracture zone represents one of the major pathways for CVOC migration from the Site to the east. The second fracture zone extends north from the vicinity of EW03 to the area of EW05 (see Figures 14 and 15 of Appendix M). Although not as potentially important for off-site migration, this fracture allows the more efficient collection of ground water in the northern portion of the GSM between the four northern-most extraction wells.

The second significant finding of the GSM evaluation was that the GSM was not fully effective in controlling the migration of CVOCs in the southern half of the area (between EW01 and EW03) at the historic pumping rates, and measures for increasing of pumping from well EW02 (located nearest the east-west fracture trace) were recommended. Historically, the six individual extraction wells (EW01 – EW06) in the GSM had been operated at rates of about 5/5/5/5/5/25 gpm, respectively for a total of 50 gpm. In order to improve the performance of the GSM in the southern area, adjustment of this pumping regime to reduce the production from EW06 and increase production from EW02 were recommended.

Based on these recommendations, all pumps and risers were removed from the extraction wells and cleaned, all active discharge lines were cleaned, and more appropriately sized pumps were fitted to wells EW02 and EW06. There was also a reconfiguration of the well piping to allow EW02 to use a portion of the larger 2-inch line connecting EW06 to the treatment system. The pump replacements and new configuration resulted in an increase in the rate of groundwater extraction at EW02 from about 5 to 18 gpm, and a decrease in the groundwater extraction rate at EW06 from about 30 to 15 gpm. The remaining four extraction wells continued to pump at 5 gpm resulting in a combined total pumping rate of 50 gpm, similar to the flow rate achieved under the prior configuration.

13.4.3 Recent GSM Performance

The more recent performance of the GSM following adjustment of the pumping rates in 2005 can be evaluated by considering the effect of pumping on ground water levels in the overburden and bedrock zones. To demonstrate this performance, a series of maps of water levels in the overburden and bedrock from the GSM performance monitoring have been prepared as part of a follow-up evaluation of the effectiveness of the upgrades, and are included in Appendix N.

The first map is from September 2005 (Appendix N, Figure 1), a period when the GSM was shut down for maintenance and implementation of the upgrade measures such that there is no induced drawdown of the aquifer. Also, this mapping is at the end of the normal seasonal dry period and ground water levels are low. Ground water flow generally is to the east towards the wetlands across Route 152, with a slight downward to neutral gradient between the overburden and bedrock over most of the immediate area. Subsequently by late

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results of earlier chemical testing of ground water during packer tests of each borehole are included in Appendix M.

October 2005 (Appendix N, Figure 5), after significant (more than 12 inches) rainfall, ground water levels rose significantly across most of the GSM area, in spite of a resumption of pumping.[73] This demonstrates that the while the GSM may be effective in controlling ground water migration, significant seasonal fluctuation of the water table will still occur in response to active recharge of the water table zone from both a rise in water levels in Turnpike Lake and local infiltration.

Subsequently, as the GSM has continued to operate at the adjusted pumping rates, a relatively stable water level regime has formed. This regime is best illustrated by considering the overburden and bedrock maps for June 28, 2006 (see Figures 11 and 22 in Appendix N). In the overburden zone (Figure 11) the GSM is shown to be effective in preventing the flow of ground water to the east as a result of the HDPE barrier wall. Across this barrier, looking west to east (upgradient to downgradient), ground water levels drop about 1.5 feet in the north near piezometers P7/8, 8 feet in the middle near piezometers P3/4, and 5.5 feet to the south near piezometers P9/13. Overburden water elevations east of the barrier wall remain low in June 2006, in spite of the relatively higher seasonal levels observed elsewhere on the Site to the west. These findings demonstrate that with the shutdown of water supply in the overburden zone from the west, water east of the HDPE barrier is being effectively drained into the underlying bedrock zone in response to pumping. Also, a subtle depression of the water table has formed west of the barrier wall in the vicinity of EW04/MW12A, with a convergence of flow from the north and south on this area. These conditions are consistent with the downward drainage of water into the underlying bedrock zone induced by the pumping.[74] These conditions are all consistent with the effective containment of the overburden zone by the GSM when operated at current pumping rates.

To confirm the interpretation of ground water flow conditions in the area of the GSM, the ground water model developed for the Site was also used to examine the effect of pumping on water levels and ground water flow patterns (see Appendix H). Under steady state pumping conditions, the model indicates that the effective GSM capture zone for the overburden aquifer extends east to approximately the western edge of Route 152 (corresponding approximately to the green space along the eastern border of the Site). Within this area, ground water in the overburden aquifer drains into the underlying bedrock and is pulled back to the west where it is removed by the extraction wells.

In the shallow bedrock zone, the pumping of the GSM is again found to cause significant drawdown of water levels (see Figure 22 of Appendix N). This drawdown in the bedrock causes a significant increase in the natural downward gradient from the overburden to bedrock zones throughout the area of the GSM. Effective capture of flow in the bedrock is demonstrated in the northern half of the GSM by a reversal of the natural (eastward) hydraulic gradient in piezometers P7a and P8a (near EW05) and P14a and P15a (between EW03 and EW04). Also, significant drawdown of the bedrock water level is apparent downgradient of the GSM at P15a, indicating the effective capture zone of the GSM in this area extends well to the east of the GSM barrier wall, thereby effectively controlling migration in the area immediately beyond (east) of the HDPE barrier wall in both the overburden and bedrock zones.

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73 Ground water levels in the northern portion of the GSM rose nearly 8 feet over this time.

74 During the initial pump testing of the production wells, drawdown of the water levels in the overburden aquifer upgradient of the HDPE barrier wall was also observed, a condition consistent with the drainage of water from the overburden zone into the extraction wells and the underlying bedrock. This drawdown is illustrated on the overburden maps in Appendix N.

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Conditions in the southern portion of the GSM are more complex, potentially related to the major fracture zone in this area. In the southernmost area (between EW01 and EW02) significant drawdown and a reversal of hydraulic gradient along the major fracture zone is observed when comparing water levels in P12a and P13a. This drawdown extends well to the east of the HDPE barrier wall and should effectively control the downgradient movement of ground water in the overburden and bedrock zones.

Further north in the area between EW02 and EW03, less effective capture is apparent. In this area there is a general reversal of hydraulic gradient on the west side (upgradient) of the HDPE barrier wall, as can be seen by comparing water levels in piezometers P1a/2a/3a. The lowest water level in this vicinity is at P1a, which sits in a hydraulic "saddle" that forms between the pumping centered on EW01/EW02 and EW03/EW04. This reversal of gradient indicates that ground water flowing today from upgradient AOCs to the west into this area is effectively captured.

Immediately to the east of the HDPE barrier wall, however, the natural eastward gradient is maintained in spite of the pumping. This can be seen by comparing water levels in P3a/4a and MW15/17. Also, unlike areas to the north and south, there is much less bedrock drawdown induced by pumping from wells EW02 and EW03, limiting the effectiveness of the GSM in projecting hydraulic control downgradient of the HDPE barrier wall. This is a potential concern because historic water quality data suggest that DNAPL-like conditions likely existed immediately east of the barrier wall in this area (i.e. at monitoring wells MW15/17), which if not effectively controlled, could represent a long-term source of CVOCs to migrate into areas to the east of Route 152. Although there is some suggestion in the water level data that drainage of ground water east of the barrier wall extends to the area of P4a, it apparently does not extend as effectively to MW15/17.

The reasons that the drawdown in the bedrock in this area is more subdued are not entirely clear but may relate to one of two explanations. First, the natural permeability of the overburden zone, or the installation of the HDPE barrier wall, may be allowing preferentially higher recharge of the bedrock in this area, thereby supporting a higher water level in the shallow bedrock immediately adjacent to the HDPE barrier wall, which prevents further drawdown in the bedrock. Second, bedrock fractures in the area may not be effectively drained by pumping wells EW02 and EW03 to the south and north, respectively. Of these two theories, the latter seems more plausible based on the currently known information.

The prior drilling on the Site indicates that fracturing in the bedrock is predominantly high angle to near vertical, meaning that a vertically drilled well will only directly intercept immediately nearby fractures. Fractures farther from the well borehole may be less effectively drained unless there is a significant amount of transverse fracturing within the major lateral/vertical fracture pattern. In this area one major fracture zone was identified, running across the Site in an east-west direction. This fracture zone crosses the GSM between EW01 and EW02. If sympathetic parallel fractures developed along the axis of this major fracture trace (a condition that is not uncommon), it is plausible that these fractures would be oriented east-west, with a near vertical dip, running between EW02 and EW03. Without significant transverse fracturing to the north and south across this area, effective drainage of water from this secondary fracture zone to the extraction wells may be inhibited.

Additional geophysical investigations were conducted from June through September, 2008 in order to further characterize the bedrock zones in the vicinity of the GSM and provide

necessary information to support the potential placement of an additional extraction well to improve GSM capture efficiency.

Downhole geophysical logging of extraction wells EW01, EW02 and EW03; nearby monitoring wells MW17 and MW45B; and piezometer P12a, was conducted from June 24, 2008 through July 2, 2008. Fluid temperature and fluid resistivity logs were generated to identify hydraulically active water bearing zones; caliper logs were generated to map borehole diameters and identify fracturing along the borehole wall; acoustic televiewer logs were used to determine the location, strike and dip of fractures; and heat pulse flowmeter logs were used to determine the direction and rate of flow in the vicinity of identified fracture zones. This information was summarized in a report prepared by LFR Inc. (2009b) and summary figures are provided in Appendix U.

Overall, an abundance of high angle fractures was confirmed during the geophysical logging. The open planar features dip at angles ranging from approximately 10 to 90 degrees from horizontal with the majority of open planar features (64%) being high angle, dipping at 60 to 90 degrees. The orientation of the majority of the open planar features cluster in three general groups:

- Dipping towards the east – striking north,
- Dipping towards the south to south-southwest – striking east to east-southeast, and
- Dipping towards the southeast – striking northeast

The downhole geophysical data suggests that the overall fabric of the bedrock changes from EW01 to EW03 with the predominant strike of the fractures rotating from east to east-southeast at EW01 to north to southeast at EW03. This change is consistent with the previously inferred presence of a hydraulic divide between EW02 and EW03.

The information generated from the downhole geophysical logging was augmented by surface geophysical testing (including seismic refraction profiling, two-dimensional (2D) multi-electrode resistivity profiling, and VLF [very low frequency] profiling) performed from July 17, 2008 through September 5 2008. This information was summarized in a report prepared by LFR Inc. (2009b) and summary figures are provided in Appendix U.

The southern east-west trending fracture zone between EW01 and EW02 that was originally inferred from pumping test groundwater elevation data (see Figure 19, Appendix M) was further substantiated from the correlation and trend of anomalies observed in the surface geophysical data, which indicated a relatively high angle fracture zone in the bedrock trending roughly west-southwest to east-northeast. This trend is oriented on an axis through piezometers P12a and P13a and likely extends toward the upper courtyard area in the vicinity of the former drywell.

Based on results of the geophysical testing, and considering the high concentrations of CVOCs that have existed in the bedrock immediately downgradient of the HDPE barrier wall near MW15/17, BASF performed additional upgrades to increase flow at EW02. In January 2010, BASF replaced the 1-inch diameter downhole riser at EW02 with a 2-inch riser and installed an additional access manhole approximately 50 feet north of EW02. Approximately 50 feet of 1-inch conveyance piping from EW02 to the new access manhole was also

replaced with 2-inch line. The purpose of the manhole was to facilitate access to the 1-inch conveyance piping from EW02 for periodic cleaning/jetting operations, which were formerly conducted from Manhole #1 near EW06.

BASF also deepened the EW02 extraction well boring from the existing depth of 200 feet bgs to approximately 302 feet bgs and increased the pumping rate at this well in order to improve groundwater capture in this area. The EW02 deepening activities were completed in September 2010. A boring log documenting the observations made during the deepening activities is provided in Appendix B. Following deepening, the existing 3 horsepower extraction pump was reinstalled in EW02 and the pump intake elevation was lowered from approximately 194 to 279 feet bgs. BASF is currently conducting evaluations to select the optimal extraction pump to be permanently installed in EW02 including infrastructure implications such as electrical wiring requirements and the potential installation of a variable frequency drive (VFD).

As an ongoing effort to further optimize the performance of the GSM, BASF conducted a pilot test to evaluate the effect of increasing the diameter of the remaining 1-inch diameter conveyance piping to temporary 2-inch diameter piping from EW02 to the 2-inch diameter piping at manhole #2 leading to the treatment system. It has been observed that the existing 1-inch diameter piping combined with frequent clogging by iron and manganese precipitate has greatly reduced the ability to maximize the extraction flow rate from EW02. The EW02 piping pilot test activities were completed from July to September 2010. Based on the favorable results of the piping pilot test, BASF is currently planning to install permanent 2-inch diameter conveyance piping from EW02 to Manhole #2 and then connect to the existing 2-inch diameter conveyance line originally connected to EW06.

Based on a preliminary evaluation of the shallow bedrock groundwater elevation data from before and after the EW02 deepening and conveyance piping upgrade pilot test, these optimization efforts have significantly improved the available extraction flow rate from EW02 (approximately 27 to 28 GPM) and overall hydraulic capture in the bedrock around the GSM, particularly in the area between EW01 and EW02, and have resulted in a hydraulic gradient reversal that extends to the east beyond Taunton Street and piezometers P16/a/c. See Figures 13.2 and 13.3 depicting the shallow bedrock groundwater elevation contours from June 30, 2010 prior to deepening and November 10, 2010 after deepening and the installation of the temporary larger diameter conveyance piping. In addition to these effects, the GSM optimization activities have resulted in the following effects to the GWTP operation:

- Increased VOC, manganese, and total dissolved solids loading at the GWTP;
- Increased water treatment chemical usage at the GWTP;
- Increased granular activated carbon (GAC) usage; and
- Increased GWTP operation and maintenance (O&M) efforts.

At present, there is only preliminary data available to evaluate the improvements gained through the deepening of EW02 and the larger conveyance piping upgrade. The long term effects of these optimization activities will be evaluated through an ongoing examination of overburden and bedrock groundwater elevation data around the GSM, groundwater quality trends from EW02, the remaining extraction wells, and groundwater monitoring wells

upgradient and downgradient of the GSM, as well as affects on the GWTP O&M activities including water treatment chemical and GAC usage, electrical consumption, and overall O&M efforts.The ground water model was also used to investigate the effectiveness of the GSM in controlling flow in the bedrock. At steady state, the model predicts that the GSM is effective in capturing the entire bedrock flow that crosses the area of the GSM (within the boundary conditions of the model, down to about 200 feet bgs), effectively meeting the performance standard for ground water Stabilization. The effective capture zone in bedrock is predicted by the model to extend to just east of Route 152, or somewhat farther downgradient than was predicted for the overburden. This prediction is consistent with the observations of significant drawdown in the bedrock and gradient reversal near piezometers P13a and P15a, east of the HDPE barrier wall. The fact that complete capture of the bedrock flow is predicted supports a conclusion that the overall level of ground water pumping is likely sufficient to achieve performance standards, however, this does not guarantee that all fracture zones are necessarily effectively controlled. The model is built on an assumption that the bedrock behaves as an equivalent porous media, and ground water is free to drain in any direction consistent with prevailing hydraulic gradients. As such, it is only an approximation of the actual flow through the fractured bedrock.

13.5 Additional Stabilization Measures

Two additional Stabilization Measures have either been recommended (for Building 8) or have been implemented (Upper Courtyard drywell) in light of the findings of the RFI, as discussed below.

13.5.1 Soil Gas Control Beneath Buildings 8

The investigation of CVOCs in soil gas beneath Building 8 identified two predominant sources of CVOCs in the vicinity of AOC 5 and AOC 14. While no significant concentrations of CVOCs were found in soil samples collected from these AOCs, and no DNAPL was observed in soil or the underlying ground water, it is apparent that both areas are a potential source of CVOCs migrating via soil gas into Buildings 8 and 10. This conclusion is corroborated by the detection of CVOCs in indoor air within Building 8 in earlier air quality tests at levels well above detection limits and background concentrations (see Appendix I).[75]

BASF is currently leasing Buildings 8 and 10 for industrial use. Longer term, BASF is considering whether to continue this type of use of these buildings or to demolish them. If they were to continue in use, then an additional Stabilization Measure (e.g. a subslab ventilation system for recovery/treatment of CVOCs in soil gas) should be investigated and potentially installed to reduce the migration of CVOCs into the overlying buildings. In support to this Stabilization Measure, supplemental investigative activities are also recommended to verify the occurrence (or absence) of CVOCs in the vertical direction beneath the building slabs, and also to ascertain if potential remaining source(s) of CVOCs remain under Buildings 8 and 10. Alternatively if the buildings were demolished, then the concern with CVOC migration indoors would be removed.

13.5.2 Dry Well Removal

The Supplemental Design Investigations of AOC 7 identified a former dry well that was apparently used for the disposal of spent solvents. Very high concentrations of CVOCs were

75 At the time of these tests there was no ongoing use of CVOCs in the buildings, and prior process equipment related to historic degreasing operations had been removed. This indicates that the likely source of CVOCs was related to the conditions beneath the building floors, and not an internal source.

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observed in soil and ground water in the immediate area of the drywell, suggesting the local presence of DNAPL conditions near the base of the overburden zone. This drywell was located near the major east-west fracture zone that traverses the Site through the southern portion of the GSM. In light of the potential for a significant source of CVOCs to continue to affect the quality of groundwater in this area and downgradient in the area of the GSM, work plans were submitted and accepted by EPA as part of Interim Stabilization Measures. The first stage of effort involved dual phase vapor extraction (DPVE), which was undertaken as an interim remedy for this area. An initial one-week limited DPVE pilot testing program was conducted in November 2004 and a follow on three-month pilot program was attempted in the late summer 2005 to evaluate this remedial alternative (LFR Levine Fricke, 2005b; LFR, 2006a). However, because sufficient drawdown levels could not be achieved due to higher than expected hydraulic conductivity in the bedrock in this area, pilot testing was discontinued within the first few days of this effort, and instead direct removal via excavation of the source of CVOCs in the overburden zone around the drywell was determined to be appropriate based on discussions with EPA. This excavation work was performed in late 2007 – early 2008. This work was summarized in a report prepared by LFR, Inc. in April 2009. Summary tables and figures are provided in Appendix V.

Excavation of the area (approximately 65 feet long by 30 feet wide) down to the bedrock surface (approximately 20 to 27 feet bgs) began on October 25, 2007 and continued until December 18, 2007. The area of excavation is depicted in Figures 2 and 3 of Appendix V. Due to the excavation depth required, sheet piling was utilized around the perimeter of the excavation, and approximately 80,000 gallons of groundwater was produced via dewatering operations. Eight monitoring wells were destroyed during the excavation ((LFR1, MW28, MW105, P16, P17, P20, P21 and P23). In addition, the remains of a second, previously unknown former transformer pad including a concrete slab, metal strapping, and pieces of a utility pole and also a concrete-encased subsurface electrical line, were uncovered along the northern edge of the excavation. Testing of excavated soils revealed the presence of PCBs. Excavated soils were stockpiled by depth and sampled for PCB analysis. PCB concentrations in soils excavated from 0 to 4 feet bgs ranged from 0.39 to 93 mg/kg, with two samples containing greater than 50 mg/kg PCBs. PCB concentrations in soils excavated from 4 to 8 feet bgs ranged from 1.46 to 6.55 mg/kg, and PCB concentrations in soils excavated from 8 to 20 feet bgs ranged from about 0.3 to 1.2 mg/kg (see Table 1 of Appendix V). In total, approximately 1,695 tons (57 truck loads) of soil were transported off-site to appropriate waste management facilities based on the levels of PCBs present in the soil. Upon completion, the excavation was backfilled with clean fill.

14 References

Agency for Toxic Substances and Disease Registry (ATSDR). 1989. Toxicological Profile for Copper. Draft.

Agency for Toxic Substances and Disease Registry (ATSDR). 1990. Toxicological Profile for Silver. TO-90/24.

Agency for Toxic Substances and Disease Registry (ATSDR). 1992. Toxicological Profile for Zinc. Draft.

Agency for Toxic Substances and Disease Registry (ATSDR). 1993. Toxicological Profile for Cadmium. TP-92/06.

Alison, J.D. and T.L. Alison. 2005. Partition Coefficients for Metals in Surface Water, Soil, and Waste. Report Prepared for USEPA Office of Research and Development. EPA/600/R-05/074. July

American Society of Heating, Refrigeration, and Air-Conditioning Engineers, Inc. (ASHRAE). 1993. ASHRAE Handbook - Fundamentals. Atlanta, GA.

Ankley, G.T. 1996. Evaluation of Metal/Acid-volatile Sulfide Relationships in the Prediction of Metal Bioaccumulation by Benthic Invertebrates. Environmental Toxicology and Chemistry. 15:2138-2146.

Army Corps of Engineers (ACOE). 1988. Relationship Between PCB Tissue Residues and Reproductive Success of Fathead Minnows. Environmental Effects of Dredging Technical Note EEDP-01-13. 9 pp.

Barnthouse, L.W., W.R. Munns, and M.T. Sorensen. 2008. Population-level Ecological Risk Assessment. CRC Taylor & Francis, Boca Raton, FL.

Becker, D.S., and T.C. Ginn. 2008. Critical Evaluation of the Sediment Effect Concentrations for Polychlorinated Biphenyls. Integrated Environmental Assessment and Management 4(2):156–170.

Berlin, R. and W. Duggan. 1995. Site Characterization Program Exterior of Plainville, Massachusetts Plant Engelhard Corporation. Prepared for Engelhard Corporation, Plainville, Massachusetts.

Berlin, R.E. and W.P. Duggan. 1997. Decommissioning Work Plan for Soils and Sediments at the Engelhard Corporation Plainville Massachusetts Facility. June

Beyer, W.N. 1990. Evaluating Soil Contamination. U.S. Fish and Wildlife Service Biological Report 90(2). 25 pp.

Beyer, W.N. and C. Stafford. 1993. Survey and Evaluation of Contaminants in Earthworms and in Soil Derived from Dredged Material at Confined Disposal Facilities in the Great Lakes Region. Environmental Monitoring and Assessment. 24:151-165.

Baes C.F. III, R.D. Sharp, A.L. Sjoreen, and R.W. Shor. 1984. A Review and Analysis of Parameters for Assessing Transport of Environmentally Released Radionuclides Through Agriculture. Oak Ridge National Laboratory Report ORNL-5786. 148 pp.

Bechtel. 1998. Empirical Models for the Uptake of Inorganic Chemicals from Soil by Plants. Bechtel Jacobs Company, LLC. September.

Bode, R.W., M.A. Novak and L.E. Abele. 1991. Quality Assurance Work Plan for Biological Stream Monitoring in New York State. Stream Biomonitoring Unit, Division of Water, NYS Department of Environmental Conservation. Albany, NY. 78 p.

Buchman, M.F. 1998. NOAA Screening Quick Reference Tables. NOAA HAZMAT Report 97-2, Seattle, WA. 12 pp.

Burt, William. 1998. Personal communication with Mr. Willium Burt of the Plainville Department of Public Health. March 3.

California Air Pollution Control Officers Association (CAPCOA). 1993. Air Toxics "Hot Spots" Program Risk Assessment Guidelines.

Chow, Ven Te. 1959. Open Channel Hydraulics. McGraw-Hill Book Company. New York. D-84-2.

Clausen, J.L., M. Hoyt, E. Wessling, B. Stearns, B. Ramirez and N. Korte. 2004. Acetone production as a result of sodium bisulfate preservation of soil samples. *Soil and Sediment Contamination* 13:245-254.

DeGraaf, R.M. and D.A. Richard. 1986. Forest Wildlife of Massachusetts. University of Massachusetts Cooperative Extension C-182. 53 pp.

DeGraaf, R.M. and D.D. Rudis. 1987. New England Wildlife: Habitat, Natural History, and Distribution. USDA Forest Service General Technical Report NE-108. 491 pp.

DeGraaf, R.M., M. Yamasaki, W.B. Leak, and J.W. Lanier. 1992. New England Wildlife: Management of Forested Habitats. USDA Forest Service General Technical Report NE-144. 271 pp.

Diercxsens, P., D. de Weck, N. Borsinger, B. Rosset, and J. Tarradellas. 1985. Earthworm Contamination by PCBs and Heavy Metals. Chemosphere. 14:511-522.

Dillon, T.M. 1984. Biological Consequences of Bioaccumulation in Aquatic Animals: An Assessment of the Current Literature. Army Corps of Engineers Technical Report.

Di Toro, D.M., C.S. Zarba, D.J. Hansen, W.J. Berry, R.C. Swartz, C.E. Cowan, S.P. Pavlou, H.E. Allen, N.A. Thomas and P.A. Paquin. 1991. Technical basis for establishing sediment quality criteria for nonionic organic chemicals using equilibrium partitioning. Environ. Toxicol. Chem. 10: 1541-1583.

EC and MOE. 2008. Canada-Ontario Decision-Making Framework for Assessment of Great Lakes Contaminated Sediment. Environment Cananda and Ontario Ministry of the Environment. ISBN 978-0-662-4618-7. http://dsppsd.pwgsc.gc.ca/collection_2010/ec/En164-14-2007-eng.pdf

Eckenfelder/Brown and Caldwell. 1999. Draft Comprehensive Site Assessment Report, Plainville Landfill, Plainville, Massachusetts. Volumes I and II. April.

ECS. 2002. Strategic Approach for Completion of the RFI Process and Scoping Proposal for Supplemental RFI. October 4.

ECS. 2004a. Groundwater Stabilization Measure Report, Engelhard Corporation Site, Plainville, MA. June 24

ECS. 2004b. Supplemental Design Investigation, Courtyard Area (AOC 7), Engelhard Corporation Site, Plainville, MA. July 9.

ECS. 2004c. Monitored Natural Attenuation Report. July 15.

ECS. 2005. Groundwater Stabilization Measure (GSM) Upgrade Report, Engelhard Corporation Site, Plainville, MA. February.

Efroymson, R.A., M.E. Will, and G.W. Suter II. 1997b. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision. Environmental Restoration Division, ORNL. ES/ER/TM-126/R2.

Efroymson, R.A., M.E. Will, G.W. Suter II, and A.C. Wooten. 1997a. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision. Environmental Restoration Division, ORNL Environmental Restoration Program. ES/ER/TM-85/R3.

Engelhard Corporation. 2004. July 15, 2004 Meeting Minutes on AOC 7 Supplemental Design Investigation and Overall Radiological Project Pathforward. Issued to US EPA, MA DPH and MA DEP. November 3.

ENVIRON Corporation. 1989. Results of Phase I and Phase II Field Investigations, Engelhard Corporation, Plainville, Massachusetts. March 13.

ENVIRON Corporation. 1990. Phase III Summary Report, Engelhard Corporation, Palinville, Massachusetts. Draft. January 12.

ENVIRON Corporation. 1994a. Stabilization Plan for the Engelhard Corporation Facility in Plainville, Massachusetts. August 17.

ENVIRON Corporation. 1994b. RCRA Facility Investigation Proposal, Engelhard Corporation, Plainville, Massachusetts. January 7.

ENVIRON Corporation. 1995a. RCRA Facility Investigation, Phase I Interim Report, Engelhard Corporation, Plainville, Massachusetts. August 31.

ENVIRON Corporation. 1995b. Submittal of Additional Data Collected for the Engelhard Stabilization Plan Design. July 28.

ENVIRON Corporation. 1997. Human Health and Ecological Risk Assessment. Second Interim Deliverable. Engelhard Facility, Plainville, Massachusetts. December 30.

ENVIRON Corporation. 1996. Revised Addendum to Appendix A of the August 17, 1994 Stabilization Plan for the Engelhard Corporation Facility, Plainville, MA. September 20.

ENVIRON Corporation. 1999. Draft RCRA Facility Investigation (RFI). Engelhard Corporation, Plainville Massachusetts. September 2.

ENVIRON Corporation. 2001. November 20 Letter Report to Thomas Brown, Engelhard Corporation re: Air Sampling Conducted at Engelhard Facility, Plainville, Massachusetts.

ENVIRON Corporation. 2005. Supplemental RFI Work Plan, Engelhard Corporation Facility, Plainville Massachusetts. March 10.

ENVIRON Corporation. 2010. Quality Assurance Project Plan – Supplemental Surface Water and Sediment Sampling, BASF Plainville MA Facility. April.

ESTCP. 2009. Environmental Security Technology Certification Program Final Report: Demonstration and Certification of Amphibian Ecological Risk Assessment Protocol. ESTCP Project ER-0514 TR-2318-ENV. http://serdp-estcp.org/Program-Areas/Environmental-Restoration/Risk-Assessment/ER-200514

Everett, M and D. Lepley. 2002. Nabalus serpentarius Pursh (Lion's Foot) Conservation and Research Plan for New England. New England Wild Flower Society, Framingham, Massachusetts, USA. http://www.newenglandwild.org/docs/pdf/Nabalusserpentarius.pdf

Fischer, E. and L. Koszorus. 1992. Sublethal Effects, Accumulation Capacities and Elimination Rates of As, Hg and Se in the Manure Worm, Eisenia fetida (Oligochaeta, Lumbricidae). Pedobiologia. 36:172-178.

Fitchko, J. 1989. Criteria for Contaminated Soil/Sediment Cleanup. Pudvan Publishing Co., Inc., Northbrook, IL.

Foster Wheeler Environmental Corporation. 1995. Deep Bedrock Investigation Preliminary Results and Proposed Well Designs for Inner Perimeter Monitoring Wells MW38 and MW22C. December 15.

Foster Wheeler Environmental Corporation. 1996. Deep Bedrock Investigation Preliminary Results and Proposed Well Designs for Inner Perimeter Monitoring Wells MW24C, MW332 and MW39. February 8..

Foster Wheeler Environmental Corporation. 1998. Groundwater Treament Plant. Final Stabilization Report. August.

Foster Wheeler Environmental Corporation. 1999. Groundwater Monitoring Program Results. June 23.

Franson, M.H. (ed). 1992. Standard Methods for Examination of Water and Wastewater, 18th Edition. American Public Health Association, Washington DC.

Freeze and Cherry. 1979. Groundwater. Prentice-Hall Incorporated. New Jersey.

Fuchsman, P.C., T.R. Barber, J.C. Lawton and K.B. Leigh. 2006. An evaluation of cause effect relationships between PCB concentrations and sediment toxicity to benthic invertebrates. Environ. Toxicol. Chem. 25:2601-2612.

Gauthier, T.D. and B.L. Murphy. 2003. Age-dating groundwater plumes based on the ratio of 1,1-dichloroethylene to 1,1,1-trichloroethane: An uncertainty analysis. *Environmental Forensics* 4:205-213.

Gilbert, R.O. 1987. Statistical Methods for Environmental Pollution Monitoring. Van Nostrand Reinhold, New York, New York.

Hansen, D.J. and W.J. Berry. 1996. Sediment-metals Toxicity Can Occur Only When SEM is Greater Than AVS. SETAC News. 16(3):15-16.

Hazardous Substance Data Bank (HSDB). 1998. On-line Computer Data Base. National Library of Medicine, Bethesda, MD.

Hilsenhoff, W. L. 1982. Using a Biotic Index to Evaluate Water Quality in Streams. Technical Bulletin No. 132. Department of Natural Resources, Madison, WI.

Howard, P., R.S. Boethling, W.F. Jarvis, W.M. Meylan, and E.M. Michalenko. 1991. Handbook of Environmental Degradation Rates. Lewis Publishers, Chelsea, MI.

Jarvinen, A.W. and G.T. Ankley. 1999. Linkage of Effects to Tissue Residues: Development of a Comprehensive Database for Aquatic Organisms Exposed to Inorganic and Organic Chemicals. Society of Environmental Toxicology and Chemistry (SETAC) Press, Pensacola, FL. 358 pp.

Jones, D.S., G.W. Suter II, and R.N. Hull. 1997. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-associated Biota: 1997 Revision. Environmental Restoration Division, ORNL Environmental Restoration Program.

Karickhoff, S.W. 1984. Organic Pollutant Sorption in Aquatic Systems. Journal of Hydraulic Engineering, Vol. 110, p 707-735. American Society of Civil Engineers.

Lambe and Whitman. 1969. Soil Mechanics. John Wiley and Sons. New York.

Landre, E. 1994. Ninety-fourth Christmas Bird Count, Millis, Massachusetts. Field Notes. 48(4):459.

Landre, E. 1995. Ninety-fifth Christmas Bird Count, Millis, Massachusetts. Field Notes. 49(4):429.

Landre, E. 1996. Ninety-sixth Christmas Bird Count, Millis, Massachusetts. Field Notes. 50(4):454.

Landre, E. 1997. Ninety-seventh Christmas Bird Count, Millis, Massachusetts. Field Notes. 51(2):243-244.

Langmuir, D., P. Chrstowski, R. Chaney, and B. Vigneault. 2003. Issue Paper on the Environmental Chemistry of Metals. Submitted to U.S. EPA Risk Assessment Forum by ERG, Lexington, MA.

Lapham, Wayne W. 1988. Yield and Quality of Ground Water from Stratified-Drift Aquifers, Taunton River Basin, Massachusetts. Water-Resources Investigations Report 86-4053. United States Geological Survey.

Lapham, Wayne W. and Julio C. Olimpio. 1989. Yield and Quality of Ground Water from Stratified-Drift Aquifers, Taunton River Basin, Massachusetts: Executive Summary. Water-Resources Investigations Report 86-4053A. United States Geological Survey.

Lenat, D.R. 1993. A biotic index for the southeastern United States: derivation and list of tolerance values, with criteria for assigning water-quality ratings. J. N. Am. Benthol. Soc., 12(3): 279-290.

Levey, D.J. and W.H. Karasov. 1989. Digestive Responses of Temperate Birds Switched to Fruit or Insect Diets. Auk. 106:675-686.

LFR Levine Fricke. 2005a. Future Land Use Proposal Application – 30 Taunton Street, Plainville Massachusetts. February 24.

LFR Levine Fricke. 2005b. AOC 7 Initial Courtyard Remediation Report (Draft) – 30 Taunton Street, Plainville Massachusetts. April.

LFR Levine Fricke. 2005c. Monitored Natural Attenuation Report – 30 Taunton Street, Plainville Massachusetts. October 4.

LFR Levine Fricke. 2006a. Results of Dual Phase Vapor Extraction (DPVE) Extended Pilot Test – Engelhard Facility, 30 Taunton Street, Plainville Massachusetts. March 27.

LFR Levine Fricke. 2006b. Groundwater Stabilization Upgrade Report Technical Memo – Draft. October 31.

LFR Inc. 2007. ASTM Phase II Environmental Site Assessment, 43 Taunton Street, Plainville, Massachusetts, September 20. LFR Project # 010-13150-00-160.

LFR Inc. 2008. PCB Soil Removal Completion Report - BASF Catalysts, LLC, 32 Taunton Street, Plainville, Massachusetts, June 26. LFR Project # 010-13150-00-170.

LFR Inc. 2009a. Upper Courtyard Remediation/Drywell Excavation Construction Closeout Report - BASF Catalysts, LLC, 32 Taunton Street, Plainville, Massachusetts, April 17. LFR Project # 010-13150-00-250.

LFR Inc. 2009b. Geophysical Investigation Report - BASF Catalysts, LLC, 32 Taunton Street, Plainville, Massachusetts. May 12. LFR Project # 010-13150-00-250.

LFR Inc. 2009c. Summary of Courtyard Well Replacement and GSM Field Activities. Technical Memorandum. October 22.

Long, E.R. and L.G. Morgan. 1990. The Potential for Biological Effects of Sediment-sorbed Contaminants Tested in the National Status and Trends Program. NOAA Technical Memorandum NOS OMA 52.

Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder. 1995. Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. Environmental Management. 19:81-97.

Lyman, W.J., W.F. Reehl, and D.H. Rosenblatt. 1990. Handbook of Chemical Property Estimation Methods. American Chemical Society, Washington D.C.

Lyons. Paul C. 1977. Report on the Bedrock Geology of the Narrangansett Basin, Massachusetts and Rhode Island. U.S. Geological Survey. September.

Ma, W., W. Denneman, and J. Faber. 1991. Hazardous Exposure of Ground-living Small Mammals to Cadmium and Lead in Contaminated Terrestrial Ecosystems. Archives of Environmental Contamination and Toxicology. 20:266-270.

MacDonald, D.D., C.G. Ingersoll and T.A. Berger. 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Arch. Environ. Contam. Toxicol. 39: 20-31.

Mackay, D., W.Y. Shiu, and K.C. Ma. 1992. Illustrated Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals. Vol. I. Lewis Publishers, Boca Raton, FL.

Maki, A.W. and J.R. Duthie. 1978. Summary of Proposed Procedures for the Evaluation of Aquatic Hazard. Pages 153-163 IN Cairns, J., Jr., K.L. Dickson, and A.W. Maki (eds). Estimating the Hazard of Chemical Substances to Aquatic Life. ASTM STP 657.

MARIN Environmental. 2001. Preliminary Design Report for Soil Remediation Project. Prepared for Engelhard Corporation, Plainville, Massachusetts.

Martin, A.C., H.S. Zim, and A.L. Nelson. 1951. American Wildlife and Plants: A Guide to Wildlife Food Habits. Dover Publications, Inc. New York, NY. 500 pp.

Massachusetts Contingency Plan (MCP), 1993, (Table 3; soil category S-2 and ground water category GW-1).

Massachusetts Department of Environmental Protection (MassDEP). 1996. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. April.

Massachusetts Department of Environmental Protection (MassDEP). 2006. "Assessing Risk of Harm to Benthic Invertebrates " http://www.mass.gov/dep/water/laws/ecotuaai.pdf

Massachusetts Department of Environmental Quality (MDEQ). 1982. Division of Water Pollution Control. Baseline Water Quality Studies of Selected Lakes and Ponds; Taunton River Basin; 1975, 1979 and 1980. January. Publication No. 12674-116-50-1-82-CR.

Massachusetts Division of Fisheries & Wildlife (MDFW). 1995a. Letter from R. Keller, Aquatic Biologist, to W. Kappleman, ENVIRON Corporation, regarding fisheries data for Turnpike Lake and associated tributaries. 14 September.

Massachusetts Division of Fisheries & Wildlife (MDFW). 1995b. Letter from H. Dinkeloo, Natural Heritage & Endangered Species Program, to W. Kappleman, ENVIRON Corporation, regarding data on state-listed rare species in the vicinity of the Engelhard facility. 6 November.

Massachusetts Division of Fisheries & Wildlife (MDFW). 1997. Massachusetts Natural Heritage Atlas, 1997-1998 edition. Natural Heritage and Endangered Species Program, Westborough, MA.

Massachusetts Division of Fisheries & Wildlife (MDFW). 2010a. Massachusetts Division of Fisheries and Wildlife, BioMap2. http://www.mass.gov/dfwele/dfw/nhesp/land_protection/biomap/biomap_home.htm

Massachusetts Division of Fisheries & Wildlife (MDFW). 2010b. MassWildlife - Rare Species by Town MESA (Massachusetts Endangered Species Act) and Federal Status. http://www.mass.gov/dfwele/dfw/nhesp/species_info/town_lists/town_p.htm

Massachusetts Division of Fisheries & Wildlife (MDFW). 2010c. MassWildlife - Interactive Priority and Estimated Habitats. http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/online_viewer.htm

Massachusetts Water Resources Commission. 2004. Water Resources Commission Decision – Interbasin Transfer Application, Plainville Water Department, Lake Mirimichi Well Field. March 11.

Menzie, C.A., D.E. Burmaster, J.S. Freshman, and C.A. Callahan. 1992. Assessment of Methods for Estimating Ecological Risk in the Terrestrial Component: A Case Study at the Baird & McGuire Superfund Site in Holbrook, Massachusetts. Environmental Toxicology and Chemistry. 11:245-260.

Montgomery, J.H. 1996. Groundwater Chemicals Desk Reference, Second Edition. Lewis Publishers, Chelsea, MI.

Natural Heritage & Endangered Species Program (NHESP). 2006. Estimated Habitats of Rare Wildlife Datalayer - September 2006 (Updated December 2006) http://www.mass.gov/mgis/esthab.htm

Natural Heritage & Endangered Species Program (NHESP). 2010. Massachusetts Natural Heritage and Endangered Species Program, 2008 Priority Habitat and Estimated Habitat. http://maps.massgis.state.ma.us/PRI_EST_HAB_TEST/viewer.htm

New York State Department of Environmental Conservation (NYSDEC). 1994. Technical Guidance for Screening Contaminated Sediments. Division of Fish and Wildlife and Division of Marine Resources. 36 pp.

Niimi, A.J. 1996. PCBs in Aquatic Organisms. Pages 117-152 IN Beyer, W.N., G.H. Heinz, and A.W. Redmon-Norwood (eds). Environmental Contaminants in Wildlife: Interpreting Tissue Concentrations. Lewis Publishers, Boca Raton, FL. 494 pp.

North Carolina Department of Environment and Natural Resources (NCDENR), 2001. "Standard Operating Procedures for Benthic Macroinvertebrates." Biological Assessment Unit. April.

NUREG-1575. 1997. Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). December.

Oak Ridge Institute for Science and Education (ORISE). 1997. Letter Report to US NRC Re: Confirmatory Survey for Survey Units 1 and 2, Interior of Building 2, Engelhard Plant, Plainville MA. February 4.

Oak Ridge National Laboratory (ORNL). 1994. Estimating Exposure of Terrestrial Wildlife to Contaminants. ES/ER/TM-125. Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee. http://www.esd.ornl.gov/programs/ecorisk/documents/tm125.pdf

Oak Ridge National Laboratory (ORNL). 1996. Toxicological Benchmarks for Wildlife: 1996 Revision. ES/ER/TM-86/R3. http://www.esd.ornl.gov/programs/ecorisk/documents/tm86r3.pdf

Oak Ridge National Laboratory (ORNL). 1997a. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision. ES/ER/TM-85/R3. http://rais.ornl.gov/documents/tm85r3.pdf

Oak Ridge National Laboratory (ORNL). 1997b. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and

Heterotrophic Process: 1997 Revision. ES/ER/TM-126/R2. http://www.ornl.gov/~webworks/cpr/rpt/75155.pdf

Ontario Ministry of Environment and Energy (MOE). 1993. Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. ISBN 0-7729-9248-7. 27 pp.

Sample, B.E. and G.W. Suter II. 1994. Estimating Exposure to Terrestrial Wildlife to Contaminants. Environmental Restoration Division, ORNL ES/ER/TM-125.

Sample, B.E., D.M. Opresko, and G.W. Suter II. 1996. Toxicological Benchmarks for Wildlife: 1996 Revision. Environmental Restoration Division, ORNL ES/ER/TM-86/R3. 44 pp.

Sample, B.E., J.J. Beauchamp, R.A. Efroymson, and G.W. Suter II. 1998. Development and Validation of Bioaccumulation Models for Small Mammals. Environmental Restoration Division, ORNL ES/ER/TM-219.

Sample, B.E., M.S. Aplin, R.A. Efroymson, G.W. Suter II, and C.J.E. Welsh. 1997. Methods and Tools for Estimation of the Exposure of Terrestrial Wildlife to Contaminants. Environmental Sciences Division, Oak Ridge National Laboratory. ORNL/TM-13391.

Schwarzenbach, R.P., P.M. Gschwend, D.M. Imboden. 1993. Environmental Organic Chemistry. John Wiley & Sons, New York.

Shaler, N.S., J.B. Woodworth, and A.F. Foerste. 1899. Geology of the Narragansett Basin. United States Geological Survey.

Simmons, G.J. and M.J. McKee. 1992. Alkoxyresorufin metabolism in white-footed mice at relevant environmental concentrations of Aroclor 1254. Fundamental and Applied Toxicology. 19:446- 452.

Sorensen, M.T., W.R. Gala, and J.A. Margolin. 2004. Chemical-specific risk characterization – selecting the right tool for the job. Journal of Human and Ecological Risk Assessment (10) 245-269.

South Coast Air Quality Management District (SCAQMD). 1988. Multi-Pathway Health Risk Assessment Input Parameters Guidance Document, Prepared by Clement Associates, Inc. under contract #8798. June.

Sparling, D.W., S. Linder and C.A. Bishop. 2000. Ecotoxicology of Amphibians and Reptiles. SETAC Technical Publications Series, Pensacola FL.

Suter, G.W., B.W. Cornaby, C.T. Hadden, R.N. Hull, M. Stack and F.A. Zafran. 1995. An approach for balancing health and ecological risks at hazardous waste facilities. Risk Analysis, vol. 15, no. 2, pp. 221-231.

Suter, G.W. II and C.L. Tsao. 1996. Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision. Environmental Restoration Division, ORNL ES/ER/TM-96/R2. 54 pp.

Suter, G.W. II. 1989. Ecological Endpoints. Chapter 2 IN Warren-Hicks, W., B.R. Parkhurst, and S.S. Baker, Jr. (eds). Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference. EPA/600/3-89/013.

Suter, G.W. II. 1990. Endpoints for Regional Ecological Risk Assessment. Environmental Management. 14:9-23.

Suter, G.W. II. 1993. Ecological Risk Assessment. Lewis Publishers, Chelsea, MI. 538 pp.

Swanson, W.R., and J.A. Monacelli. 2010. "An Investigation of the Natural and Anthropogenic Contributions of Arsenic to Urban Fill Soil," *Proceedings of the Annual International Conference on Soils, Sediments, Water and Energy*: Vol. 15, Article 9.

Travis, C.C., and A.D. Arms. 1988. Bioconcentration of Organics in Beef, Milk, and Vegetation. Environmental Science and Technology. 22:271-274.

U.S. Department of Agriculture (USDA), Soil Conservation Service. 1989. Soil Survey of Norfolk and Suffolk Counties, Massachusetts. 194 pp.

U.S. Department of Energy (USDOE). 1982. Handbook on Atmospheric Diffusion. Office of Health and Environmental Research, Office of Energy Research. DOE/TIC-11223.

U.S. Environmental Protection Agency (USEPA). 1975. Use f the Water Balance Method for Predicting Leachate Generation from Solid Waste Disposal Sites. Office of Solid Waste Management Programs. October. EPA/530/SW-168.

U.S. Environmental Protection Agency (USEPA). 1983. Environmental Transport and Transformation of Polychlorinated Biphenyls. EPA/560/5-83/025.

U.S. Environmental Protection Agency (USEPA). 1988. Superfund Exposure Assessment Manual. EPA/540/1-88/001. Office of Remedial Response. Washington, D.C.

U.S. Environmental Protection Agency (USEPA). 1989a. Risk Assessment Guidance for Superfund. Volume I, Human Health Evaluation Manual (Part A). Interim Final.

U.S. Environmental Protection Agency (USEPA). 1989b. Exposure Factors Handbook. EPA/600/8-89/043. May.

U.S. Environmental Protection Agency (USEPA). 1989c. Supplemental Risk Assessment Guidance for the Superfund Program. Prepared by the U.S. EPA Region 1 Risk Assessment Work Group. EPA 901/5-89-001. Draft Final. June.

U.S. Environmental Protection Agency (USEPA). 1989d. Risk Assessment Guidance for Superfund. Volume II. Environmental Evaluation Manual. EPA/540/1-89/001.

U.S. Environmental Protection Agency (USEPA) Region I. 1989e. Supplemental Risk Assessment Guidance for the Superfund Program, Part 2 - Guidance for Ecological Risk Assessments, Draft Final. EPA/901/5-89/001.

U.S. Environmental Protection Agency (USEPA). 1989f. Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference. EPA/600/3-89/013.

U.S. Environmental Protection Agency (USEPA). 1989g. Rapid Bioassessment Protocols for use in Streams and Rivers: Benthic Macroinvertebrates and Fish. Plafkin, J.L., M.T. Barbour, K.D. Porter, S.K. Gross, and R.M. Hughes. Office of Water Regulations and Standards, Washington, D.C. EPA 440-4-89-001.

U.S. Environmental Protection Agency (USEPA). 1990. Assessment of Risks From Exposure of Humans, Terrestrial and Avian Wildlife, and Aquatic Life to Dioxins and

Furans From Disposal and Use of Sludge From Bleached Kraft and Sulfite Pulp and Paper Mills. EPA/560/5-90/013.

U.S. Environmental Protection Agency (USEPA). 1991a. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals).

U.S. Environmental Protection Agency (USEPA). 1991b. Memorandum: Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors". Interim Final. March 25.

U.S. Environmental Protection Agency (USEPA). 1991c. Ecological Assessment of Superfund Sites: An Overview. Eco Update, Volume 1, Number 2. Publication 9345.0-05I.

U.S. Environmental Protection Agency (USEPA). 1991d. Criteria for Choosing Indicator Species for Ecological Risk Assessments at Superfund Sites. EPA/101/F-90/051. 51 pp.

U.S. Environmental Protection Agency (USEPA). 1991e. Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment. EPA821/R91-100.

U.S. Environmental Protection Agency (USEPA). 1992a. Statistical Analysis of Ground water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance. July. 54 pp.

U.S. Environmental Protection Agency (USEPA). 1992b. Dermal Exposure Assessment: Principles and Applications. Office of Research and Development. EPA/600/8-91/011B. January.

U.S. Environmental Protection Agency (USEPA). 1992c. Risk Updates. USEPA Region I. December.

U.S. Environmental Protection Agency (USEPA). 1992d. SCREEN2 Model User's Guide. Office of Air Quality Planning and Standards. Research Triangle Park, NC. EPA-450/4-92-006. September.

U.S. Environmental Protection Agency (USEPA). 1992e. Framework for Ecological Risk Assessment. EPA/630/R-92/001.

U.S. Environmental Protection Agency (USEPA). 1993a. Addendum to the Methodology for Assessing Health Risks Associated with Indirect Exposure to Combustor Emissions. Exposure Assessment Group. EPA/600/AP-93-003. Review Draft. November.

U.S. Environmental Protection Agency (USEPA). 1993b. Wildlife Exposure Factors Handbook, Volume I of II. EPA/600/R-93/187a.

U.S. Environmental Protection Agency (USEPA). 1994a. Risk Updates. US EPA Region One. August.

U.S. Environmental Protection Agency (USEPA). 1994b. Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. OSWER Directive #9355.4-12. July 14.

U.S. Environmental Protection Agency (USEPA). 1994c. VLEACH: A One-Dimensional Finite Difference Vadose Zone Leaching Model - Version 2.1. Center for Subsurface Modeling Support. Office of Research and Development.

U.S. Environmental Protection Agency (USEPA). 1994d. Water Quality Criteria Summary. Office of Science and Technology, Health and Ecological Criteria Division, Washington, DC.

U.S. Environmental Protection Agency (USEPA). 1994e. Revised Draft of Risk Assessment Implementation Guidance for Hazardous Waste Combustion Facilities. Memorandum from M.H. Shapiro, U.S. EPA Office of Solid Waste, to Waste Management Division Directors, Regions I-X. May 5.

U.S. Environmental Protection Agency (USEPA). 1994f. Estimating Exposure to Dioxin-like Compounds. Volumes I-III. Review Draft. Office of Research and Development, Washington, D.C. EPA/600/6-88/005Ca,b,c.

U.S. Environmental Protection Agency (USEPA). 1994g. ARCS Assessment Guidance Document. Chicago, Ill.: Great Lakes National Program Office. EPA 905-B94-002.

U.S. Environmental Protection Agency (USEPA). 1995a. Risk Updates. EPA New England. August.

U.S. Environmental Protection Agency (USEPA) Region I. 1995b. Statement of Work for Risk Assessment: Health and Environmental Risk Assessment (HERA). 18 August.

U.S. Environmental Protection Agency (USEPA). 1995c. Internal Report on Summary of Measured, Calculated, and Recommended log Kow Values. Prepared for E. Southerland, Chief of the Risk Assessment and Management Branch, Standards and Applied Science Division, Office of Water by S.W. Karickhoff and J.M. Long, Environmental Research Laboratory - Athens. April 10, 1995.

U.S. Environmental Protection Agency (USEPA). 1995d. Great Lakes Water Quality Initiative Technical Support Document for Wildlife Criteria. EPA/820/B-95/009.

U.S. Environmental Protection Agency (USEPA). 1995e. Engineering Forum Issue – Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites. EPA/540/S-96/500. December.

U.S. Environmental Protection Agency (USEPA). 1996a. Letter from R. Brackett, USEPA, transmitting comments on the First Interim Deliverable of the HERA.

U.S. Environmental Protection Agency (USEPA). 1996b. Risk Updates. EPA Region 1, New England. November.

U.S. Environmental Protection Agency (USEPA). 1996c. Drinking Water Regulations and Health Advisories. Office of Water. EPA 822-B-96-002. October.

U.S. Environmental Protection Agency (USEPA). 1996d. Soil Screening Guidance: Technical Background Document. Appendix C. EPA/540/R-95/128.

U.S. Environmental Protection Agency (USEPA). 1996e. Ecotox Thresholds. Eco Update, Volume 3, Number 2. EPA/540/F-95/038. 12 pp.

U.S. Environmental Protection Agency (USEPA). 1997a. Exposure Factors Handbook. Review Draft. EPA/600/p-95/002Ba. August.

U.S. Environmental Protection Agency (USEPA). 1997b . Health Effects Assessment Summary Tables. FY 1997 Update. EPA-540-R-97-036. July.

U.S. Environmental Protection Agency (USEPA). 1997c. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. EPA/540/R-97/006. Interim Final. June.

U.S. Environmental Protection Agency (USEPA). 1998. Guidelines for Ecological Risk Assessment. EPA/630/R-95/002F.

U.S. Environmental Protection Agency (USEPA). 1999a. Letter from R. Brackett, USEPA, transmitting comments on the Second Interim Deliverable of the HERA. May 18.

U.S. Environmental Protection Agency (USEPA). 1999b. Updated Risk-Based Concentration Tables. USEPA Region III. April.

U.S. Environmental Protection Agency (USEPA). 1999c. Integrated Risk Information System (IRIS). Office of Research and Development.

U.S. Environmental Protection Agency (USEPA). 1999d. National Recommended Water Quality Criteria - Correction. EPA/822/Z-99/001.

U.S. Environmental Protection Agency (USEPA). 1999e. Rapid Bioassessment Protocols for Use in Creeks and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition, EPA 841-B-99-002. Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. Office of Water, Washington, D.C.

U.S. Environmental Protection Agency (USEPA). 2000. Amended Guidance on Ecological Risk Assessment at Military Bases: Process Considerations, Timing of Activities, and Inclusion of Stakeholders. Memorandum from Simon, Ted. W., Ph.D., Office of Technical Services. http://risk.lsd.ornl.gov/homepage/ecoproc2.pdf

U.S. Environmental Protection Agency (USEPA). 2000a. BIOCHLOR Natural Attenuation Decision Support System – User's Manual Version 1.0. Office of Research and Development. Washington, DC. EPA/600/R-00/008. January

U.S. Environmental Protection Agency (USEPA). 2000b. Equilibrium-Partitioning Sediment Guidelines (ESGs) for the Protection of Benthic Organisms: Nonionic Organics (Draft). U.S. Environmental Protection Agency, Office of Science and Technology and Office of Research and Development.

U.S. Environmental Protection Agency (USEPA). 2001. ECO-Update: Role of Screening-level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments. http://www.epa.gov/superfund/programs/risk/ecoup/slera0601.pdf

U.S. Environmental Protection Agency (USEPA) Region 4. 2001b. Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment. Originally published November 1995. Website version last updated November 30, 2001: http://www.epa.gov/region4/waste/ots/ecolbul.html

U.S. Environmental Protection Agency (USEPA). 2002 EPA comments on Draft RFI

U.S. Environmental Protection Agency (USEPA). 2003a. Region V Ecological Screening Levels. http://www.epa.gov/Region5/rcraca/edql.htm

U.S. Environmental Protection Agency (USEPA). 2003b. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. Office of Research and Development. EPA/600/R-02/013. http://www.epa.gov/nheerl/publications/files/PAHESB.pdf

U.S. Environmental Protection Agency (USEPA). 2003c. Generic Ecological Assessment Endpoints (GEAEs) for Ecological Risk Assessment. Risk Assessment Forum, US EPA, Washington, D.C. EPA/30/P-02/004F. http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=55131

U.S. Environmental Protection Agency (USEPA). 2004. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings. February.

U.S. Environmental Protection Agency (USEPA). 2005a. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: Metal Mixtures (Cadmium, Copper, Lead, Nickel, Silver, and Zinc). EPA-600-R-02-011 http://www.epa.gov/nheerl/publications/files/metalsESB_022405.pdf

U.S. Environmental Protection Agency (USEPA). 2005b. Streamlined Remediation System Evaluation (RSE-Lite) for a Ground Water Pump and Treat System. Engelhard Corporation Facility, Plainville, Massachusetts. August 3.

U.S. Environmental Protection Agency (USEPA). 2006. National Recommended Water Quality Criteria. Office of Water, Office of Science and Technology. 3404T. http://www.epa.gov/waterscience/criteria/nrwqc-2006.pdf

U.S. Environmental Protection Agency (USEPA). 2006b. Assessing Risks To Populations At Superfund And RCRA Sites - Characterizing Effects On Populations. EPA/600/R-06/038 ERASC-006. http://www.epa.gov/oswer/riskassessment/pdf/erasc_risks_to_eco_pops.pdf

U.S. Environmental Protection Agency (USEPA). 2007a. Framework for Metals Risk Assessment. Office of the Science Advisor, Risk Assessment Forum, EPA 120/R-07/001. http://www.epa.gov/raf/metalsframework/pdfs/metals-risk-assessment-final.pdf

U.S. Environmental Protection Agency (USEPA). 2007b. Guidance for Developing Ecological Soil Screening Levels OSWER Directive 9285.7-55. Guidance for Developing Ecological Soil Screening Levels (Eco-SSLs), Attachment 4-1, Exposure Factors and Bioaccumulation Models for Derivation of Wildlife Eco-SSLs, OSWER Directive 9285.7-55. http://www.epa.gov/ecotox/ecossl/pdf/ecossl_attachment_4-1.pdf

U.S. Environmental Protection Agency (USEPA). 2008. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: Compendium of Tier 2 Values for Nonionic Organics. EPA-600-R-02-016. Office of Research and Development. Washington, DC 20460.

U.S. Environmental Protection Agency (USEPA). 2010a. Ecological Soil Screening Levels. http://www.epa.gov/ecotox/ecossl/

U.S. Environmental Protection Agency (USEPA). 2010b. National Recommended Water Quality Criteria. http://water.epa.gov/scitech/swguidance/waterquality/standards/current/index.cfm

U.S. Environmental Protection Agency (USEPA) Region 3. 2010c. Ecological Risk Assessment, Freshwater Screening Benchmarks, Freshwater Sediment Screening Benchmarks. http://www.epa.gov/reg3hwmd/risk/eco/index.htm

U.S. Fish and Wildlife Service (USFWS). 1977. National Wetland Inventory map for the Wrentham, Massachusetts Quadrangle.

U.S. Fish and Wildlife Service (USFWS). 1995. Letter from K. Carr, New England Field Office, to W. Kappleman, ENVIRON Corporation, regarding data on threatened and endangered species. 12 October.

U.S. Fish and Wildlife Service (USFWS). 2007. USFWS Threatened and Endangered Species System (TESS). http://www.fws.gov/endangered/wildlife.html

U.S. Fish and Wildlife Service (USFWS). 2010a. National Wetlands Inventory, Wetlands Mapper. http://www.fws.gov/wetlands/Data/Mapper.html

U.S. Fish and Wildlife Service (USFWS). 2010b. Information, Planning, and Conservation System (IPaC). http://ecos.fws.gov/ipac/

United States Geological Survey (USGS). 1964 (Photorevised 1979). Wrentham Quadrangle, Massachusetts (N4200-W7115/7.5) 7.5 Minute Series (Topographic) AMS 6768 III SE-Series V814. Scale 1:25,000.

United States Geological Survey (USGS). 1984. Gazeteer of Hydrologic Characteristics of Streams in Massachusetts -- Taunton River and Ten Mile River Basins and Coastal River Basins of Mount Hope Bay, Narragansett Bay, and Rhode Island Sound. U.S. Geological Survey. Water-Resources Investigations Report 84-4283.

United States Geological Survey (USGS). 1987. Topographic map for the Wrentham, Massachusetts Quadrangle.

U.S. Navy. 2003. *Implementation Guide For Assessing And Managing Contaminated Sediment At Navy Facilities.* http://enviro.nfesc.navy.mil/erb/erb_a/restoration/fcs_area/con_sed/ug-2053/ug-2053-sed.pdf

Veit, R.R. and W.R. Petersen. 1993. Birds of Massachusetts. Massachusetts Audubon Society. 514 pp.

Ven Te Chow. 1959. Open Channel Hydraulics,

Verschueren, K. 1983. Handbook of Environmental Data on Organic Chemicals. Van Nostrand Reinhold Company, New York.

Weast, R.C. (Ed.) 1989. CRC Handbook of Chemistry and Physics. CRC Press, Inc. Boca Raton, FL.

Welty, J., Wicks, C., & Wilson, R. 1984. Fundamentals of Momentum, Heat, and Mass Transfer. Third Edition.

Williams, J.R., D.F. Farrell, and R.E. Willey. 1973a. Water Resources of the Taunton River Basin, Southeastern Massachusetts. Hydrologic Investigations Atlas HA-460. Department of the Interior. United States Geological Survey. [MAP]

Williams, J.R. and R.E. Willey. 1973b. Bedrock Topography and Texture of Unconsolidated Deposits, Taunton River Basin, Southeastern Massachusetts. Miscellaneous Geologic Investigations Map I-742. Department of the Interior. United States Geological Survey. [MAP]

Williams, J. R. 1968. Availability of Ground Water in the Northern Part Tenmile and Taunton River Basins, Southeastern Massachusetts. Hydrologic Investigations Atlas HA- 300. Department of the Interior. United States Geological Survey. [MAP]

Williams, J. R. and R. E. Wiley. 1967. Massachusetts Basic - Data Report No. 10, Ground Water Series. Northern Part Ten Mile River and Taunton River Basins. United States Department of the Interior Geological Survey.

Williams, J. R. and R. E. Willey. 1970. Massachusetts Basic-Data Report No. 12, Ground Water Series, Taunton River Basin. United States Department of the Interior Geological Survey.

Zen, E-an, ed., R. Goldsmith, N.M. Ratcliffe, P. Robinson and R.S. Stanley, compilers. 1983. Bedrock Geologic Map of Massachusetts. U.S.G.S.

TABLE 3.1: Ground Water Monitoring Well Specifications
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Well Number	Zone	Date of Construction	Investigation Phase	Casing Type (2)	Casing Diameter (Inches)	Total Well Depth (ft, bgs)	Total Casing Depth (ft, bgs)	Screen Interval (ft, bgs)	Screen Length (feet)	Open Hole Interval (feet)	Open Hole Length (feet)	Depth to Bedrock (ft, bgs)
MW01	Overburden	8/15/1987	Pre RFI	SS	2	17	17	7 - 17	10	NA (4)	NA	NA
MW02	Overburden	8/14/1987	Pre RFI	SS	2	24	24	14 - 24	10	NA	NA	NA
MW03	Overburden	8/11/1987	Pre RFI	SS	2	23	23	8 - 23	15	NA	NA	NA
MW04	Overburden	8/12/1987	Pre RFI	SS	2	23	23	7 - 23	16	NA	NA	NA
MW05	Overburden	7/31/1987	Pre RFI	SS	2	22	22	5 - 22	17	NA	NA	NA
MW06	Overburden	8/18/1987	Pre RFI	SS	2	19	19	4 - 19	15	NA	NA	NA
MW07 (Background)	Overburden	8/6/1987	Pre RFI	SS	2	19	19	9 - 19	10	NA	NA	NA
MW08	Overburden	9/19/1987	Pre RFI	SS	2	18	18	3 - 18	15	NA	NA	NA
MW09	Overburden	8/20/1987	Pre RFI	SS	2	19	19	4 - 19	15	NA	NA	NA
MW09B	Bedrock	10/17/2005	Supp RFI	PVC	4	58	58	43 - 58	15	NA	NA	34
MW09C	Bedrock	11/23/2005	Supp RFI	PVC	4	100	100	80 - 100	20	NA	NA	34
MW12 (2)	Overburden	8/23/1988	Pre RFI	SS	2	22	22	7 - 22	15	NA	NA	23
MW12A	Overburden	9/26/2005	Supp RFI	SS	4	25	25	15 - 25	10	NA	NA	NA
MW12B	Bedrock	9/29/2005	Supp RFI	SS	4	42	42	27 - 42	15	NA	NA	25
MW13	Bedrock	8/11/1988	Pre RFI	SS	4	32	27	NA	NA	27 - 32	5	25
MW14	Bedrock	8/22/1988	Pre RFI	SS	4	31.5	24	NA	NA	24 - 31.5	7.5	21
MW15	Bedrock	8/16/1988	Pre RFI	SS	4	31.7	27	NA	NA	27 - 31.7	4.7	25
MW16	Bedrock	8/18/1989	Pre RFI	SS	4	68.3	52.5	NA	NA	52.5 - 68.3	15.8	22
MW17	Bedrock	8/21/1989	Pre RFI	SS	4	76.5	61	NA	NA	61 - 76.5	15.5	26
MW17R	Bedrock	5/1/2008		CS	4	76	61	NA	NA	61 - 76	15	27
MW18	Bedrock	8/17/1989	Pre RFI	SS	4	42	26	NA	NA	26 - 42	16	24
MW19	Bedrock	8/25/1989	Pre RFI	SS	4	38	23	NA	NA	23 - 38	15	19
MW20A	Overburden	7/5/1989	Pre RFI	PVC	4	8	8	3 - 8	5	NA	NA	NA
MW20B	Bedrock	7/24/1989	Pre RFI	PVC	4	52	35	NA	NA	35 - 52	16	28
MW20C	Deep Bedrock	12/23/2005	Supp RFI	PVC	4	95	75	NA	NA	75 - 95	20	28
MW21A	Overburden	7/7/1989	Pre RFI	PVC	4	8	8	3 - 8	5	NA	NA	NA
MW21B	Bedrock	8/25/1989	Pre RFI	PVC	4	51.7	37.5	NA	NA	37.5 - 51.7	14.2	32
MW21C	Deep Bedrock	12/19/2005	Supp RFI	PVC	4	103	83	NA	NA	83 - 103	20	27
MW22A	Overburden	7/6/1989	Pre RFI	PVC	4	7	7	2 - 7	5	NA	NA	NA
MW22B	Bedrock	8/29/1989	Pre RFI	PVC	4	66.5	51.5	NA	NA	51.5 - 66.5	15	36

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MW22C	Deep Bedrock	12/5/1996	RFI Phase II	PVC	2	122	122	100-120	20	NA	NA	36
MW23A	Overburden	7/6/1989	Pre RFI	PVC	4	6.5	6.5	1.5 - 6.5	5	NA	NA	NA
MW23B	Bedrock	7/27/1989	Pre RFI	PVC	4	50	36	NA	NA	36 - 50	14	32
MW24A (1)	Overburden	7/6/1989	Pre RFI	PVC	4	12	12	7 - 12	5	NA	NA	NA
MW24B (1)	Bedrock	7/26/1989	Pre RFI	PVC	4	53	37.5	NA	NA	37.5 - 53	15.5	33
MW24C (1)	Deep Bedrock	1/5/1996	RFI Phase II	PVC	2	160	160	140-160	20	NA	NA	33
MW25A	Overburden	12/1/1994	RFI Phase I	PVC	2	24	24	14 - 24	10	NA	NA	NA
MW25B	Bedrock	1/4/1995	RFI Phase I	SS	3	50	35	NA	NA	35 - 50	15	27
MW25C	Deep Bedrock	6/10/2003	GSM Upgrade	CS	3	80	64	NA	NA	64 - 80	16	31
MW26	Overburden	11/30/1994	RFI Phase I	PVC	2	20	20	5 - 20	16	NA	NA	NA
MW27	Bedrock	1/9/1995	RFI Phase I	SS	3	44	29	NA	NA	29 - 44	15	17
MW28 (7)	Overburden	12/9/1994	RFI Phase I	PVC	2	19	19	7 - 19	12	NA	NA	20
MW29	Bedrock	1/4/1995	RFI Phase I	SS	3	50	35	NA	NA	35 - 50	15	27
MW30A	Overburden	1/10/1995	RFI Phase I	PVC	2	16	16	6 - 16	10	NA	NA	NA
MW30B	Bedrock	1/17/1995	RFI Phase I	SS	3	55	40	NA	NA	40 - 55	15	35
MW31A	Overburden	1/11/1995	RFI Phase I	PVC	2	15	15	4 - 15	11	NA	NA	NA
MW31B	Bedrock	12/20/1994	RFI Phase I	SS	3	42	27	NA	NA	27 - 42	15	15
MW32A	Overburden	12/2/1994	RFI Phase I	PVC	2	16	16	6 - 16	10	NA	NA	24
MW32B	Bedrock	1/3/1995	RFI Phase I	SS	3	47	32	NA	NA	32 - 47	15	24
MW33A	Overburden	1/9/1995	RFI Phase I	PVC	2	14	14	3.5 - 14	10.5	NA	NA	10
MW33B	Bedrock	1/16/1995	RFI Phase I	SS	3	48	30	NA	NA	30 - 48	15	10
MW33C	Deep Bedrock	1/15/1996	RFI Phase II	PVC	2	180	180	160-180	20	NA	NA	10
MW33D	Deep Bedrock	9/16/2010	Supp RFI	CS	4	300	250	NA	NA	250 - 300	50	10
MW34	Overburden	1/19/1995	RFI Phase I	SS	2	10	9.5	5.5 - 9.5	4	NA	NA	NA
MW35	Overburden	1/18/1995	RFI Phase I	SS	2	10	10	6 - 10	4	NA	NA	NA
MW-36	Overburden	1/18/1995	RFI Phase I	SS	2	10	10	6 - 10	4	NA	NA	NA
MW37 (Background)	Bedrock	12/13/1994	RFI Phase I	SS	3	44.8	30	NA	NA	30 - 44.8	14.8	24
MW38	Deep Bedrock	11/22/1995	RFI Phase II	PVC	2	122	122	100-120	20	NA	NA	19
MW39 (1)	Deep Bedrock	1/17/1996	RFI Phase II	PVC	2	180	180	140-180	40	NA	NA	22
MW40A	Overburden	10/15/2001	MNA	PVC	2	26	26	16 - 26	10	NA	NA	NA

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MW40B	Bedrock	10/12/2001	MNA	PVC	2	50	50	40 - 50	10	NA	NA	22
MW41A	Overburden	10/11/2001	MNA	PVC	2	16	16	6 - 16	10	NA	NA	NA
MW41B	Bedrock	10/11/2001	MNA	PVC	2	60	60	50 - 60	10	NA	NA	22
MW42	Deep Bedrock	1/24/2006	Supp RFI	PVC	4	160	140	NA	NA	140 - 160	20	30
MW43A	Overburden	8/27/2010	Supp RFI	PVC	2	15	15	5 - 15	10	NA	NA	NA
MW43B	Bedrock	11/16/2005	Supp RFI	PVC	4	46	31	NA	NA	31 - 46	15	22
MW43C	Deep Bedrock	12/13/2005	Supp RFI	PVC	4	108	88	NA	NA	88 - 108	20	22
MW43D	Deep Bedrock	9/7/2010	Supp RFI	CS	4	300	250	NA	NA	250 - 300	50	29
MW44A	Overburden	10/20/2005	Supp RFI	PVC	4	22	22	12 - 22	10	NA	NA	NA
MW45A	Overburden	9/19/2005	Supp RFI	PVC	4	19	19	9 - 19	10	NA	NA	NA
MW45B	Bedrock	9/21/2005	Supp RFI	PVC	4	50	31	NA	NA	31 - 50	19	28
MW45C	Deep Bedrock	4/28/2009		PVC	2	200	200	180 - 200	20	NA	NA	26
MW46A	Overburden	9/15/2005	Supp RFI	PVC	4	19	19	9 - 19	10	NA	NA	NA
MW48A	Overburden	10/26/2005	Supp RFI	PVC	4	25	25	15 - 25	10	NA	NA	NA
MW48B	Bedrock	11/9/2005	Supp RFI	CS	2	45	45	30 - 45	15	NA	NA	27
MW49A	Overburden	10/7/2005	Supp RFI	PVC	2	22	22	12 - 22	10	NA	NA	NA
MW50	Bedrock	8/9/2007	Drive-In	SS	4	34	19	NA	NA	19 - 34	15	13
MW51A	Overburden	8/2/2007	Drive-In	PVC	2	14	14	4 - 14	10	NA	NA	NA
MW51B	Bedrock	8/9/2007	Drive-In	SS	4	70	55	NA	NA	55 - 70	15	38
MW52	Overburden	8/10/2007	Drive-In	PVC	2	14	14	4 - 14	10	NA	NA	NA
MW53A	Overburden	4/16/2009	LFR	PVC	4	22.5	22.5	7.5 - 22.5	15	NA	NA	22.5
MW53B	Bedrock	4/30/2009	LFR	Steel	4	60	40	NA	NA	40 - 60	20	23
MW53C	Deep Bedrock	4/20/2009	LFR	PVC	2	200	200	180 - 200	20	NA	NA	23
MW54A	Overburden	8/27/2010	LFR	PVC	2	15	15	5 - 15	10	NA	NA	NA
MW54B	Bedrock	8/30/2010	LFR	CS	4	60.7	30.5	NA	NA	30.5 - 60.7	30	18
LFR1 (7)	OB/Bed	9/6/2005	SVE Pilot Test	PVC/SS	4	35	35	5 - 35	30	NA	NA	19
LFR2	OB/Bed	9/7/2005	SVE Pilot Test	PVC/SS	4	40	40	10 - 40	30	NA	NA	19
LFR3	OB/Bed	9/8/2005	SVE Pilot Test	PVC/SS	4	40	40	10 - 40	30	NA	NA	21
MW101	Overburden	12/19/2003	Courtyard	PVC	2	14	14	4 - 14	10	NA	NA	NA
MW102	Overburden	12/19/2003	Courtyard	PVC	2	15	15	5 - 15	10	NA	NA	NA

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MW103	Overburden	12/18/2003	Courtyard	PVC	2	15	15	5 - 15	10	NA	NA	NA
MW104	Overburden	12/18/2003	Courtyard	PVC	2	16	12	2 - 12	10	NA	NA	NA
MW105 (7)	Bedrock	8/23/2004	Courtyard	CS	4	42	29	NA	NA	29 - 42	13	24
MW106	Overburden	3/5/2004	Courtyard	PVC	2	12	12	2 - 12	10	NA	NA	NA
P1	Overburden	6/30/1997	GSM Upgrade	PVC	2	29	29	14 - 29	15	NA	NA	NA
P1a	Bedrock	6/30/1997	GSM Upgrade	PVC	2	64.3	64.3	34.3 - 64.3	30	NA	NA	29
P2	Overburden	7/2/1997	GSM Upgrade	PVC	2	24	24	9 - 24	15	NA	NA	NA
P2a	Bedrock	7/2/1997	GSM Upgrade	PVC	2	62	62	32 - 62	30	NA	NA	24
P03	Overburden	7/7/1997	GSM Upgrade	PVC	2	25	25	10 - 25	15	NA	NA	NA
P3a	Bedrock	7/7/1997	GSM Upgrade	PVC	2	60	60	30 - 60	30	NA	NA	25
P4	Overburden	7/9/1997	GSM Upgrade	PVC	2	26	26	11 - 26	15	NA	NA	NA
P4a	Bedrock	7/9/1997	GSM Upgrade	PVC	2	61	61	31 - 61	30	NA	NA	26
P5	Overburden	6/17/1997	GSM Upgrade	PVC	2	30.5	30.5	15.5 - 30.5	15	NA	NA	NA
P5a	Bedrock	6/17/1997	GSM Upgrade	PVC	2	65.2	65.2	35.2 - 65.2	30	NA	NA	31
P6	Overburden	6/19/1997	GSM Upgrade	PVC	2	26	26	11 - 26	15	NA	NA	NA
P6a	Bedrock	6/19/1997	GSM Upgrade	PVC	2	60.8	60.8	30.8 - 60.8	30	NA	NA	26
P7	Overburden	6/23/1997	GSM Upgrade	PVC	2	27.2	27.2	12.2 - 27.2	15	NA	NA	NA
P7a	Bedrock	6/23/1997	GSM Upgrade	PVC	2	62	62	32 - 62	30	NA	NA	27
P8	Overburden	6/26/1997	GSM Upgrade	PVC	2	25	25	10 -25	15	NA	NA	NA
P8a	Bedrock	6/26/1997	GSM Upgrade	PVC	2	58	58	28 - 58	30	NA	NA	25
P9	Overburden	7/14/1997	GSM Upgrade	PVC	2	24.5	24.5	9.5 - 24.5	15	NA	NA	NA
P9a	Bedrock	7/14/1997	GSM Upgrade	PVC	2	62.4	62.4	32.4 - 62.4	30	NA	NA	25
P10	Overburden	7/16/1997	GSM Upgrade	PVC	2	21.3	21.3	6.3 - 21.3	15	NA	NA	NA
P10a	Bedrock	7/16/1997	GSM Upgrade	PVC	2	57.3	57.3	27.3 - 57.3	30	NA	NA	21
P11	Overburden	6/9/2003	GSM Upgrade	PVC	2	20	20	4.5 - 19.5	15	NA	NA	NA
P11a	Bedrock	6/9/2003	GSM Upgrade	CS	3	58	33	NA	NA	33 - 58	25	28
P12	Overburden	6/6/2003	GSM Upgrade	PVC	2	24	24	9 - 24	15	NA	NA	NA
P12a	Bedrock	6/11/2003	GSM Upgrade	CS	3	59	34	NA	NA	34 - 59	25	29
P12b	Deep Bedrock	4/28/2009		PVC	2	200	200	180 - 200	20	NA	NA	24
P13	Overburden	5/29/2003	GSM Upgrade	PVC	2	28	28	11 - 28	17	NA	NA	NA

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P13a	Bedrock	6/2/2003	GSM Upgrade	CS	3	63	43	NA	NA	43 - 63	20	32
P14	Overburden	6/5/2003	GSM Upgrade	PVC	2	30	30	10 - 30	20	NA	NA	NA
P14a	Bedrock	6/10/2003	GSM Upgrade	CS	3	59	39	NA	NA	39 - 59	20	34
P15	Overburden	5/28/2003	GSM Upgrade	PVC	2	28	28	13 - 28	15	NA	NA	NA
P15a	Bedrock	6/3/2003	GSM Upgrade	CS	3	59.5	34.5	NA	NA	34.5 - 59.5	25	30
P15CY	Overburden	12/19/2003	Courtyard	PVC	1	18	18	16 - 18	2	NA	NA	NA
P15aCY	Overburden	12/19/2003	Courtyard	PVC	1	18	11	6 - 11	5	NA	NA	NA
P16 (7)	Overburden	12/22/2003	Courtyard	PVC	2	20.5	20	15 - 20	5	NA	NA	NA
NEWP16	Obverburden	5/28/2009	LFR	PVC	2	30	30	15 - 30	15	NA	NA	30
P16a	Bedrock	9/1/2010	LFR	CS	4	67	37	NA	NA	37 - 67	30	29
P16c	Deep Bedrock	7/13/2009	LFR	PVC	2	270	245	245 - 270	25	NA	NA	30
P17 (7)	Overburden	12/22/2003	Courtyard	PVC	1	18	11	6 - 11	5	NA	NA	NA
P17a (7)	Overburden	12/22/2003	Courtyard	PVC	1	18	18	16 - 18	2	NA	NA	NA
NEWP17a	Bedrock	5/29/2009	Supp RFI	CS	4	60	30	NA	NA	30 - 60	30	19
P18	Overburden	7/14/2009	Supp RFI	PVC	2	27	27	17 - 27	10	NA	NA	27
P20 (7)	Overburden	3/10/2004	Courtyard	PVC	4	19	17	7 - 17	10	NA	NA	NA
P21 (7)	Overburden	3/11/2004	Courtyard	PVC	2	18	17	7 - 17	10	NA	NA	NA
P23 (7)	Overburden	3/11/2004	Courtyard	PVC	2	19	16	6 - 16	10	NA	NA	NA
EW01	Deep Bedrock	Apr-96	GSM	SS	8	180	31.5	16.5 - 31.5	15	31.5 - 180	148.5	25
EW02 (5)	Deep Bedrock	Jul-96	GSM	SS	6	200	30	NA	NA	30 - 200	170	25
EW03	Deep Bedrock	Apr-95	GSM	SS	8	180	51.5	21.5 - 51.5	30	51.5 - 180	128.5	25
EW04	Deep Bedrock	Jul-96	GSM	SS	6	200	31	NA	NA	31 - 200	169	26
EW05	Deep Bedrock	Apr-96	GSM	SS	8	120	31.5	16.5 - 31.5	15	31.5 - 120	88.5	27
EW06	Deep Bedrock	Jul-96	GSM	SS	6	200	26	NA	NA	26 - 200	174	21

Notes:

(1) Removed in 2002 due to planned site development by owner of the property

(2) SS = stainless steel; PVC = polyvinyl chloride; CS = carbon steel; PVC/SS = PVC riser and stainless steel screen

(3) replaced by MW-12A in 2005

(4) NA = not applicable

TABLE 3.1: Ground Water Monitoring Well Specifications **DRAFT**
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Well Number	Zone	Date of Construction	Investigation Phase	Casing Type (2)	Casing Diameter (Inches)	Total Well Depth (ft, bgs)	Total Casing Depth (ft, bgs)	Screen Interval (ft, bgs)	Screen Length (feet)	Open Hole Interval (feet)	Open Hole Length (feet)	Depth to Bedrock (ft, bgs)

(5) Well deepened from 200 to 302 feet bgs in September, 2010
(6) Well was replaced by MW17R in May, 2008
(7) Well was decommissioned/destroyed during Upper Courtyard Remediation

Table 4.1.1: Phase I Soil Sampling Program
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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Soil Boring	Sample ID	Date Collected	Lab Report No.	Sample Collection	Analyses[2] VOC	SVOC	PCB	PPM	CN	TPHD	Cr^{+6}	SPLP
SB-15	EP-SB15-1-2-4	02-07-95	3095-0140	ENVIRON	√			√	√			
SB-15	EP-SB15-2-5-7	02-07-95	3095-0140	ENVIRON	√			√	√			
SB-16	EP-SB16-1-2-4	01-20-95	3095-0041	ENVIRON	√			√	√		√	
SB-16	EP-SB16-2-5-7	01-20-95	3095-0041	ENVIRON	√			√	√		√	
SB-17	EP-SB17-1-2-4	01-13-95	3095-0041	ENVIRON	√			√	√			
SB-17	EP-SB17-2-5-7	01-13-95	3095-0041	ENVIRON	√			√	√			
SB-17	EP-SB17-3-7-9	01-13-95	3095-0041	ENVIRON	√			√	√			
SB-18	EP-SB18-1-2-4	02-06-95	3095-0140	ENVIRON	√			√	√		√	
SB-18	EP-SB18-1-2-4-D	02-06-95	3095-0140	ENVIRON	√			√	√			
SB-18	EP-SB18-2-5-7	02-06-95	3095-0140	ENVIRON	√			√	√		√	
SB-19	EP-SB19-1-2-4	12-22-94	3094-1413A	FW*	√			√				
SB-19	EP-SB19-2-5-7	12-22-94	3094-1413A	FW*	√			√				
SB-19	EP-SB19-3-8-10	12-22-94	3094-1413A	FW*	√			√				√
SB-20	EP-SB20-1-2-4	12-13-94	3094-1413	FW*	√			√		√		
SB-20	EP-SB20-2-5-7	12-13-94	3094-1413	FW*	√			√		√		√
SB-21	EP-SB21-1-2-4	12-19-94	3094-1413A	FW*	√			√				
SB-21	EP-SB21-2-5-7	12-19-94	3094-1413A	FW*	√			√				
SB-21	EP-SB21-3-9-11	12-19-94	3094-1413A	FW*	√			√				
SB-22	EP-SB22-1-2-4	12-22-94	3094-1413B	FW*	√			√				√
SB-22	EP-SB22-2-5-7	12-22-94	3094-1413B	FW*	√			√				
SB-22	EP-SB22-3-7-9	12-22-94	3094-1413B	FW*	√			√				
SB-23	EP-SB23-1-2-4	12-20-94	3094-1413A	FW*				√				
SB-23	EP-SB23-2-5-7	12-20-94	3094-1413A	FW*				√				
SB-23	EP-SB23-3-9-11	12-20-94	3094-1413A	FW*				√[1]				√
SB-24	EP-SB24-1-2-4	01-30-95	3095-0041A	ENVIRON	√							
SB-24	EP-SB24-1-2-4-D	01-30-95	3095-0041A	ENVIRON	√[1]							
SB-24	EP-SB24-2-8-10	01-30-95	3095-0041A	ENVIRON	√			√				
SB-24	EP-SB24-2-8-10-D	01-30-95	3095-0041A	ENVIRON				√				
SB-25	EP-SB25-1-2-4	01-25-95	3095-0041A	ENVIRON	√							
SB-25	EP-SB25-2-6-8	01-25-95	3095-0041A	ENVIRON	√			√			√[1]	
SB-25	EP-SB25-3-14-16	01-25-95	3095-0041A	ENVIRON	√							
SB-26	EP-SB26-1-2-4	12-20-94	3094-1413A	FW*	√	√		√	√	√		
SB-26	EP-SB26-2-8-10	12-20-94	3094-1413A	FW*	√			√	√	√		
SB-26	EP-SB26-3-18-20	12-20-94	3094-1413A	FW*	√							
SB-27	EP-SB27-1-6-8	02-13-95	3095-0041A	ENVIRON				√			√	
SB-27	EP-SB27-2-18-20	04-07-95	3095-0417	ENVIRON				√				√
SB-27	EP-SB27-2-18-20	04-07-95	E163-005[3]	ENVIRON							√	
SB-28	EP-SB28-1-5-7	12-08-94	3094-1413	FW*	√			√				
SB-28	EP-SB28-2-7-9	12-08-94	3094-1413	FW*	√			√				
SB-29	EP-SB29-1-5-7	12-07-94	3094-1413	FW*	√			√				
SB-29	EP-SB29-2-15-17	12-07-94	3094-1413	FW*	√			√				

Table 4.1.1: Phase I Soil Sampling Program
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Soil Boring	Sample ID	Date Collected	Lab Report No.	Sample Collection	Analyses[2] VOC	SVOC	PCB	PPM	CN	TPHD	Cr^{+6}	SPLP
SB-30	EP-SB30-1-5-7	12-06-94	3094-1413	FW*	√			√				
SB-30	EP-SB30-2-15-17	12-06-94	3094-1413	FW*	√			√				
SB-31	EP-SB31-1-2-4	12-20-94	3094-1413A	FW*						√		
SB-31	EP-SB31-2-4-6	12-20-94	3094-1413A	FW*						√		
SB-32	EP-SB32-1-2-4	02-10-95	3095-0041A	ENVIRON	√							
SB-32	EP-SB32-2-8-10	02-10-95	3095-0041A	ENVIRON	√							
SB-33	EP-SB33-1-10-12	01-13-95	3095-0041	ENVIRON				√		√	√	
SB-33	EP-SB33-2-14-16	01-13-95	3095-0041	ENVIRON				√		√	√	
SB-34	EP-SB34-1-2-4	02-09-95	3095-0140	ENVIRON	√			√	√		√	
SB-34	EP-SB34-2-6-8	02-10-95	3095-0041A	ENVIRON	√			√	√		√	
SB-34	EP-SB34-3-8-10	02-10-95	3095-0041A	ENVIRON	√			√[1]	√[1]		√	
SB-35	EP-SB35-1-2-4	02-07-95	3095-0140	ENVIRON	√[1]							
SB-35	EP-SB35-2-9-11	02-08-95	3095-0140	ENVIRON	√							
SB-35	EP-SB35-3-16-18	02-08-95	3095-0140	ENVIRON	√							
SB-35	EP-SB35-4-25-27	02-09-95	3095-0140	ENVIRON	√							
SB-36	EP-SB36-1-1-3	01-23-95	3095-0147	ENVIRON	√							
SB-36B	EP-SB36B-1-2-4	01-26-95	3095-0041A	ENVIRON	√[1]							
SB-36B	EP-SB36B-1-2-4-D	01-26-95	3095-0041A	ENVIRON	√							
SB-36B	EP-SB36B-2-5-6	01-26-95	3095-0041A	ENVIRON	√							
SB-36B	EP-SB36B-3-8-10	01-26-95	3095-0041A	ENVIRON	√							
SB-37	EP-SB37-1-1-3	12-12-94	3094-1413	FW*	√			√	√	√		
SB-37	EP-SB37-2-5-7	12-12-94	3094-1413	FW*	√			√	√	√		
SB-38	EP-SB38-1-1-3	11-22-94	3095-1359	FW*	√		√	√	√	√		
SB-38	EP-SB38-2-5-7	11-22-94	3095-1359	FW*	√		√	√	√	√		
SB-39	EP-SB39-1-1-3	12-07-94	3094-1413	FW*	√	√		√	√	√		
SB-39	EP-SB39-2-5-7	12-07-94	3094-1413	FW*	√	√		√	√	√		
SB-40	EP-SB40-1-1-3	11-22-94	3095-1359	FW*	√			√	√	√		
SB-40	EP-SB40-2-5-7	11-22-94	3095-1359	FW*	√			√	√	√		
SB-41	EP-SB41-1-1-3	12-12-94	3094-1413	FW*	√	√	√	√	√	√		
SB-41	EP-SB41-2-5-7	12-12-94	3094-1413	FW*	√	√	√	√	√	√		
SB-42	EP-SB42-1-10-12	01-12-95	3095-0041	ENVIRON						√		
SB-42	EP-SB42-2-16-18	01-12-95	3095-0041	ENVIRON						√		
SB-43	EP-SB43-1-2-4	01-19-95	3095-0041	ENVIRON				√[1]			√	
SB-43	EP-SB43-1-2-4-D	01-19-95	3095-0041	ENVIRON				√			√	
SB-43	EP-SB43-2-5-7	01-19-95	3095-0041	ENVIRON				√			√	
SB-43	EP-SB43-3-10-12	01-19-95	3095-0041	ENVIRON				√			√	
SB-44	EP-SB44-1-2-4	01-19-95	3095-0041	ENVIRON				√				
SB-44	EP-SB44-2-5-7	01-19-95	3095-0041	ENVIRON				√				
SB-44	EP-SB44-3-10-12	01-19-95	3095-0041	ENVIRON				√				

Table 4.1.1: Phase I Soil Sampling Program
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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Soil Boring	Sample ID	Date Collected	Lab Report No.	Sample Collection	Analyses(2) VOC	SVOC	PCB	PPM	CN	TPHD	Cr^{+6}	SPLP
SB-45	EP-SB45-1-2-4	01-11-95	3095-0041	ENVIRON				√				
SB-45	EP-SB45-2-5-7	01-11-95	3095-0041	ENVIRON				√				
SB-45	EP-SB45-3-11-13	01-11-95	3095-0041	ENVIRON				√				
SBRD-33	EP-SBRD33-3-10-12	11-23-94	3095-1359	FW*	√	√	√	√	√	√		
SBRD-33A	EP-SBRD33A-1-10-12	12-16-94	3094-1413	FW*	√	√				√		
trip blank	EP-TB01	11-23-94	3095-1359	FW*	√							
trip blank	EP-TB02	NL	3094-1413	FW*	√							
trip blank	EP-TB04	12-08-94	3094-1413	FW*	√							
trip blank	EP-TB05	12-12-94	3094-1413	FW*	√							
trip blank	EP-TB06	12-13-94	3094-1413	FW*	√							
trip blank	EP-TB07	12-16-94	3094-1413A	FW*	√							
trip blank	EP-TB08	12-19-94	3094-1413A	FW*	√							
trip blank	EP-TB09	12-20-94	3094-1413A	FW*	√							
trip blank	EP-TB10	12-22-94	3094-1413A	FW*	√			√				
trip blank	EP-TB19	01-25-95	3095-0041A	ENVIRON	√							
trip blank	EP-TB18	01-23-95	3095-0147	ENVIRON	√							
trip blank	EP-TB20	01-26-95	3095-0041A	ENVIRON	√							
trip blank	EP-TB21	02-07-95	3095-0140	ENVIRON	√							
trip blank	EP-TB22	02-09-95	3095-0140	ENVIRON	√							
trip blank	EP-TB23	02-10-95	3095-0140	ENVIRON	√							
field blank	EP-FB03	12-07-94	3094-1413	FW*	√							
field blank	EP-FB01	12-22-94	3094-1413A	FW*	√	√	√	√	√			
field blank	EP-FB04	01-30-95	3095-0041A	ENVIRON	√			√				
field blank	EP-FB05	02-09-95	3095-0140	ENVIRON				√			√	

Notes:

√[1] = Matrix Spike/Matrix Spike Duplicate Sample
(2) Analyses: VOC = Volatile Organic Compound
SVOC = Semi-Volatile Organic Compound
PCB = Polychlorinated Biphenyls
CN = Cyanide
TPHD = Total Petroleum Hydrocarbons as Diesel
Cr^{+6} = Hexavalent Chromium
SPLP = Synthetic Precipitation Leaching Procedure
(3) = partial report
Trip and field blanks consisted of a water matrix.
FW* = Foster Wheeler
NL = Sample not listed on chain of custody, received by the laboratory on 12-07-94

Table 4.1.2: Surface and Subsurface Soil, Ground Water, Surface Water, Sediment, and Fish Sampling Programs-Volatile Organic Compound Analytes
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Analyte	Soil Reporting Limits (µg/kg) [1]
1,1,1-trichloroethane	5
1,1,2,2-tetrachloroethane	5
1,1,2-trichloroethane	5
1,1-dichloroethane	5
1,1-dichloroethene	5
1,2-dichloroethane	5
1,2-dichloropropane	5
4-methyl-2-pentanone (methyl-iso-butyl-ketone)	10
2-chloroethyl vinyl ether	10
Benzene	5
Bromodichloromethane (dichlorobromomethane)	5
Bromoform	5
Bromomethane (methyl bromide)	10
Carbon tetrachloride	5
Chlorobenzene	5
Chloroethane	10
Chloroform	5
Chloromethane (methyl chloride)	10
Cis-1,3-dichloropropene	5
Dibromochloromethane (chlorodibromomethane)	5
Ethylbenzene	5
Freon 11 (trichlorofluoromethane)	10
Methylene chloride	5
Styrene	5
Tetrachloroethene	5
Toluene	5
Trans-1,2-dichloroethene	5
Trans-1,3-dichloropropene	5
Trichloroethene	5
Vinyl acetate	10
Vinyl chloride	10
1,2-dichlorobenzene	5
1,4-dichlorobenzene	5
1,3-dichlorobenzene (m-dichlorobenzene)	5
Xylenes, total	5

Notes:

(1) The final reporting limit achievable by the laboratory may be affected by matrix interferences, field blank/method blank contamination etc.

Table 4.1.3: Surface and Subsurface Soil, Ground Water, Surface Water, Sediment, and Fish Sampling Programs-Semi-Volatile Organic Compound Analytes
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Analyte	Reporting Limits (µg/kg) [1]
Phenol	330
bis (2-Chloroethyl) ether	330
2-Chlorophenol	330
1,3-Dichlorobenzene	330
1,4-Dichlorobenzene	330
Benzyl alcohol	330
1,2-Dichlorobenzene	330
2-Methylphenol	330
bis (2-Chloroisopropyl) ether	330
4-Methylphenol	330
N-Nitroso-di-n-propylamine	330
Hexachloroethane	330
Nitrobenzene	330
Isophorone	330
2-Nitrophenol	330
Benzoic acid	1600
bis (2-Chloroethoxy) methane	330
2,4-Dichlorophenol	330
1,2,4-Trichlorobenzene	330
Naphthalene	330
4-Chloroaniline	330
Hexachlorobutadiene	330
4-Chloro-3-methylphenol	330
2-Methylnaphthalene	330
Hexachlorocyclopentadiene	330
2,4,6-Trichlorophenol	330
2,4,5-Trichlorophenol	1600
2-Chloronaphthalene	330
2-Nitroaniline	1600
Dimethylphthalate	330
Acenaphthylene	330
2,6-Dinitrotoluene	330
3-Nitroaniline	1600
Acenaphthene	330
2,4-Dinitrophenol	1600
4-Nitrophenol	1600
Dibenzofuran	330
2,4-Dinitrotoluene	330
Diethylphthalate	330
4-Chlorphenyl-phenylether	330
Fluorene	330
4-Nitroaniline	1600

Table 4.1.3: Surface and Subsurface Soil, Ground Water, Surface Water, Sediment, and Fish Sampling Programs-Semi-Volatile Organic Compound Analytes
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Analyte	Reporting Limits (µg/kg) [1]
4,6-Dinitro-2-methylphenol	1600
N-Nitrosodiphenylamine	330
4-Bromophenyl-phenyleether	330
Hexachlorobenzene	330
Pentachlorophenol	1600
Phenanthrene	330
Anthracene	330
Di-n-butylphthalate	330
Fluoranthene	330
Pyrene	330
Butylbenzylphthalate	330
3,3'-Dichlorobenzidine	660
Benzo(a)anthracene	330
Chrysene	330
bis (2-Ethylhexyl) phthalate	330
Di-n-octylphthalate	330
Benzo(b)fluoranthene	330
Benzo(k)fluoranthene	330
Benzo(a)pyrene	330
Indeno(1,2,3-cd)pyrene	330
Dibenzo(a,h)anthracene	330
Benzo(g,h,i)perylene	330

Notes:

(1) The final reporting limit achievable by the laboratory may be affected by matrix interferences, field blank/method blank contaminations, etc.

Table 4.1.4: Surface and Subsurface Soil, Ground Water, Surface Water, and Sediment Sampling Programs-Metals Analytes
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Metals	EPA Test Method	Water Detection Limits (µg/L)	Soil Detection Limits (µg/kg)
Antimony	3010/6010	60	6000
Arsenic	3020/7060	8	800
Beryllium	3010/6010	1.0	100
Cadmium	3010/6010	4.0	400
Chromium (Total)	3010/6010	10	1000
Chromium (Hexavalent) (1)	7195	n/a	1000
Cobalt(2)	3010/6010	20	n/a
Copper	6010	n/a	1000
Cyanide (3)	335.2	25	n/a
Lead	3020/7421	5.0	500
Mercury	7470/7471	0.2	500
Nickel	3010/6010	20	2000
Selenium	3020/7740	5.0	500
Silver	3010/6010	10	1000
Thallium	3020/7841	10	1000
Zinc	3010/6010	20	2000

Notes:

(1) Hexavalent chromium was only analyzed on selected soil samples collected during the soil sampling program.
(2) Cobalt was not analyzed for in ground water samples.
(3) Cyanide results from the surface water sampling program are included with the water quality results.
"n/a" indicates samples were not analyzed for specific metal.

Table 4.1.5: Surface and Subsurface Soil, Ground Water, Surface Water, Sediment, and Fish Sampling Programs-Polychlorinated Biphenyls Analytes
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Parameter		EPA Test Method	Soil Reporting Limits (µg/kg)
PCBs			
	Aroclor 1016	8081	33
	Aroclor 1221	8081	67
	Aroclor 1232	8081	33
	Aroclor 1242	8081	33
	Aroclor 1248	8081	33
	Aroclor 1254	8081	33
	Aroclor 1260	8081	33

Notes:
(1) The final reporting limit achieved by the laboratory may have been affected by matrix intereferences, field blank/method blank contaminations, etc.

Table 4.1.6: Soil Sampling Program - Detected Metals
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SITE LOCATION	SB-15	SB-15	SB-16	SB-16	SB-17
SAMPLE DEPTH	2	5	2	5	2
SAMPLE ID	EP-SB15-1-2-4	EP-SB15-2-5-7	EP-SB16-1-2-4	EP-SB16-2-5-7	EP-SB17-1-2-4
LABORATORY SDG NO.	Z0140	Z0140	Z0041	Z0041	Z0041
SAMPLE DATE	2/7/1995	2/7/1995	1/20/1995	1/20/1995	1/13/1995
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	6.6	--	--
Arsenic	0.35	0.4	1.2 J	2.1 J	1.3
Beryllium	--	--	0.32	--	--
Cadmium	2.8	5	56.5	66.3	10.5
Chromium (total)	5.9 J	12.2 J	46.8	56.8	13.4
Copper	9.5	31.8	238	464	24.6
Cyanide	--	--	5.9	6.6	--
Lead	n/a	5.4	17.7 J	62.1 J	11.8 J
Mercury	--	--	--	--	--
Nickel	6.0 J	5.9 J	17.5	17.7	9.8
Selenium	--	--	0.34	0.34 J	--
Silver	0.61	1.2	33.5 J	19.7 J	9.8 J
Thallium	--	--	--	--	--
Zinc	29.4	26.4	67.6 J	228 J	40.3 J

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SITE LOCATION	SB-17	SB-17	SB-18	SB-18	SB-19
SAMPLE DEPTH	5	7	2	6	2
SAMPLE ID	EP-SB17-2-5-7	EP-SB17-3-7-9	EP-SB18-1-2-4	EP-SB18-2-5-7	EP-SB19-1-2-4
LABORATORY SDG NO.	Z0041	Z0041	Z0140	Z0140	
SAMPLE DATE	1/13/1995	34712	2/6/1995	2/6/1995	12/22/1994
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	5.6 U	--	--	--	--
Arsenic	0.41	0.29	0.8	0.94	1.7
Beryllium	0.22 U	--	--	--	--
Cadmium	2.3	14.5	--	--	265
Chromium (total)	7.6	11.3	6.4 J	11.0 J	10.1
Copper	9.2	49.6	5.3	12.9	9.7 J
Cyanide	0.53 U	--	--	--	n/a
Lead	5.5 J	5.6 J	3.8	4.8	11.7
Mercury	0.098 U	--	--	--	--
Nickel	16.9	9.2	5.2 J	9.9 J	7.7
Selenium	0.22 U	--	--	--	0.42
Silver	3.5 J	1.7 J	--	0.83	11.6
Thallium	0.22 U	--	--	--	--
Zinc	31.7 J	51.8 J	24.2	29.1	49.1

Notes:

(1) "J" qualifier indicates estimated value.

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(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
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SITE LOCATION	**SB-19**	**SB-19**	**SB-20**	**SB-20**	**SB-21**	**SB-21**
SAMPLE DEPTH	**5**	**8**	**2**	**5**	**2**	**5**
SAMPLE ID	**EP-SB19-2-5-7**	**EP-SB19-3-8-10**	**EP-SB20-1-2-4**	**EP-SB20-2-5-7**	**EP-SB21-1-2-4**	**EP-SB21-2-5-7**
LABORATORY SDG NO.						
SAMPLE DATE	**12/22/1994**	**12/22/1994**	**12/13/1994**	**12/13/1994**	**12/19/1994**	**12/19/1994**
UNITS	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Antimony	--	--	--	--	--	--
Arsenic	0.55 J	0.30 J	1.8	0.65	1.9	0.67 J
Beryllium	--	--	--	--	--	--
Cadmium	76	51.6	10.5	5.6	9.1	28.4
Chromium (total)	10.5	10.8	12.4	6.1	6.3	18.2
Copper	9.1	10.7 J	13.5	--	5.8 J	6.8 J
Cyanide	n/a	n/a	n/a	n/a	n/a	n/a
Lead	6.5	4.2	25.2	11.8 J	14.4	10.3
Mercury	--	--	--	--	--	--
Nickel	11.1	14.4	12.7	4.6	4.8	7.8
Selenium	--	--	--	--	--	--
Silver	6.3	3.3	1.4	--	--	1.4
Thallium	--	--	--	--	--	--
Zinc	40	48.2	39	27	39.4	35.3

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SITE LOCATION	**SB-21**	**SB-22**	**SB-22**	**SB-22**	**SB-23**	**SB-23**
SAMPLE DEPTH	**9**	**2**	**5**	**7**	**2**	**5**
SAMPLE ID	**EP-SB21-3-9-11**	**EP-SB22-1-2-4**	**EP-SB22-2-5-7**	**EP-SB22-3-7-9**	**EP-SB23-1-2-4**	**EP-SB23-2-5-7**
LABORATORY SDG NO.						
SAMPLE DATE	**12/19/1994**	**12/22/1994**	**12/22/1994**	**12/22/1994**	**12/20/1994**	**12/20/1994**
UNITS	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Antimony	--	--	--	--	--	--
Arsenic	0.48 J	2.7	1.0 J	0.99 J	0.27 J	--
Beryllium	--	--	--	--	--	--
Cadmium	6.4	61	8.6	3.7	7.6	0.57
Chromium (total)	12.3	12.5	20.9	20.3	4.9	3.1
Copper	3.8 J	24.5	7.7 J	9.0 J	12.6	3.2 J
Cyanide	n/a	n/a	n/a	n/a	n/a	n/a
Lead	5.9	19.8	5.6	7.3	6.2	4.3
Mercury	--	--	--	--	--	--
Nickel	9.2	10.7	17.7	19.2	6.8	5
Selenium	--	0.68	--	--	--	--
Silver	--	33.8	1.4	--	3.2	--
Thallium	--	--	--	--	--	--
Zinc	44.2	61.3	33	30.3	29.6	18.9

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
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BASF Corporation, Plainville Massachusetts

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SITE LOCATION	SB-23	SB-24	SB-25	SB-26	SB-26	SB-27
SAMPLE DEPTH	9	8	6	2	8	6
SAMPLE ID	EP-SB23-3-9-11	EP-SB24-2-8-10	EP-SB25-2-6-8	EP-SB26-1-2-4	EP-SB26-2-8-10	EP-SB27-1-6-8
LABORATORY SDG NO.		A0041	A0041			A0140
SAMPLE DATE	12/20/1994	1/30/1995	34724	12/20/1994	12/20/1994	2/13/1995
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	--
Arsenic	0.44 J	0.79 J	0.42 J	0.77 J	0.26 J	0.66
Beryllium	--	--	--	--	--	--
Cadmium	--	1.2	--	--	--	--
Chromium (total)	6.6	7.7	12.3	8.6	5.7	12.0 J
Copper	4.2 J	112	49.2	8.6 J	3.5 J	7.1
Cyanide	n/a	n/a	n/a	--	--	n/a
Lead	4.9	9.0 J	5.4 J	7.7	4	5.2
Mercury	--	--	--	--	--	--
Nickel	7.5	9.1	8.5	8.5	7.4	7.7 J
Selenium	--	--	--	--	--	--
Silver	--	12.9 J	8.3 J	0.81	--	--
Thallium	--	--	--	--	--	--
Zinc	29.3	50.1 J	35.4 J	34.6	19.3	27.3

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
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BASF Corporation, Plainville Massachusetts

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SITE LOCATION	SB-27	SB-28	SB-28	SB-29	SB-29	SB-30
SAMPLE DEPTH	18	5	7	5	15	5
SAMPLE ID	EP-SB27-2-18-20	EP-SB28-1-5-7	EP-SB28-2-7-9	EP-SB29-1-5-7	EP-SB29-2-15-17	EP-SB30-1-5-7
LABORATORY SDG NO.	Z0417					
SAMPLE DATE	4/7/1995	12/8/1994	12/8/1994	12/7/1994	12/7/1994	12/6/1994
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	--
Arsenic	1.6	--	6.2	--	1.1	0.75
Beryllium	0.37	--	--	--	--	--
Cadmium	--	0.89	6.6	1.2	--	0.42
Chromium (total)	17.2 J	5.2	7.6	--	10.2	5.2
Copper	22.1	4	4.7	--	15.2	--
Cyanide	n/a	n/a	n/a	n/a	n/a	n/a
Lead	8.9	3.1	3.3	3.6	6	3.5
Mercury	--	--	--	--	--	--
Nickel	12.6	7.2	6.9	4.8	10.3	6.8
Selenium	0.79	--	--	--	--	--
Silver	1.9	--	--	--	--	--
Thallium	--	--	--	--	--	--
Zinc	41.9	33.4	20.2	17.8	27.4	21.3

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
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SITE LOCATION	SB-30	SB-33	SB-33	SB-34	SB-34	SB-34
SAMPLE DEPTH	15	10	14	2	6	8
SAMPLE ID	EP-SB30-2-15-17	EP-SB33-1-10-12	EP-SB33-2-14-16	EP-SB34-1-2-4	EP-SB34-2-6-8	EP-SB34-3-8-10
LABORATORY SDG NO.		Z0041	Z0041	Z0140	Z0140	Z0140
SAMPLE DATE	12/6/1994	1/13/1995	1/13/1995	2/9/1995	2/10/1995	2/10/1995
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	--
Arsenic	1.8	0.29	0.88	1	0.24	0.51
Beryllium	0.76	--	--	--	--	--
Cadmium	--	--	0.47	29.8	5	6.2
Chromium (total)	9.7	6.4	9.5	19.9 J	8.2 J	10.4 J
Copper	128	5.1	11.9	297	49	44.6
Cyanide	n/a	n/a	n/a	--	--	--
Lead	8.8	3.5 J	4.9	31.9	5.6	3.7
Mercury	--	--	--	--	--	--
Nickel	15	6.2	10.6	15.5 J	6.9 J	12.7 J
Selenium	--	--	--	--	--	--
Silver	--	--	0.55 J	2.8	--	--
Thallium	--	--	--	--	--	--
Zinc	48.7	23.9 J	28.4 J	55.7	44.1	42.6

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
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BASF Corporation, Plainville Massachusetts

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SITE LOCATION	**SB-37**	**SB-37**	**SB-38**	**SB-38**	**SB-39**	**SB-39**
SAMPLE DEPTH	**1**	**5**	**1**	**5**	**1**	**5**
SAMPLE ID	**EP-SB37-1-1-3**	**EP-SB37-2-5-7**	**EP-SB38-1-1-3**	**EP-SB38-2-5-7**	**EP-SB39-1-1-3**	**EP-SB39-2-5-7**
LABORATORY SDG NO.						
SAMPLE DATE	**12/12/1994**	**12/12/1994**	**11/22/1994**	**11/22/1994**	**12/7/1994**	**12/7/1994**
UNITS	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Antimony	--	--	--	--	--	--
Arsenic	1.4	--	0.44	0.8	0.94	0.29
Beryllium	--	--	--	0.17	--	--
Cadmium	61.9	16.6	7.2	7	0.57	2.5
Chromium (total)	11.2	5.7	4.6	7.6	9.4	11.3
Copper	56.3	--	8	12.4	--	5.1
Cyanide	--	--	--	--	--	--
Lead	15.7	4.2	3.7	4	6.1	4.4
Mercury	--	--	--	0.065	--	--
Nickel	15.3	8	6.7	14	7.3	7
Selenium	--	--	--	--	--	--
Silver	19.9	1.8	1.7	4	--	--
Thallium	--	--	0.12	--	--	--
Zinc	87.8	30.5	28.4	33.5	30.9	26.8

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
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BASF Corporation, Plainville Massachusetts

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SITE LOCATION	SB-40	SB-40	SB-41	SB-41	SB-43	SB-43
SAMPLE DEPTH	1	5	1	5	2	2
SAMPLE ID	EP-SB40-1-1-3	EP-SB40-2-5-7	EP-SB41-1-1-3	EP-SB41-2-5-7	EP-SB43-1-2-4	EP-SB43-1-2-4D
LABORATORY SDG NO.					Z0041	Z0041
SAMPLE DATE	11/22/1994	11/22/1994	12/12/1994	12/12/1994	1/19/1995	1/19/1995
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	n/a
Arsenic	0.72	0.79	4.2	0.49	0.4	n/a
Beryllium	0.17	0.26	--	--	--	n/a
Cadmium	0.89	0.46	3.6	3.8	--	n/a
Chromium (total)	7	7.6	8.2	4.9	3.4	n/a
Copper	7.4	5.5	18.3	--	3.2	n/a
Cyanide	--	--	--	--	n/a	n/a
Lead	5.7	5.5	25.8	5.2	3.2 J	n/a
Mercury	--	--	0.14	--	--	n/a
Nickel	7.8	17.9	6.6	7.8	5.6	n/a
Selenium	0.12 J	--	0.31	--	--	n/a
Silver	1.2	0.32	2	1.9	--	n/a
Thallium	--	--	--	--	--	n/a
Zinc	98.3	54.2	27.9	24.2	17.3 J	n/a

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
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SITE LOCATION	SB-43	SB-43	SB-44	SB-44	SB-44	SB-45
SAMPLE DEPTH	5	10	2	5	10	2
SAMPLE ID	EP-SB43-2-5-7	EP-SB43-3-10-12	EP-SB44-1-2-4	EP-SB44-2-5-7	EP-SB44-3-10-12	EP-SB45-1-2-4
LABORATORY SDG NO.	Z0041	Z0041	Z0041	Z0041	Z0041	Z0041
SAMPLE DATE	1/19/1995	1/19/1995	1/19/1995	1/19/1995	1/19/1995	1/11/1995
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	--
Arsenic	0.6	0.58 J	1.6 J	0.81 J	0.26 J	0.41
Beryllium	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--
Chromium (total)	5.4	6.5	8	6.5	3.4	5.7
Copper	3.8	4.4	4.3	4	3	7
Cyanide	n/a	n/a	n/a	n/a	n/a	n/a
Lead	4.3 J	5.3 J	4.2 J	5.6 J	2.4 J	5.0 J
Mercury	--	--	--	--	--	--
Nickel	5.7	8.6	8.1	8.6	4.2	7.3
Selenium	--	--	--	--	--	--
Silver	--	--	0.49 J	--	--	--
Thallium	--	--	--	--	--	--
Zinc	19.2 J	28.1 J	28.0 J	21.6 J	--	21.3 J

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.6: Soil Sampling Program - Detected Metals
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SITE LOCATION	**SB-45**	**SB-45**	**SB-RD33**
SAMPLE DEPTH	**5**	**11**	**10**
SAMPLE ID	**EP-SB45-2-5-7**	**EP-SB45-3-11-13**	**EP-SBRD33-3-10-12**
LABORATORY SDG NO.	**Z0041**	**Z0041**	**Z1359**
SAMPLE DATE	**1/11/1995**	**1/11/1995**	**11/23/1994**
UNITS	**mg/kg**	**mg/kg**	**mg/kg**
Antimony	--	--	--
Arsenic	0.35	0.36	3.2
Beryllium	--	--	0.35
Cadmium	--	--	81.7
Chromium (total)	3.7	5	192
Copper	4.3	6.9	603
Cyanide	n/a	n/a	94.5
Lead	3.2 J	3.9 J	130
Mercury	--	--	242
Nickel	6.8	8.9	36.3
Selenium	--	--	1.7 J
Silver	--	--	4990
Thallium	--	--	--
Zinc	17.7 J	24.0 J	68.3

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

mg/kg = milligrams per kilogram.

Table 4.1.7: Soil Sampling Program - SPLP Analytical Results for Metals
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	**SB-19**	**SB-20**	**SB-22**	**SB-23**	**SB-27**
SAMPLE DEPTH:	**8**	**5**	**2**	**9**	**18**
SAMPLE ID:	**EP-SB19-3-8-10**	**EP-SB20-2-5-7**	**EP-SB22-1-2-4**	**EP-SB23-3-9-11**	**EP-SB27-2-18-20**
LABORATORY SDG NO.:	**A1413**	**Z1413**	**B1413**	**A1413**	**Z0417**
UNITS	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Cadmium	0.0169	0.087	0.0516	--	--
Chromium	--	0.0035	--	--	0.0707
Copper	--	--	--	--	0.122 J
Lead	--	0.0115	--	--	0.0555
Zinc	--	0.118	--	--	0.177 J

Notes:
(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID indicates duplicate sample.
mg/L = milligrams per Liter

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	**SB-16**	**SB-16**	**SB-17**	**SB-18**	**SB-19**	**SB-20**
SAMPLE DEPTH:	**2**	**5**	**2**	**2**	**5**	**2**
SAMPLE ID:	**EP-SB16-1-2-4**	**EP-SB16-2-5-7**	**EP-SB17-1-2-4**	**EP-SB18-1-2-4**	**EP-SB19-2-5-7**	**EP-SB20-1-2-4**
LABORATORY SDG NO.:	**Z0041**	**Z0041**	**Z0041**	**Z0140**	**A1413**	**Z1413**
DATE SAMPLED:	**1/20/1995**	**1/20/1995**	**1/13/1995**	**2/6/1995**	**12/22/1994**	**12/13/1994**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
1,1,1-trichloroethane	23	2 J	--	--	--	--
1,1-dichloroethane	2 J	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--
Benzene	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	2 J	--
Methylene chloride	--	--	--	--	--	--
Styrene	--	--	--	--	2 J	--
Tetrachloroethene	120	28	2 J	--	--	3 J
Toluene	1 J	--	1 J	2 J	8	2 J
Trichloroethene	110	14	--	--	--	--
Vinyl acetate	--	--	--	--	--	--
Xylenes, total	--	--	--	--	9	--

Notes:
(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram
(4) fill material collected from within AOC 30

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
Revised Draft RFI Report
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SAMPLE LOCATION:	**SB-22**	**SB-22**	**SB-22**	**SB-24**	**SB-24**	**SB-24**
SAMPLE DEPTH:	**2**	**5**	**7**	**2**	**2**	**8**
SAMPLE ID:	**EP-SB22-1-2-4**	**EP-SB22-2-5-7**	**EP-SB22-3-7-9**	**EP-SB24-1-2-4**	**EP-SB24-1-2-4D**	**EP-SB24-2-8-10**
LABORATORY SDG NO.:	**B1413**	**B1413**	**B1413**	**A0041**	**A0041**	**A0041**
DATE SAMPLED:	**12/22/1994**	**12/22/1994**	**12/22/1994**	**1/30/1995**	**1/30/1995**	**1/30/1995**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
1,1,1-trichloroethane	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--
Benzene	--	--	--	--	4 J	--
Chlorobenzene	--	--	--	--	4 J	--
Chloroethane	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--
Styrene	--	--	--	--	--	--
Tetrachloroethene	4900	84	98	5200	470	6
Toluene	--	--	--	--	--	--
Trichloroethene	--	--	2 J	--	--	--
Vinyl acetate	--	--	--	--	--	--
Xylenes, total	--	--	--	--	--	--

Notes:
(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram
(4) fill material collected from within AOC 30

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
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SAMPLE LOCATION:	**SB-25**	**SB-25**	**SB-25**	**SB-29**	**SB-30**	**SB-30**
SAMPLE DEPTH:	**2**	**6**	**14**	**15**	**5**	**15**
SAMPLE ID:	**EP-SB25-1-2-4**	**EP-SB25-2-6-8**	**EP-SB25-3-14-16**	**EP-SB29-2-15-17**	**EP-SB30-1-5-7**	**EP-SB30-2-15-17**
LABORATORY SDG NO.:	**A0041**	**A0041**	**A0041**	**Z1413**	**Z1413**	**Z1413**
DATE SAMPLED:	**1/24/1995**	**1/25/1995**	**1/25/1995**	**12/7/1994**	**12/6/1994**	**12/6/1994**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
1,1,1-trichloroethane	--	16	6800	--	--	2 J
1,1-dichloroethane	--	4 J	470 J	--	--	1 J
1,1-dichloroethene	--	--	500 J	--	--	--
Benzene	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--
Styrene	--	--	--	--	--	--
Tetrachloroethene	3 J	220	--	2 J	--	2 J
Toluene	--	--	--	--	--	--
Trichloroethene	--	--	--	220	--	10
Vinyl acetate	--	--	--	--	1 J	--
Xylenes, total	--	--	--	--	--	--

Notes:
(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram
(4) fill material collected from within AOC 30

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
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SAMPLE LOCATION:	**SB-32**	**SB-32**	**SB-34**	**SB-34**	**SB-35**	**SB-36**
SAMPLE DEPTH:	**2**	**8**	**2**	**6**	**25**	**1**
SAMPLE ID:	**EP-SB32-1-2-4**	**EP-SB32-2-8-10**	**EP-SB34-1-2-4**	**EP-SB34-2-6-8**	**EP-SB35-4-25-27**	**EP-SB36-1-1-3**
LABORATORY SDG NO.:	**A0140**	**A0140**	**Z0140**	**Z0140**	**Z0140**	**Z0147**
DATE SAMPLED:	**2/10/1995**	**2/10/1995**	**2/9/1995**	**2/10/1995**	**2/9/1995**	**1/23/1995**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
1,1,1-trichloroethane	--	4 J	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	12000 J
1,1-dichloroethene	--	--	--	--	--	--
Benzene	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	2900 J
Ethylbenzene	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--
Styrene	--	--	--	--	--	--
Tetrachloroethene	14	140	8	8	7	2200 J
Toluene	--	--	--	--	--	--
Trichloroethene	--	--	--	--	8	--
Vinyl acetate	--	--	0.4 J	--	--	--
Xylenes, total	--	--	--	--	--	--

Notes:
(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram
(4) fill material collected from within AOC 30

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
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SAMPLE LOCATION:	SB-36B	SB-36C (4)	SB-36CR	SB-36CR	SB-37	SB-37
SAMPLE DEPTH:	2	1	5.5	9	1	5
SAMPLE ID:	EP-SB36B-1-2-4	EP-SB36C-1-1-2	EP-SB36C-2-5.5-6	EP-SB36C-3-9-10	EP-SB37-1-1-3	EP-SB37-2-5-7
LABORATORY SDG NO.:	A0041	2797A	2797A	2797A	Z1413	Z1413
DATE SAMPLED:	1/26/1995	11/10/1997	11/10/1997	11/10/1997	12/12/1994	12/12/1994
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
1,1,1-trichloroethane	6	410 J	--	--	--	4 J
1,1-dichloroethane	--	53,000	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--
Benzene	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--
Methylene chloride	--	440	--	--	--	--
Styrene	--	--	--	--	--	--
Tetrachloroethene	6	1200	--	--	3 J	170 J
Toluene	2 J	--	--	--	--	1 J
Trichloroethene	--	--	--	--	--	--
Vinyl acetate	--	--	--	--	--	--
Xylenes, total	--				--	--

Notes:
(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram
(4) fill material collected from within AOC 30

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
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SAMPLE LOCATION:	**SB-38**	**SB-38**	**SB-39**	**SB-39**	**SB-40**	**SB-40**
SAMPLE DEPTH:	**1**	**5**	**1**	**5**	**1**	**5**
SAMPLE ID:	**EP-SB38-1-1-3**	**EP-SB38-2-5-7**	**EP-SB39-1-1-3**	**EP-SB39-2-5-7**	**EP-SB40-1-1-3**	**EP-SB40-2-5-7**
LABORATORY SDG NO.:	**Z1359**	**Z1359**	**Z1413**	**Z1413**	**Z1359**	**Z1359**
DATE SAMPLED:	**11/22/1994**	**11/22/1994**	**12/7/1994**	**12/7/1994**	**11/22/1994**	**11/22/1994**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
1,1,1-trichloroethane	--	1 J	--	--	1 J	--
1,1-dichloroethane	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--
Benzene	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--
Methylene chloride	--	4 JB	1 J	--	--	--
Styrene	--	--	--	--	--	--
Tetrachloroethene	--	13	1 J	9	14	1 J
Toluene	1 J	4 J	2 J	--	21	2 J
Trichloroethene	--	--	--	--	1 J	--
Vinyl acetate	--	--	--	--	--	--
Xylenes, total	--	--	--	--	1 J	--

Notes:
(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram
(4) fill material collected from within AOC 30

Table 4.1.8: RFI Phase I/II Soil Sampling Program - Detected VOCs
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SAMPLE LOCATION:	**SB-41**	**SB-RD33**	**SB-RD33A**
SAMPLE DEPTH:	**1**	**10**	**10**
SAMPLE ID:	**EP-SB41-1-1-3**	**EP-SBRD33-3-10-**	**EP-SBRD33A-1-10**
LABORATORY SDG NO.:	**Z1413**	**Z1359**	**Z1413**
DATE SAMPLED:	**12/12/1994**	**11/23/1994**	**12/16/1994**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**
1,1,1-trichloroethane	--	4 J	--
1,1-dichloroethane	--	--	--
1,1-dichloroethene	--	--	--
Benzene	--	--	--
Chlorobenzene	--	--	--
Chloroethane	--	--	--
Ethylbenzene	--	--	--
Methylene chloride	--	--	--
Styrene	--	--	--
Tetrachloroethene	1 J	63	10
Toluene	2 J	2 J	--
Trichloroethene	--	27	9
Vinyl acetate	--	--	--
Xylenes, total	--	--	--

Notes:
(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram
(4) fill material collected from within AOC 30

Table 4.1.9: RFI Phase I Soil Sampling Program - Detected SVOCs
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SAMPLE LOCATION:	**SB-26**	**SB-41**	**SB-RD33**	**SB-RD33A**
SAMPLE DEPTH:	**2**	**5**	**10**	**10**
SAMPLE ID:	**EP-SB26-1-2-4**	**EP-SB41-2-5-7**	**EP-SBRD33-3-10-**	**EP-SBRD33A-1-10**
LABORATORY SDG NO.:	**A1413**	**Z1413**	**Z1359**	**Z1413**
DATE SAMPLED:	**12/20/1994**	**12/12/1994**	**11/23/1994**	**12/16/1994**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Benzoic acid	23 J	10 J	--	--
bis (2-Ethylhexyl) phthalate	--	--	15000 J	--
Di-n-butylphthalate	12 J	--	--	--
Fluoranthene	--	--	5900 J	--
Phenanthrene	15 J	--	--	--
Pyrene	--	--	--	62 J

Notes:
(1) "J" qualifier indicates estimated value.
(3) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram

Table 4.1.10: RFI Soil Sampling Program - Detected BTEX and TPHD
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SAMPLE LOCATION:	**SB-16**	**SB-17**	**SB-18**	**SB-19**	**SB-20**	**SB-24**	**SB-36B**
SAMPLE DEPTH:	**2**	**2**	**2**	**5**	**2**	**2**	**2**
SAMPLE ID:	**EP-SB16-1-2-4**	**EP-SB17-1-2-4**	**EP-SB18-1-2-4**	**EP-SB19-2-5-7**	**EP-SB20-1-2-4**	**EP-SB24-1-2-4D**	**EP-SB36B-1-2-4**
LABORATORY SDG NO.:	**Z0041**	**Z0041**	**Z0140**	**A1413**	**Z1413**	**A0041**	**A0041**
DATE SAMPLED:	**1/20/1995**	**1/13/1995**	**2/6/1995**	**12/22/1994**	**12/13/1994**	**1/30/1995**	**1/26/1995**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Benzene	--	--	--	--	--	4 J	--
Ethyl benzene	--	--	--	2 J	--	--	--
Toluene	1 J	1 J	2 J	8	2 J	--	2 J
Xylenes, total	--	--	--	9	--	--	--
TPH (as diesel)	--	--	--	--	--	--	--

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram

Table 4.1.10: RFI Soil Sampling Program - Detected BTEX and TPHD
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SAMPLE LOCATION:	**SB-37**	**SB-38**	**SB-38**	**SB-39**	**SB-40**	**SB-40**	**SB-41**
SAMPLE DEPTH:	**5**	**1**	**5**	**1**	**1**	**5**	**1**
SAMPLE ID:	**EP-SB37-2-5-7**	**EP-SB38-1-1-3**	**EP-SB38-2-5-7**	**EP-SB39-1-1-3**	**EP-SB40-1-1-3**	**EP-SB40-2-5-7**	**EP-SB41-1-1-3**
LABORATORY SDG NO.:	**Z1413**	**Z1359**	**Z1359**	**Z1413**	**Z1359**	**Z1359**	**Z1413**
DATE SAMPLED:	**12/12/1994**	**11/22/1994**	**11/22/1994**	**12/7/1994**	**11/22/1994**	**11/22/1994**	**12/12/1994**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Benzene	--	--	--	--	--	--	--
Ethyl benzene	--	--	--	--	--	--	--
Toluene	1 J	1 J	4 J	2 J	21	2 J	2 J
Xylenes, total	--	--	--	--	1 J	--	--
TPH (as diesel)	--	--	--	--	--	--	--

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram

Table 4.1.10: RFI Soil Sampling Program - Detected BTEX and TPHD
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SAMPLE LOCATION:	**SB-RD33**	**SB-RD33**
SAMPLE DEPTH:	**10**	**10**
SAMPLE ID:	**EP-SBRD33-3-10-**	**EP-SBRD33-3-10-**
LABORATORY SDG NO.:	**Z1359**	**Z1359**
DATE SAMPLED:	**11/23/1994**	**11/23/1994**
UNITS	**µg/kg**	**µg/kg**
Benzene	--	--
Ethyl benzene	--	--
Toluene	2 J	--
Xylenes, total	--	--
TPH (as diesel)	--	160

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram

Table 4.1.11: RFI Phase I Soil Sampling Program - Detected PCBs
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SITE_ID	**SB-38**	**SB-38**	**SB-41**	**SB-41**	**SB-RD33**
Sample Depth	**1**	**5**	**1**	**5**	**10**
Sample ID	**EP-SB38-1-1-3**	**EP-SB38-2-5-7**	**EP-SB41-1-1-3**	**EP-SB41-2-5-7**	**EP-SBRD33-3-10-**
Sample Date	**11/22/1994**	**11/22/1994**	**12/12/1994**	**12/12/1994**	**11/23/1994**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1248	37 J	82 J	84000 J	2500 J	74000 J
Aroclor 1254	--	--	160000 J	4300 J	80000 J
Aroclor 1260	--	--	--	--	25000

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected
(3) "D" in sample ID indicates duplicate sample.
µg/kg = micrograms per kilogram

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
MW01	Overburden	203.41	9/87	9.51	193.9
			8/88	8.61	194.8
			9/25/1989	7.42	195.99
			11/28/1989	5.34	198.07
			6/15/1990	8.01	195.4
			3/21/1991	8.21	195.2
			11/14/1991	8.01	195.4
			12/18/1992	8.01	195.4
		203.22	1/4/1995	7.05	196.17
			2/27/1995	7.57	195.65
			4/26/1995	7.65	195.57
			4/17/1997	6.90	196.32
			8/11/1997	9.01	194.21
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	12.86	190.36
			11/20/2002	7.48	195.74
			9/29/2003	9.49	193.73
		203.15	10/18/2004	8.02	195.13
		202.79	2/24/2006	7.07	195.72
			11/9/2006	6.01	196.78
			10/24/2008	7.53	195.26
			10/22/2009	7.70	195.09
			11/10/2010	7.74	195.05
MW02	Overburden	204.59	9/87	22.79	181.8
			8/88	20.69	183.9
			9/25/1989	19.83	184.76
			11/28/1989	19.38	185.21
			6/15/1990	16.99	187.6
			3/21/1991	NM	NM
			11/14/1991	NM	NM
			12/18/1992	13.49	191.1
		203.59	1/3/1995	17.13	186.46
			2/27/1995	18.59	185.00
			4/26/1995	18.73	184.86
			4/17/1997	16.05	187.54
			8/11/1997	21.78	181.81
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	23.84	179.75
			11/20/2002	19.07	184.52

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			9/29/2003	21.81	181.78
			10/18/2004	20.52	183.07
		203.20	2/24/2006	16.95	186.25
			11/9/2006	18.07	185.13
			11/26/2007	22.28	180.92
			10/24/2008	19.26	183.94
			10/22/2009	19.46	183.74
			11/10/2010	19.72	183.48
MW03	Overburden	197.93	9/87	19.33	178.6
			8/88	17.43	180.5
			9/25/1989	16.73	181.2
			11/28/1989	16.55	181.38
			6/15/1990	14.03	183.9
			3/21/1991	11.53	186.4
			11/14/1991	12.53	185.4
			12/18/1992	11.53	186.4
		196.89	1/3/1995	15.01	181.88
			2/27/1995	15.73	181.16
			4/26/1995	15.87	181.02
			4/11/1997	14.75	182.14
			8/11/1997	16.59	180.30
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	dry	dry
			11/20/2002	21.03	175.86
			9/29/2003	dry	dry
			10/18/2004	dry	dry
		196.59	2/24/2006	15.24	181.35
			11/9/2006	16.22	180.37
			11/26/2007	dry	dry
			10/24/2008	dry	dry
			10/22/2009	19.62	176.97
			11/10/2010	17.54	179.05
MW04	Overburden	201.36	9/87	24.56	176.8
			8/88	22.76	178.6
			9/25/1989	22.12	179.24
			11/28/1989	21.66	179.7
			6/15/1990	18.96	182.4
			3/21/1991	17.76	183.6
			11/14/1991	17.46	183.9

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			12/18/1992	14.96	186.4
		201.29	1/3/1995	20.05	181.24
			2/27/1995	20.91	180.38
			4/26/1995	21.14	180.15
			4/17/1997	17.81	183.48
			8/11/1997	20.75	180.54
			7/99	NM	NM
			3/00	22.64	178.65
			12/4/2001	dry	dry
			11/20/2002	23.32	177.97
			9/29/2003	24.31	176.98
			10/18/2004	24.10	177.19
		200.99	2/24/2006	22.83	178.16
			11/9/2006	24.82	176.17
			11/26/2007	dry	dry
			10/24/2008	24.51	176.48
			10/22/2009	24.28	176.71
			11/10/2010	dry	dry
MW05	Overburden	200.17	9/87	11.17	189.0
			8/88	8.67	191.5
			9/25/1989	7.76	192.41
			11/28/1989	8.08	192.09
			6/15/1990	7.97	192.2
			3/21/1991	7.97	192.2
			11/14/1991	7.97	192.2
			12/18/1992	7.67	192.5
		199.03	1/4/1995	6.37	192.66
			2/27/1995	6.48	192.55
			4/26/1995	6.50	192.53
			4/17/1997	6.05	192.98
			8/11/1997	7.98	191.05
			7/99	7.63	191.40
			3/00	NM	NM
			12/4/2001	19.17	179.86
			11/20/2002	7.31	191.72
			9/29/2003	NM	NM
		200.15	10/18/2004	7.77	192.38
		199.80	2/24/2006	7.25	192.55
			11/9/2006	7.18	192.62
			11/26/2007	9	190.80
			10/24/2008	7.7	192.10

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			10/22/2009	7.69	192.11
			11/10/2010	7.85	191.95
MW06	Overburden	199.17	9/87	5.07	194.1
			8/88	4.77	194.4
			9/25/1989	3.02	196.15
			11/28/1989	4.47	194.7
			6/15/1990	3.97	195.2
			3/21/1991	9.77	189.4
			11/14/1991	3.97	195.2
			12/18/1992	2.57	196.6
		196.09	1/4/1995	3.13	192.96
			2/27/1995	3.62	192.47
			4/26/1995	3.70	192.39
			4/17/1997	3.10	192.99
			8/11/1997	5.12	190.97
			7/99	NM	NM
			3/00	NM	NM
		198.55	12/4/2001	7.55	191.00
			11/20/2002	3.78	194.77
			9/29/2003	5.36	193.19
		199.05	10/18/2004	4.31	194.74
		198.59	2/24/2006	3.22	195.37
			11/9/2006	2.8	195.79
			11/26/2007	6.3	192.29
			10/24/2008	4.08	194.51
			10/22/2009	4.11	194.48
			11/10/2010	4.15	194.44
MW07	Overburden	209.25	9/87	14.95	194.3
			8/88	13.95	195.3
			9/25/1989	12.94	196.31
			11/28/1989	13.33	195.92
			6/15/1990	10.95	198.3
			3/21/1991	9.75	199.5
			11/14/1991	9.95	199.3
			12/18/1992	8.75	200.5
		208.18	1/3/1995	11.53	196.65
			2/27/1995	12.01	196.17

Table 4.2.1a: Ground Water Elevations
Revised Draft RFI Report
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			4/26/1995	12.13	196.05
			4/17/1997	11.56	196.62
			8/11/1997	13.85	194.33
			7/99	13.34	194.84
			3/00	13.21	194.97
			12/4/2001	15.82	192.36
			11/20/2002	13.28	194.90
			9/29/2003	14.60	193.58
			10/18/2004	14.08	194.10
		209.11	2/24/2006	12.86	196.25
			11/9/2006	12.92	196.19
			11/26/2007	15.09	194.02
			10/24/2008	13.55	195.56
			10/22/2009	13.46	195.65
			11/10/2010	13.62	195.49
MW08	Overburden	181.45	9/87	8.25	173.2
			8/88	7.25	174.2
			9/25/1989	6.02	175.43
			11/28/1989	5.65	175.8
			6/15/1990	2.95	178.5
			3/21/1991	2.95	178.5
			11/14/1991	2.45	179.0
			12/18/1992	2.45	179.0
		181.43	1/3/1995	5.95	175.48
			2/27/1995	6.55	174.88
			4/26/1995	6.80	174.63
			4/17/1997	5.77	175.66
			8/11/1997	7.02	174.41
			7/99	9.18	172.25
			3/00	6.26	175.17
			12/4/2001	9.52	171.91
			11/20/2002	6.97	174.46
			9/29/2003	8.72	172.71
			10/18/2004	8.20	173.23
		181.09	2/24/2006	6.95	174.14
			11/9/2006	6.25	174.84

Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			11/26/2007	8.75	172.34
			10/24/2008	7.72	173.37
			10/22/2009	7.23	173.86
			11/10/2010	6.67	174.42
MW09/MW09A	Overburden	177.17	9/87	6.97	170.2
			8/88	6.87	170.3
			9/25/1989	5.98	171.19
			11/28/1989	5.70	171.47
			6/15/1990	3.97	173.2
			3/21/1991	3.97	173.2
			11/14/1991	3.97	173.2
			12/18/1992	4.17	173.0
		177.00	1/3/1995	5.76	171.24
			2/27/1995	6.06	170.94
			4/26/1995	8.22	168.78
			4/17/1997	5.97	171.03
			8/11/1997	7.27	169.73
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	7.13	169.87
			11/20/2002	6.00	171.00
			9/29/2003	6.88	170.12
			10/18/2004	6.54	170.46
		176.67	2/24/2006	6.38	170.29
			11/9/2006	5.85	170.82
			11/26/2007	6.89	169.78
			10/24/2008	6.65	170.02
			10/22/2009	6.52	170.15
			11/10/2010	6.26	170.41
MW09B		176.14	2/24/2006	5.27	170.87
			11/9/2006	4.69	171.45
			11/26/2007	6.12	170.02
			10/24/2008	5.76	170.38
			10/22/2009	5.58	170.56
			11/10/2010	5.15	170.99
MW09C		175.27	2/24/2006	4.00	171.27
			11/9/2006	3.33	171.94
			11/26/2007	4.92	170.35
			10/24/2008	4.5	170.77
			10/22/2009	4.41	170.86
			11/10/2010	3.2	172.07
MW12	Overburden	200.69	8/88	19.19	181.5
			9/25/1989	15.60	185.09
			11/28/1989	18.28	182.41
			6/15/1990	15.99	184.7

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			3/21/1991	15.49	185.2
			11/14/1991	15.49	185.2
			12/18/1992	12.89	187.8
		200.63	1/3/1995	17.66	182.97
			2/27/1995	18.41	182.22
			4/26/1995	18.80	181.83
			4/17/1997	17.82	182.81
			8/11/1997	20.00	180.63
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	dry	dry
			11/20/2002	23.27	177.36
			9/29/2003	24.45	176.18
			10/18/2004	23.75	176.88
MW12A		197.70	2/24/2006	13.40	184.30
			11/9/2006	15.64	182.06
			11/26/2007	dry	dry
			10/24/2008	14.15	183.55
			10/22/2009	18.2	179.50
			11/10/2010	13.09	184.61
MW12B		197.79	2/24/2006	15.84	181.95
			11/9/2006	17.62	180.17
			11/26/2007	23.89	173.90
			10/24/2008	20.75	177.04
			10/22/2009	23.61	174.18
			11/10/2010	20.08	177.71
MW13	Bedrock	205.92	8/88	12.92	193.0
			9/25/1989	12.08	193.84
			11/28/1989	12.42	193.5
			6/15/1990	5.02	200.9
			3/21/1991	9.02	196.9
			11/14/1991	7.02	198.9
			12/18/1992	7.02	198.9
		205.93	1/3/1995	11.51	194.42
			2/27/1995	12.16	193.77
			4/26/1995	12.33	193.60
			4/17/1997	11.54	194.39
			8/11/1997	14.92	191.01
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	17.07	188.86
			11/20/2002	12.96	192.97

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			9/29/2003	14.83	191.10
		205.89	10/18/2004	13.67	192.22
		205.12	2/24/2006	13.91	191.21
			11/9/2006	13.81	191.31
			11/26/2007	na	na
			10/24/2008	14.23	190.89
			10/22/2009	13.79	191.33
			11/10/2010	15.85	189.27
MW14	Bedrock	197.61	8/88	17.91	179.7
			9/25/1989	16.70	180.91
			11/28/1989	16.48	181.13
			6/15/1990	13.51	184.1
			3/21/1991	13.81	183.8
			11/14/1991	14.51	183.1
			12/18/1992	13.71	183.9
		197.53	1/3/1995	15.96	181.57
			2/27/1995	16.65	180.88
			4/26/1995	16.84	180.69
			4/17/1997	15.40	182.13
			8/11/1997	17.00	180.53
			7/99	NM	NM
			3/00	21.96	175.57
			12/4/2001	29.16	168.37
			11/20/2002	22.06	175.47
			9/29/2003	28.77	168.76
			10/18/2004	25.83	171.70
		197.27	2/24/2006	15.97	181.30
			11/9/2006	16.99	180.28
			11/26/2007	28.39	168.88
			10/24/2008	21.14	176.13
			10/22/2009	23.03	174.24
			11/10/2010	18.31	178.96
MW15	Bedrock	201.20	8/88	22.00	179.2
			9/25/1989	19.75	181.45
			11/28/1989	19.30	181.9

Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			6/15/1990	13.70	187.5
			3/21/1991	14.70	186.5
			11/14/1991	11.70	189.5
			12/18/1992	12.40	188.8
		201.12	1/3/1995	18.90	182.22
			2/27/1995	19.52	181.60
			4/26/1995	20.03	181.09
			4/17/1997	18.00	183.12
			8/11/1997	21.12	180.00
			7/99	23.55	177.57
			3/00	21.60	179.52
			12/4/2001	26.17	174.95
			11/20/2002	21.80	179.32
			9/29/2003	23.60	177.52
			10/18/2004	23.14	177.98
		200.84	2/24/2006	22.86	177.98
			11/9/2006	24.72	176.12
			11/26/2007	31.76	169.08
			10/24/2008	24.33	176.51
			10/22/2009	24.61	176.23
			11/10/2010	25.51	175.33
MW16	Bedrock	198.18	9/25/1989	18.74	179.44
			11/28/1989	18.36	179.82
			6/15/1990	12.28	185.9
			3/21/1991	14.68	183.5
			11/14/1991	11.28	186.9
			12/18/1992	15.08	183.1
		198.13	1/3/1995	17.92	180.21
			2/27/1995	18.53	179.60
			4/26/1995	18.39	179.74
			4/17/1997	16.75	181.38
			8/11/1997	18.05	180.08
			7/99	31.92	166.21
			3/00	24.04	174.09
			12/4/2001	35.02	163.11
			11/20/2002	26.64	171.49
			9/29/2003	31.10	167.03
			10/18/2004	27.38	170.75
		197.84	2/24/2006	18.06	179.78
			11/9/2006	20.02	177.82
			11/26/2007	30.22	167.62
			10/24/2008	24.4	173.44
			10/22/2009	25.75	172.09
			11/10/2010	20.95	176.89
MW17	Bedrock	201.65	9/25/1989	20.62	181.03
			11/28/1989	18.72	182.93

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			6/15/1990	18.45	183.2
			3/21/1991	21.95	179.7
			11/14/1991	22.45	179.2
			12/18/1992	20.85	180.8
		201.59	1/3/1995	20.02	181.57
			2/27/1995	20.77	180.82
			4/26/1995	21.03	180.56
			4/17/1997	18.45	183.14
			8/11/1997	20.65	180.94
			7/99	24.69	176.90
			3/00	22.77	178.82
			12/4/2001	26.78	174.81
			11/20/2002	23.23	178.36
			9/29/2003	24.50	177.09
			10/18/2004	24.14	177.45
		201.29	2/24/2006	23.20	178.09
			11/9/2006	24.93	176.36
			11/26/2007	30.81	170.48
			10/24/2008	24.85	176.44
MW17R		200.86	10/22/2009	40.88	159.98
			11/10/2010	32.65	168.21
MW18	Bedrock	199.71	9/25/1989	8.78	190.93
			11/28/1989	8.88	190.83
			6/15/1990	9.01	190.7
			3/21/1991	1.21	198.5
			11/14/1991	8.01	191.7
			12/18/1992	9.91	189.8
		199.70	1/4/1995	8.11	191.59
			2/27/1995	8.63	191.07
			4/26/1995	8.66	191.04
			4/17/1997	8.32	191.38
			8/11/1997	9.92	189.78
			7/99	9.07	190.63
			3/00	NM	NM
			12/4/2001	19.17	180.53
			11/20/2002	8.24	191.46
			9/29/2003	NM	NM
		199.64	10/18/2004	8.85	190.79
		199.31	2/24/2006	8.25	191.06
			11/9/2006	8.27	191.04
			11/26/2007	10.22	189.09
			10/24/2008	8.68	190.63
			10/22/2009	8.7	190.61
			11/10/2010	7.98	191.33
MW19	Bedrock	180.48	9/25/1989	6.10	174.38
			11/28/1989	5.79	174.69

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			6/15/1990	2.98	177.5
			3/21/1991	5.48	175.0
			11/14/1991	4.48	176.0
			12/18/1992	3.98	176.5
		180.46	1/3/1995	5.64	174.82
			2/27/1995	6.02	174.44
			4/26/1995	6.24	174.22
			4/17/1997	5.77	174.69
			8/11/1997	6.97	173.49
			7/99	NM	NM
			3/00	5.68	174.78
			12/4/2001	8.67	171.79
			11/20/2002	6.32	174.14
			9/29/2003	8.07	172.39
			10/18/2004	7.30	173.16
		180.15	2/24/2006	6.09	174.06
			11/9/2006	5.61	174.54
			11/26/2007	7.95	172.20
			10/24/2008	7.03	173.12
			10/22/2009	7.1	173.05
			11/10/2010	6.18	173.97
MW20A	Overburden	175.58	9/25/1989	5.75	169.83
			11/28/1989	5.17	170.41
			6/15/1990	3.98	171.6
			3/21/1991	3.98	171.6
			11/14/1991	3.98	171.6
			12/18/1992	2.98	172.6
		175.66	1/3/1995	5.42	170.24
			2/27/1995	5.73	169.93
			4/26/1995	5.93	169.73
			4/17/1997	5.54	170.12
			8/11/1997	6.55	169.11
			7/99	6.82	168.84
			3/00	5.61	170.05
			12/4/2001	6.59	169.07
			11/20/2002	5.95	169.71
			9/29/2003	6.66	169.00
			10/18/2004	6.32	169.34
		175.53	2/24/2006	5.97	169.56
			11/9/2006	5.85	169.68
			11/26/2007	6.6	168.93
			10/24/2008	6.36	169.17
			10/22/2009	6.29	169.24
			11/10/2010	6.31	169.22
MW20B	Bedrock	174.74	9/25/1989	4.02	170.72
			11/28/1989	3.60	171.14
			6/15/1990	6.04	168.7

Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			3/21/1991	7.54	167.2
			11/14/1991	8.04	166.7
			12/18/1992	7.34	167.4
		174.67	1/3/1995	3.65	171.02
			2/27/1995	4.00	170.67
			4/26/1995	4.16	170.51
			4/17/1997	3.80	170.87
			8/11/1997	4.92	169.75
			7/99	5.35	169.32
			3/00	3.75	170.92
			12/4/2001	5.10	169.57
			11/20/2002	4.19	170.48
			9/29/2003	5.06	169.61
			10/18/2004	4.63	170.04
		174.40	2/24/2006	4.23	170.17
			11/9/2006	3.75	170.65
			11/26/2007	4.9	169.50
			10/24/2008	4.63	169.77
			10/22/2009	4.47	169.93
			11/10/2010	4.25	170.15
MW20C	Deep Bedrock	174.71	2/24/2006	4.15	170.56
			11/9/2006	3.74	170.97
			11/26/2007	4.82	169.89
			10/24/2008	4.63	170.08
			10/22/2009	4.39	170.32
			11/10/2010	4.14	170.57
MW21A	Overburden	179.19	9/25/1989	5.96	173.23
			11/28/1989	6.11	173.08
			6/15/1990	4.99	174.2
			3/21/1991	3.49	175.7
			11/14/1991	3.99	175.2
			12/18/1992	3.39	175.8
		179.31	1/3/1995	5.72	173.59
			2/27/1995	5.94	173.37
			4/26/1995	6.04	173.27
			4/17/1997	5.90	173.41
			8/11/1997	7.27	172.04
		179.19	7/99	7.01	172.18
			3/00	6.01	173.18
			12/4/2001	6.90	172.29
			11/20/2002	6.22	172.97
			9/29/2003	6.87	172.32
			10/18/2004	6.52	172.67
		179.02	2/24/2006	5.78	173.24
			11/9/2006	5.73	173.29
			11/26/2007	6.64	172.38
			10/24/2008	6.45	172.57

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			10/22/2009	6.44	172.58
			11/10/2010	6.24	172.78
MW21B	Bedrock	179.64	9/25/1989	6.38	173.26
			11/28/1989	6.14	173.50
			6/15/1990	3.74	175.9
			3/21/1991	4.74	174.9
			11/14/1991	5.74	173.9
			12/18/1992	4.74	174.9
		179.66	1/3/1995	5.99	173.67
			2/27/1995	6.11	173.55
			4/26/1995	6.35	173.31
			4/17/1997	6.11	173.55
			8/11/1997	7.63	172.03
			7/99	8.61	171.05
			3/00	6.99	172.67
			12/4/2001	7.35	172.31
			11/20/2002	6.52	173.14
			9/29/2003	7.28	172.38
			10/18/2004	6.87	172.79
		179.27	2/24/2006	6.50	172.77
			11/9/2006	6.19	173.08
			11/26/2007	7.1	172.17
			10/24/2008	6.8	172.47
			10/22/2009	6.75	172.52
			11/10/2010	6.57	172.70
MW21C		178.75	2/24/2006	6.24	172.51
			11/9/2006	5.5	173.25
			11/26/2007	6.47	172.28
			10/24/2008	6.14	172.61
			10/22/2009	6.07	172.68
			11/10/2010	5.92	172.83
MW22A	Overburden	178.97	9/25/1989	6.06	172.91
			11/28/1989	5.71	173.26
			6/15/1990	3.97	175.0
			3/21/1991	3.97	175.0
			11/14/1991	3.47	175.5
			12/18/1992	2.27	176.7
		180.01	2/27/1995	4.93	175.08
			4/26/1995	5.66	174.35
			4/17/1997	5.23	174.78
			8/11/1997	6.83	173.18
			7/99	NM	NM
			3/00	5.15	174.86
			12/4/2001	7.20	172.81
			11/20/2002	5.62	174.39
			9/29/2003	6.90	173.11

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			10/18/2004	6.26	173.11
		179.72	2/24/2006	5.98	173.74
			11/9/2006	4.7	175.02
			11/26/2007	6.7	173.02
			10/24/2008	6.38	173.34
			10/22/2009	5.95	173.77
			11/10/2010	5.17	174.55
MW22B	Bedrock	179.97	9/25/1989	5.15	174.82
			11/28/1989	4.89	175.08
			6/15/1990	1.47	178.5
			3/21/1991	3.47	176.5
			11/14/1991	17.47	162.5
			12/18/1992	2.47	177.5
		178.99	2/27/1995	4.65	174.34
			4/26/1995	4.88	174.11
			4/17/1997	4.28	174.71
			8/11/1997	5.10	173.89
			7/99	5.83	173.16
			3/00	4.61	174.38
			12/4/2001	5.66	173.33
			11/20/2002	4.59	174.40
			9/29/2003	5.51	173.48
			10/18/2004	4.95	173.59
		178.18	2/24/2006	4.41	173.77
			11/9/2006	3.86	174.32
			11/26/2007	5.05	173.13
			10/24/2008	4.71	173.47
			10/22/2009	4.53	173.65
			11/10/2010	4.3	173.88
MW22C	Deep Bedrock	176.50	4/17/1997	2.25	174.25
			8/11/1997	3.05	173.45
			7/99	3.43	173.07
			3/00	2.91	173.59
			12/4/2001	3.80	172.70
			11/20/2002	NM	NM
			9/29/2003	3.34	173.16
			10/18/2004	2.97	173.50
		176.10	2/24/2006	3.18	172.92
			11/9/2006	5.04	171.06
			11/26/2007	4.42	171.68
			10/24/2008	4.11	171.99
			10/22/2009	2.44	173.66
			11/10/2010	2.79	173.31
MW23A	Overburden	177.35	9/25/1989	6.66	170.69

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			11/28/1989	4.24	173.11
			6/15/1990	1.95	175.4
			3/21/1991	1.95	175.4
			11/14/1991	1.45	175.9
			12/18/1992	0.25	177.1
		177.42	2/27/1995	4.73	172.69
			4/26/1995	4.82	172.60
			4/17/1997	4.39	173.03
			8/11/1997	5.27	172.15
			7/99	5.20	172.22
			3/00	4.36	173.06
			12/4/2001	5.30	172.12
			11/20/2002	4.70	172.72
			9/29/2003	5.15	172.27
			10/18/2004	5.02	172.40
		177.00	2/24/2006	4.48	172.52
			11/9/2006	4.52	172.48
			11/26/2007	5.06	171.94
			10/24/2008	4.97	172.03
			10/22/2009	4.97	172.03
			11/10/2010	4.76	172.24
MW23B	Bedrock	176.59	9/25/1989	2.49	174.10
			11/28/1989	2.92	173.67
			6/15/1990	2.99	173.6
			3/21/1991	4.99	171.6
			11/14/1991	2.99	173.6
			12/18/1992	4.99	171.6
		176.61	2/27/1995	3.27	173.34
			4/26/1995	3.41	173.20
			4/17/1997	2.81	173.80
			8/11/1997	3.93	172.68
			7/99	4.85	171.76
			3/00	2.92	173.69
			12/4/2001	4.04	172.57
			11/20/2002	3.41	173.20
			9/29/2003	3.85	172.76
			10/18/2004	3.67	172.94
		176.24	2/24/2006	2.91	173.33
			11/9/2006	3.23	173.01
			11/26/2007	3.77	172.47
			10/24/2008	3.59	172.65
			10/22/2009	3.59	172.65
			11/10/2010	3.13	173.11
MW24A	Overburden	181.72	9/25/1989	12.10	169.62
			11/28/1989	11.48	170.24
			6/15/1990	9.02	172.7

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			3/21/1991	9.52	172.2
			11/14/1991	9.02	172.7
			12/18/1992	8.02	173.7
		181.74	1/3/1995	11.63	170.11
			2/27/1995	11.99	169.75
			4/26/1995	12.15	169.59
			4/17/1997	11.56	170.18
			8/11/1997	13.13	168.61
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	12.92	168.82
			11/20/2002	abandoned	
MW24B	Bedrock	180.95	9/25/1989	9.52	171.43
			11/28/1989	9.02	171.93
			6/15/1990	8.95	172.0
			3/21/1991	8.75	172.2
			11/14/1991	8.95	172.0
			12/18/1992	8.45	172.5
		180.98	1/3/1995	9.11	171.87
			2/27/1995	9.34	171.64
			4/26/1995	9.44	171.54
			4/17/1997	8.99	171.99
			8/11/1997	9.97	171.01
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	10.50	170.48
			11/20/2002	abandoned	
MW24C	Deep Bedrock	181.22	4/17/1997	10.57	170.65
			8/11/1997	12.00	169.22
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	11.99	169.23
			11/20/2002	abandoned	
MW25A	Overburden	203.18	1/4/1995	18.30	184.88
			2/27/1995	18.68	184.50
			4/26/1995	18.70	184.48
			4/17/1997	18.23	184.95
			8/11/1997	18.63	184.55
			7/99	19.40	183.78
			3/00	NM	NM
			12/4/2001	22.73	180.45
			11/20/2002	19.04	184.14
			9/29/2003	21.10	182.08
			10/18/2004	20.10	183.08
		202.89	2/24/2006	18.93	183.96
			11/9/2006	19.45	183.44

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			11/26/2007	21.16	181.73
			10/24/2008	19.21	183.68
			10/22/2009	19.79	183.10
			11/10/2010	21.25	181.64
MW25B	Bedrock	202.72	2/27/1995	23.57	179.15
			4/26/1995	23.81	178.91
			4/17/1997	22.30	180.42
			8/11/1997	24.21	178.51
			7/99	24.57	178.15
			3/00	NM	NM
			12/4/2001	26.63	176.09
			11/20/2002	23.71	179.01
			9/29/2003	26.19	176.53
			10/18/2004	25.57	177.15
		202.41	2/24/2006	25.31	177.10
			11/9/2006	27.69	174.72
			11/26/2007	28.51	173.90
			10/24/2008	25.84	176.57
			10/22/2009	25.66	176.75
			11/10/2010	27.38	175.03
MW25C	Deep Bedrock		9/29/2003	23.89	176.46
			10/18/2004	23.27	177.08
		200.00	2/24/2006	23.07	176.93
			11/9/2006	24.46	175.54
			11/26/2007	26.27	173.73
			10/24/2008	23.56	176.44
			10/22/2009	23.34	176.66
			11/10/2010	25.09	174.91
MW26	Overburden	205.23	1/3/1995	9.33	195.90
			2/27/1995	9.92	195.31
			4/26/1995	10.00	195.23
			4/17/1997	9.40	195.83
			8/11/1997	10.57	194.66
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	12.70	192.53
			11/20/2002	9.57	195.66
			9/29/2003	11.23	194.00
			10/18/2004	10.27	194.96
		204.83	2/24/2006	9.60	195.23
			11/9/2006	9.2	195.63
			11/26/2007	16.62	188.21
			10/24/2008	10.22	194.61
			10/22/2009	9.9	194.93
			11/10/2010	9.62	195.21

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
MW27	Bedrock	198.73	2/27/1995	4.10	194.63
			4/26/1995	4.29	194.44
			4/17/1997	3.65	195.08
			8/11/1997	7.15	191.58
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	9.04	189.69
			11/20/2002	4.82	193.91
			9/29/2003	6.64	192.09
			10/18/2004	5.89	193.37
		198.83	2/24/2006	5.36	193.47
			11/9/2006	6.22	192.61
			11/26/2007	9.39	189.44
			10/24/2008	5.29	193.54
			10/22/2009	6.2	192.63
			11/10/2010	8.83	190.00
MW28 (2)	Overburden	202.71	1/4/1995	6.90	195.81
			2/27/1995	7.35	195.36
			4/26/1995	7.46	195.25
			4/17/1997	6.95	195.76
		208.01	8/11/1997	13.52	194.49
			7/99	NM	NM
			3/00	NM	NM
		206.58	12/4/2001	15.96	190.62
			11/20/2002	12.19	194.39
			9/29/2003	13.77	192.81
		202.98	10/18/2004	8.51	194.47
		202.53	2/24/2006	7.43	195.10
			11/9/2006	7.35	195.18
			October, 2007	destroyed	
MW29	Bedrock	205.40	2/27/1995	20.87	184.53
			4/26/1995	21.17	184.23
			4/17/1997	18.80	186.60
			8/11/1997	23.19	182.21
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	26.37	179.03
			11/20/2002	22.84	182.56
			9/29/2003	25.46	179.94
			10/18/2004	23.00	182.40
		205.25	2/24/2006	18.90	186.35
			11/9/2006	20.73	184.52
			11/26/2007	na	na
			10/24/2008	20.6	184.65
			10/22/2009	22.99	182.26
			11/10/2010	23.26	181.99

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
MW30A	Overburden	186.14	2/27/1995	9.33	176.81
			4/26/1995	8.90	177.24
			4/17/1997	8.37	177.77
			8/11/1997	10.21	175.93
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	10.32	175.82
			11/20/2002	8.70	177.44
			9/29/2003	10.37	175.77
		185.98	10/18/2004	10.10	175.88
		185.61	2/24/2006	8.93	176.68
			11/9/2006	8.75	176.86
			11/26/2007	9.63	175.98
			10/24/2008	9.06	176.55
			10/22/2009	9	176.61
			11/10/2010	9.15	176.46
MW30B	Bedrock	185.87	2/27/1995	8.68	177.19
			4/26/1995	9.40	176.47
			4/17/1997	7.86	178.01
			8/11/1997	9.76	176.11
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	10.73	175.14
			11/20/2002	8.34	177.53
			9/29/2003	9.83	176.04
			10/18/2004	9.47	176.40
		185.52	2/24/2006	8.65	176.87
			11/9/2006	8.56	176.96
			11/26/2007	9.43	176.09
			10/24/2008	8.81	176.71
			10/22/2009	8.77	176.75
			11/10/2010	8.79	176.73
MW31A	Overburden	183.92	2/27/1995	7.40	176.52
			4/26/1995	7.67	176.25
			4/17/1997	7.06	176.86
			8/11/1997	7.85	176.07
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	10.10	173.82
			11/20/2002	6.97	176.95
			9/29/2003	9.27	174.65
			10/18/2004	8.45	175.47
		183.60	2/24/2006	7.38	176.22
			11/9/2006	6.75	176.85
			11/26/2007	9.15	174.45
			10/24/2008	8.48	175.12
			10/22/2009	8.81	174.79

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			11/10/2010	6.93	176.67
MW31B	Bedrock	183.47	2/27/1995	6.28	177.19
			4/26/1995	6.46	177.01
			4/17/1997	5.76	177.71
			8/11/1997	8.04	175.43
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	9.20	174.27
			11/20/2002	7.55	175.92
			9/29/2003	7.55	175.92
			10/18/2004	7.81	175.66
		183.30	2/24/2006	6.35	176.95
			11/9/2006	6.81	176.49
			11/26/2007	na	na
			10/24/2008	6.95	176.35
			10/22/2009	7.76	175.54
			11/10/2010	7.45	175.85
MW32A	Overburden	193.69	2/27/1995	9.64	184.05
			4/26/1995	9.82	183.87
			4/17/1997	7.76	185.93
			8/11/1997	12.16	181.53
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	14.03	179.66
			11/20/2002	9.67	184.02
			9/29/2003	12.51	181.18
			10/18/2004	11.39	182.30
		193.32	2/24/2006	8.06	185.26
			11/9/2006	9.02	184.30
			11/26/2007	11.09	182.23
			10/24/2008	10.39	182.93
			10/22/2009	10.35	182.97
			11/10/2010	13.31	180.01
MW32B	Bedrock	193.37	2/27/1995	8.20	185.17
			4/26/1995	8.24	185.13
			4/17/1997	5.70	187.67
			8/11/1997	10.15	183.22
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	12.47	180.90
			11/20/2002	8.36	185.01
			9/29/2003	10.96	182.41
			10/18/2004	9.70	183.67
		192.98	2/24/2006	6.58	186.40
			11/9/2006	7.45	185.53
			11/26/2007	12.45	180.53

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			10/24/2008	8.93	184.05
			10/22/2009	9.07	183.91
			11/10/2010	9.1	183.88
MW33A	Overburden	172.72	2/27/1995	2.10	170.62
			4/26/1995	2.30	170.42
			4/17/1997	2.00	170.72
			8/11/1997	3.15	169.57
			7/99	3.61	169.11
			3/00	2.12	170.60
			12/4/2001	3.16	169.56
			11/20/2002	2.00	170.72
			9/29/2003	3.12	169.60
			10/18/2004	3.78	168.94
		172.67	2/24/2006	2.42	170.25
			11/9/2006	1.88	170.79
			11/26/2007	3.08	169.59
			10/24/2008	3.04	169.63
			10/22/2009	2.79	169.88
			11/10/2010	2.4	170.27
MW33B	Bedrock	173.35	2/27/1995	2.71	170.64
			4/26/1995	2.87	170.48
			4/17/1997	2.60	170.75
			8/11/1997	3.40	169.95
			7/99	5.92	167.43
			3/00	2.69	170.66
			12/4/2001	3.89	169.46
			11/20/2002	2.87	170.48
			9/29/2003	3.78	169.57
			10/18/2004	3.38	169.97
		173.03	2/24/2006	3.00	170.03
			11/9/2006	2.58	170.45
			11/26/2007	3.59	169.44
			10/24/2008	3.47	169.56
			10/22/2009	3.17	169.86
			11/10/2010	2.95	170.08
MW33C	Deep Bedrock	174.58	4/17/1997	4.30	170.28
			8/11/1997	5.20	169.38
			7/99	7.78	166.80
			3/00	4.37	170.21
			12/4/2001	5.47	169.11
			11/20/2002	4.80	169.78
			9/29/2003	5.45	169.13
			10/18/2004	5.22	169.36
		174.06	2/24/2006	4.56	169.50
			11/9/2006	4.56	169.50
			11/26/2007	5.27	168.79

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			10/24/2008	4.98	169.08
			10/22/2009	4.92	169.14
			11/10/2010	4.84	169.22
MW33D	Deep Bedrock	172.53	11/10/2010	3.41	169.12
MW34	Overburden	173.42	2/27/1995	2.88	170.54
			4/26/1995	2.89	170.53
			4/17/1997	2.60	170.82
			8/11/1997	3.47	169.95
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	3.67	169.75
			11/20/2002	2.70	170.72
			9/29/2003	4.08	169.34
			10/18/2004	3.23	170.19
		173.12	2/24/2006	2.85	170.27
			11/9/2006	2.91	170.21
			11/26/2007	3.5	169.62
			10/24/2008	3.42	169.70
			10/22/2009	3.23	169.89
			11/10/2010	3.12	170.00
MW35	Overburden	173.47	2/27/1995	2.35	171.12
			4/26/1995	2.43	171.04
			4/17/1997	2.32	171.15
			8/11/1997	3.73	169.74
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	3.02	170.45
			11/20/2002	2.40	171.07
			9/29/2003	3.97	169.50
			10/18/2004	3.26	170.21
		173.09	2/24/2006	2.50	170.59
			11/9/2006	2.35	170.74
			11/26/2007	2.8	170.29
			10/24/2008	2.79	170.30
			10/22/2009	2.71	170.38
			11/10/2010	2.58	170.51
MW36	Overburden	173.61	2/27/1995	NM	NM
			4/26/1995	2.43	171.18
			4/17/1997	2.38	171.23
			8/11/1997	4.41	169.20
			7/99	NM	NM
			3/00	2.71	170.90
			12/4/2001	3.05	170.56
			11/20/2002	2.53	171.08
			9/29/2003	3.13	170.48

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			10/18/2004	2.97	170.64
		173.42	2/24/2006	2.92	170.50
			11/9/2006	2.74	170.68
			11/26/2007	3.14	170.28
			10/24/2008	3.1	170.32
			10/22/2009	3.07	170.35
			11/10/2010	2.98	170.44
MW37	Bedrock	208.92	1/3/1995	12.29	196.63
			2/27/1995	12.77	196.15
			4/26/1995	12.89	196.03
			4/17/1997	12.37	196.55
			8/11/1997	14.32	194.60
			7/99	14.37	194.55
			3/00	12.83	196.09
			12/4/2001	15.90	193.02
			11/20/2002	13.01	195.91
			9/29/2003	14.37	194.55
			10/18/2004	13.55	195.37
		208.48	2/24/2006	12.32	196.16
			11/9/2006	12.35	196.13
			11/26/2007	14.55	193.93
			10/24/2008	13.05	195.43
			10/22/2009	12.93	195.55
			11/10/2010	13.16	195.32
MW38	Deep Bedrock	181.64	4/17/1997	8.99	172.65
			8/11/1997	9.94	171.70
			7/99	11.19	170.45
			3/00	9.27	172.37
			12/4/2001	10.98	170.66
			11/20/2002	6.42	175.22
			9/29/2003	10.66	170.98
			10/18/2004	10.13	171.51
		181.17	2/24/2006	9.47	171.70
			11/9/2006	9.2	171.97
			11/26/2007	10.57	170.60
			10/24/2008	10.07	171.10
			10/22/2009	9.97	171.20
			11/10/2010	9.39	171.78
MW39	Deep Bedrock	183.15	4/17/1997	9.54	173.61
			8/11/1997	11.10	172.05
			7/99	NM	NM
			3/00	NM	NM
			12/4/2001	11.03	172.12
			11/20/2002	abandoned	

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
MW40A	Overburden	195.14	12/4/2001	22.23	172.91
			11/20/2002	18.72	176.42
			9/29/2003	20.90	174.24
			10/18/2004	20.30	178.84
		194.81	2/24/2006	18.66	176.15
			11/9/2006	18.95	175.86
			11/26/2007	nc	nc
			10/24/2008	19.68	175.13
			10/22/2009	19.72	175.09
			11/10/2010	19.52	175.29
MW40B	Bedrock	194.88	12/4/2001	21.40	173.48
			11/20/2002	20.41	174.47
			9/29/2003	21.88	173.00
			10/18/2004	21.21	173.67
		194.54	2/24/2006	20.30	174.24
			11/9/2006	20.34	174.20
			11/26/2007	21.9	172.64
			10/24/2008	21.26	173.28
			10/22/2009	21.01	173.53
			11/10/2010	21.06	173.48
MW41A	Overburden	185.59	12/4/2001	12.24	173.35
			11/20/2002	10.00	175.59
			9/29/2003	11.80	173.79
			10/18/2004	11.25	174.34
		185.37	2/24/2006	9.86	175.51
			11/9/2006	9.84	175.53
			11/26/2007	11.57	173.80
			10/24/2008	10.68	174.69
			10/22/2009	10.41	174.96
			11/10/2010	10.44	174.93
MW41B	Bedrock	185.97	12/4/2001	13.56	172.41
			11/20/2002	11.84	174.13
			9/29/2003	13.23	172.74
			10/18/2004	12.52	173.45
		185.65	2/24/2006	11.88	173.77
			11/9/2006	11.78	173.87
			11/26/2007	13.13	172.52
			10/24/2008	12.6	173.05
			10/22/2009	12.45	173.20
			11/10/2010	12.3	173.35
MW42	Deep Bedrock	NA	11/9/2006	7.23	
			11/26/2007	na	
			10/24/2008	7.58	
			10/22/2009	7.58	

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			11/10/2010	7.54	
MW43A	Overburden	180.43	11/10/2010	7.45	172.98
MW43B	Bedrock	181.46	2/24/2006	6.25	175.21
			11/9/2006	6.11	175.35
			11/26/2007	6.58	174.88
			10/24/2008	6.43	175.03
			10/22/2009	6.47	174.99
			11/10/2010	6.6	174.86
MW43C	Deep Bedrock	180.41	2/24/2006	6.29	174.12
			11/9/2006	5.94	174.47
			11/26/2007	6.72	173.69
			10/24/2008	6.5	173.91
			10/22/2009	6.45	173.96
			11/10/2010	6.16	174.25
MW43D	Deep Bedrock	179.58	11/10/2010	na	na
MW44A	Overburden	197.31	2/24/2006	13.48	183.83
			11/9/2006	13.05	184.26
			11/26/2007	14.08	183.23
			10/24/2008	13.32	183.99
			10/22/2009	12.95	184.36
			11/10/2010	12.82	184.49
MW45A	Overburden	203.9	2/24/2006	9.59	194.31
			11/9/2006	9.35	194.55
			11/26/2007	11.81	192.09
			10/24/2008	10.11	193.79
			10/22/2009	10.04	193.86
			11/10/2010	9.93	193.97
MW45B	Bedrock	203.87	2/24/2006	23.69	180.18
			11/9/2006	28.49	175.38
			11/26/2007	23.1	180.77
			10/24/2008	14.94	188.93
			10/22/2009	13.33	190.54
			11/10/2010	17	186.87
MW45C	Deep Bedrock	203.26	10/22/2009	27.45	175.81
			11/10/2010	48.54	154.72
MW46A	Overburden	205.86	2/24/2006	11.17	194.69
			11/9/2006	11.15	194.71
			11/26/2007	13.38	192.48
			10/24/2008	11.29	194.57

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			10/22/2009	11.06	194.80
			11/10/2010	11.24	194.62
MW48A	Overburden	203.78	2/24/2006	14.48	189.30
			11/9/2006	12.48	191.30
			11/26/2007	17.99	185.79
			10/24/2008	12.56	191.22
			10/22/2009	12.18	191.60
			11/10/2010	12.43	191.35
MW48B	Bedrock	203.81	2/24/2006	15.11	188.70
			11/9/2006	15.21	188.60
			11/26/2007	19.08	184.73
			10/24/2008	16.06	187.75
			10/22/2009	16.03	187.78
			11/10/2010	16.71	187.10
MW49A	Overburden	203.61	2/24/2006	16.10	187.51
			11/9/2006	16.36	187.25
			11/26/2007	19.67	183.94
			10/24/2008	17.28	186.33
			10/22/2009	17.12	186.49
			11/10/2010	17.81	185.80
MW50		179.82	11/26/2007	8.33	171.49
			10/24/2008	7.71	172.11
			10/22/2009	7.47	172.35
			11/10/2010	6.21	173.61
MW51A	Overburden	183.05	11/26/2007	8.25	174.80
			10/24/2008	6.36	176.69
			10/22/2009	7.04	176.01
			11/10/2010	5.56	177.49
MW51B	Bedrock	182.2	11/26/2007	8.18	174.02
			10/24/2008	5.81	176.39
			10/22/2009	6.75	175.45
			11/10/2010	4.81	177.39
MW52		182.52	11/26/2007	8.13	174.39
			10/24/2008	6.61	175.91
			10/22/2009	6.88	175.64
			11/10/2010	5.74	176.78
MW53A	Overburden	203.82	10/22/2009	9.62	194.20
			11/10/2010	9.64	194.18
MW53B	Bedrock	203.75	10/22/2009	24.91	178.84
			11/10/2010	39.84	163.91

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
MW53C	Deep Bedrock	203.63	10/22/2009	27.89	175.74
			11/10/2010	50.32	153.31
MW54A	Overburden	202.79	11/10/2010	9.99	192.80
MW54B	Bedrock	202.64	11/10/2010	10.82	191.82
MW101	Overburden	203.76	2/24/2006	8.18	195.58
			11/9/2006	8.15	195.61
			11/26/2007	11.20	192.56
			10/24/2008	9.02	194.74
			10/22/2009	8.99	194.77
			11/10/2010	9.05	194.71
MW102	Overburden	203.71	2/24/2006	8.66	195.05
			11/9/2006	8.55	195.16
			11/26/2007	na	na
			10/24/2008	na	na
			10/22/2009	9.48	194.23
			11/10/2010	9.51	194.20
MW103	Overburden	203.83	2/24/2006	8.63	195.20
			11/9/2006	8.55	195.28
			11/26/2007	11.67	192.16
			10/24/2008	well damaged	na
		203.71	10/22/2009	9.37	194.34
			11/10/2010	9.4	194.31
MW104	Overburden	200	2/24/2006	4.61	195.39
			11/9/2006	4.55	195.45
			11/26/2007	7.71	192.29
			10/24/2008	5.47	194.53
		200.02	10/22/2009	5.44	194.58
			11/10/2010	5.49	194.53
MW105	Bedrock	203.49	2/24/2006	8.96	194.53
			11/9/2006	9.28	194.21
			October, 2007	destroyed	
MW106	Overburden	200.15	2/24/2006	4.88	195.27
			11/9/2006	4.81	195.34
			11/26/2007	7.92	192.23
			10/24/2008	5.76	194.39
			10/22/2009	5.75	194.40
			11/10/2010	5.81	194.34
P1	Overburden	203.94	2/24/2006	13.07	190.87
			11/9/2006	12.66	191.28

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			11/26/2007	15.22	188.72
			10/24/2008	17.14	186.80
			10/22/2009	13.11	190.83
			11/10/2010	13.13	190.81
P1A	Bedrock	203.89	2/24/2006	24.53	179.36
			11/9/2006	29.40	174.49
			11/26/2007	37.92	165.97
			10/24/2008	37.55	166.34
			10/22/2009	26.49	177.40
			11/10/2010	39.05	164.84
P2	Overburden	204.57	2/24/2006	20.80	183.77
			11/9/2006	18.81	185.76
			11/26/2007	21.81	182.76
			10/24/2008	19.64	184.93
			10/22/2009	20.24	184.33
			11/10/2010	20.27	184.30
P2A	Bedrock	204.28	2/24/2006	24.54	179.74
			11/9/2006	28.20	176.08
			11/26/2007	35.90	168.38
			10/24/2008	27.25	177.03
			10/22/2009	27.35	176.93
			11/10/2010	33.72	170.56
P3	Overburden	200.64	2/24/2006	18.74	181.90
			11/9/2006	19.71	180.93
			11/26/2007	23.64	177.00
			10/24/2008	21.47	179.17
			10/22/2009	20.11	180.53
			11/10/2010	21.55	179.09
P3A	Bedrock	200.62	2/24/2006	21.29	179.33
			11/9/2006	25.61	175.01
			11/26/2007	34.01	166.61
			10/24/2008	23.33	177.29
			10/22/2009	22.96	177.66
			11/10/2010	dry	dry
P4	Overburden	201.84	2/24/2006	23.46	178.38
			11/9/2006	25.21	176.63
			11/26/2007	27.05	174.79
			10/24/2008	24.62	177.22
			10/22/2009	25.79	176.05
			11/10/2010	26.3	175.54
P4A	Bedrock	201.43	2/24/2006	23.21	178.22
			11/9/2006	27.91	173.52

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			11/26/2007	36.61	164.82
			10/24/2008	25.99	175.44
			10/22/2009	25.21	176.22
			11/10/2010	34.62	166.81
P5	Overburden	199.1	2/24/2006	17.08	182.02
			11/9/2006	18.58	180.52
			11/26/2007	25.45	173.65
			10/24/2008	21.42	177.68
			10/22/2009	22.66	176.44
			11/10/2010	19.74	179.36
P5A	Bedrock	196.75	2/24/2006	17.81	178.94
			11/9/2006	21.09	175.66
			11/26/2007	29.43	167.32
			10/24/2008	26.56	170.19
			10/22/2009	27.04	169.71
			11/10/2010	25.23	171.52
P6	Overburden	199.3	2/24/2006	17.42	181.88
			11/9/2006	18.89	180.41
			11/26/2007	25.57	173.73
			10/24/2008	22.08	177.22
			10/22/2009	23.54	175.76
			11/10/2010	20.03	179.27
P6A	Bedrock	198.78	2/24/2006	20.78	178.00
			11/9/2006	22.43	176.35
			11/26/2007	30.64	168.14
			10/24/2008	26.89	171.89
			10/22/2009	28.08	170.70
			11/10/2010	22.99	175.79
P7	Overburden	198.69	2/24/2006	17.64	181.05
			11/9/2006	18.81	179.88
			11/26/2007	25.62	173.07
			10/24/2008	22.48	176.21
			10/22/2009	24.14	174.55
			11/10/2010	19.93	178.76
P7A	Bedrock	198.11	2/24/2006	19.68	178.43
			11/9/2006	22.33	175.78
			11/26/2007	30.74	167.37
			10/24/2008	27.41	170.70
			10/22/2009	28.08	170.03
			11/10/2010	22.68	175.43
P8	Overburden	198.51	2/24/2006	18.03	180.48
			11/9/2006	18.80	179.71

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			11/26/2007	25.43	173.08
			10/24/2008	22.31	176.20
			10/22/2009	23.94	174.57
			11/10/2010	19.82	178.69
P8A	Bedrock	198.1	2/24/2006	18.57	179.53
			11/9/2006	20.15	177.95
			11/26/2007	28.38	169.72
			10/24/2008	24.64	173.46
			10/22/2009	25.6	172.50
			11/10/2010	20.95	177.15
P9	Overburden	199.04	2/24/2006	13.38	185.66
			11/9/2006	14.30	184.74
			11/26/2007	15.97	183.07
			10/24/2008	13.29	185.75
			10/22/2009	14.56	184.48
			11/10/2010	16.16	182.88
P9A	Bedrock	198.85	2/24/2006	14.64	184.21
			11/9/2006	15.52	183.33
			11/26/2007	17.02	181.83
			10/24/2008	14.54	184.31
			10/22/2009	16.36	182.49
			11/10/2010	18.15	180.70
P10	Overburden	193.89	2/24/2006	12.72	181.17
			11/9/2006	14.68	179.21
			11/26/2007	dry	dry
			10/24/2008	17.81	176.08
			10/22/2009	19.14	174.75
			11/10/2010	15.02	178.87
P10A	Bedrock	194.01	2/24/2006	13.21	180.80
			11/9/2006	14.22	179.79
			11/26/2007	23.28	170.73
			10/24/2008	18.04	175.97
			10/22/2009	19.82	174.19
			11/10/2010	15.63	178.38
P11	Overburden	203.8	2/24/2006	10.00	193.80
			11/9/2006	9.92	193.88
			11/26/2007	12.96	190.84
			10/24/2008	10.44	193.36
			10/22/2009	10.24	193.56
			11/10/2010	10.82	192.98

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
P11A	Bedrock	203.93	2/24/2006	32.90	171.03
			11/9/2006	10.52	193.41
			11/26/2007	13.39	190.54
			10/24/2008	10.02	193.91
			10/22/2009	10.44	193.49
			11/10/2010	11.46	192.47
P12	Overburden	203.49	2/24/2006	9.89	193.60
			11/9/2006	10.88	192.61
			11/26/2007	12.78	190.71
			10/24/2008	10.34	193.15
			10/22/2009	10.01	193.48
			11/10/2010	10.66	192.83
P12A	Bedrock	203.83	2/24/2006	30.53	173.30
			11/9/2006	37.75	166.08
			11/26/2007	42.25	161.58
			10/24/2008	30.25	173.58
			10/22/2009	27.33	176.50
			11/10/2010	47.67	156.16
P12B	Deep Bedrock	203.92	10/22/2009	27.07	176.85
			11/10/2010	50.59	153.33
P13	Overburden	199.18	2/24/2006	18.86	180.32
			11/9/2006	20.12	179.06
			11/26/2007	21.50	177.68
			10/24/2008	19.29	179.89
			10/22/2009	20.02	179.16
			11/10/2010	22.9	176.28
P13A	Bedrock	199.43	2/24/2006	26.11	173.32
			11/9/2006	32.20	167.23
			11/26/2007	35.87	163.56
			10/24/2008	25.98	173.45
			10/22/2009	23.43	176.00
			11/10/2010	40.89	158.54
P14	Overburden	204.01	2/24/2006	21.21	182.80
			11/9/2006	22.81	181.20
			11/26/2007	dry	dry
			10/24/2008	25.05	178.96
			10/22/2009	24.99	179.02
			11/10/2010	23.11	180.90
P14A	Bedrock	203.9	2/24/2006	25.04	178.86
			11/9/2006	30.40	173.50
			11/26/2007	38.12	165.78
			10/24/2008	42.46	161.44

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			10/22/2009	42.09	161.81
			11/10/2010	34.33	169.57
P15	Overburden	197.3	2/24/2006	16.85	180.45
			11/9/2006	18.27	179.03
			11/26/2007	23.27	174.03
			10/24/2008	20.39	176.91
			10/22/2009	21.36	175.94
			11/10/2010	18.91	178.39
P15A	Bedrock	197.44	2/24/2006	19.16	178.28
			11/9/2006	23.37	174.07
			11/26/2007	31.10	166.34
			10/24/2008	33.38	164.06
			10/22/2009	33.03	164.41
			11/10/2010	26.61	170.83
P15ACY	Overburden	203.74	2/24/2006	8.71	195.03
			11/9/2006	8.60	195.14
			11/26/2007	na	na
			10/24/2008	na	na
			10/22/2009	9.60	194.14
			11/10/2010	9.83	193.91
P15CY	Overburden	203.66	2/24/2006	dry	dry
			11/9/2006	dry	dry
			11/26/2007	na	na
			10/24/2008	na	na
			10/22/2009	dry	dry
			11/10/2010	dry	dry
P16	Overburden	201.3	2/24/2006	6.23	195.07
			11/9/2006	6.12	195.18
			October, 2007	destroyed	
NEWP16	Overburden	201.7	10/22/2009	25.03	176.67
			11/10/2010	26.37	175.33
NEWP16A	Bedrock	201.12	11/10/2010	26.52	174.60
P16C	Deep Bedrock	201.37	10/22/2009	27.12	174.25
			11/10/2010	31.71	169.66
P17	Overburden	203.71	2/24/2006	8.49	195.22
			11/9/2006	8.42	195.29
			October, 2007	destroyed	
P17A	Overburden	203.71	2/24/2006	8.47	195.24

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)
			11/9/2006	8.39	195.32
			October, 2007	destroyed	
NEWP17A	Bedrock	200.93	10/22/2009	26.15	174.78
			11/10/2010	25.63	175.30
P18	Overburden	199.06	10/22/2009	24.09	174.97
			11/10/2010	21.05	178.01
P20	Overburden	201.43	2/24/2006	6.27	195.16
			11/9/2006	6.20	195.23
			October, 2007	destroyed	
P21	Overburden	201.85	2/24/2006	6.80	195.05
			11/9/2006	6.70	195.15
			October, 2007	destroyed	
P23	Overburden	201.57	2/24/2006	6.50	195.07
			11/9/2006	6.40	195.17
			October, 2007	destroyed	
LFR-1	OB/Bedrock	203.71	2/24/2006	8.64	195.07
			11/9/2006	8.54	195.17
LFR-2	OB/Bedrock	203.76	2/24/2006	8.75	195.01
			11/9/2006	8.65	195.11
			11/26/2007	na	na
			10/24/2008	well damaged	na
		203.79	10/22/2009	9.67	194.12
			11/10/2010	9.95	193.84
LFR-3	OB/Bedrock	203.79	2/24/2006	8.82	194.97
			11/9/2006	8.84	194.95
			11/26/2007	11.75	192.04
			10/24/2008	9.65	194.14
		203.89	10/22/2009	9.61	194.28
			11/10/2010	9.67	194.22

Notes:

(1) Current elevations are referenced to the National Geodetic Vertical Datum of 1929. Wells were resurveyed to a consisten benchmark as part of the Supplemental RFI. Variations in TOC elevations between surveys are likely the result of incons

(2) Top of casing changed due to well repair in May, 1997.

Table 4.2.1a: Ground Water Elevations
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Well Number	Aquifer Zone	Elevation TOC/MP (ft MSL)	Date	Depth to Water (ft)	Ground Water Elevation (1)

NM = Not Measured

Table 4.2.1b: GSM Ground Water Elevations
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Well ID	Top of Casing (a)	1/27/1999 Water Level	3/18/1999 Water Level	4/20/1999 Water Level	5/20/1999 Water Level	6/17/1999 Water Level	7/15/1999 Water Level	8/19/1999 Water Level	9/23/1999 Water Level	10/28/1999 Water Level	11/29/1999 Water Level	12/30/1999 Water Level	2/7/2000 Water Level	2/28/2000 Water Level	3/30/2000 Water Level	5/4/2000 water level
P10	193.89	179.12	177.24	172.86	169.9	169.79	168.88	169.35	175.23	173.09	169.97	173.35	172.69	173.4	177.62	178.98
P10A	194.01	179.23	177.32	174.48	173.44	173.5	173.48	173.44	175.26	174.8	173.49	173.96	173.44	174.16	177.6	179.25
MW03	196.59	179.68	176.84	172.55	dry	dry	dry	dry	175.46	173.82	dry	dry	dry	dry	177.65	179.39
MW14	197.27	179.22	177.39	172.74	168.44	168.42	168.15	168.24	175.35	173.29	168.4	168.81	168.26	168.61	177.63	179.16
MW16	197.84	177.7	174.76	170.49	163.1	162.21	158.24	160.76	171.91	169.19	163	167.35	166.46	167.45	176.67	178.41
P8A	198.1	177.79	174.77	170.6	165.47	164.63	159.24	161.98	171.62	168.82	162.71	165.59	165.26	165.63	176.48	178.29
P8	198.51	179.22	177.48	173.82	173.02	172.95	171.99	172.07	175.57	173.94	172.97	173.61	172.91	173.75	176.64	179.16
P7A	198.11	176.4	172.12	167.37	161.95	161.34	156.27	158.83	168.75	165.22	160.6	163.21	162.56	163.1	176.09	178.72
P7	198.69	179.69	177.5	173.82	173.02	172.94	171.76	172.036	175.54	173.91	172.93	172.94	172.46	172.99	177.7	178.91
P6A	198.78	177.32	174	169.44	164.57	163.96	158.2	162.22	170.81	167.86	163.72	165.45	164.99	165.78	176.5	178.4
P6	199.3	180.51	178.41	174.12	173.38	173.32	172.48	173.79	177.9	174.23	173.17	173.56	173.32	176.22	178.51	180.17
P5A	196.75	176.77	172.89	168.2	162.72	162.05	156.89	159.23	175.4	165.54	160.84	163.6	162.55	163.28	176.15	178.34
P5	199.1	180.74	178.68	174.44	173.42	173.39	172.04	172.59	171.43	173.63	173.42	173.47	173.32	173.67	179.25	180.51
MW12	200.63	181.26	179.59	176.63	176.08	176.32	dry	dry	177.3	176.99	176.85	176.93	176.88	176.92	179.79	180.61
MW04	200.99	180.48	178.83	177.44	176.69	176.87	175.76	175.99	177.63	177.59	177.22	177.41	177.13	177.38	179.11	180.27
MW15	200.84	181.72	179.94	178.38	177.66	177.55	176.33	176.52	178.46	178.35	177.97	178.47	177.81	177.95	180.13	180.89
MW17	201.29	180.73	179.23	177.75	176.91	177.05	175.72	175.95	177.68	177.54	177.19	177.44	177.08	177.57	179.28	180.19
P4	201.84	181.4	179.71	178.3	177.62	177.52	176.25	176.58	178.37	178.53	178.12	178.25	177.89	178.69	180.38	181.53
P4A	201.43	182.38	180.42	178.96	178.29	178.13	176.78	177.13	179.14	179.14	178.81	179.01	178.92	179.04	180.92	181.71
P3	200.64	185.66	182.22	180.21	179.55	179.34	178.27	177.99	180.07	180.01	179.58	180.07	179.85	180.21	183.12	183.23
P3A	200.62	182.8	180.72	178.13	178.46	178.41	177.11	177.32	179.33	179.31	178.95	179.42	179.28	179.15	181.29	181.95
25A	202.89	184.78	183.71	182.51	181.97	181.87	181.15	181.17	182.99	183.02	178.19	180.9	180.63	181.03	184.02	184.18
25B	202.41	179.54	178.79	177.8	177.27	177.04	176.25	176.2	178.14	178.01	177.43	177.91	177.74	177.99	178.88	178.94
P2A	204.28	182.8	180.78	179.26	178.6	178.44	177.07	177.39	179.44	179.46	179.1	179.17	178.96	179.07	181.32	181.87
P2	204.57	184.26	182.15	180.85	180.86	180.72	180.41	180.06	185.07	181.04	180.82	181	180.83	181.34	182.89	183.35
P1A	203.89	182.78	180.81	179.31	178.64	178.47	177.13	178.42	179.51	179.5	179.15	179.2	178.83	178.94	181.33	181.87
P1	203.94	191.22	191.03	190.08	189.83	189.42	188.62	188.14	190.19	190.47	190.16	190.24	190.09	190.4	191.37	191.09
MW28	202.53	191.15	190.73	189.88	189.63	189.02	188.08	187.21	189.72	189.88	189.75	189.88	189.48	189.84	190.86	190.53
MW06	198.59	NM	195.17	194.34	194.1	193.47	192.54	191.6	194.1	194.27	194.17	194.26	194.07	194.14	195.33	194.84
MW27	198.83	NM	193.23	192.35	191.9	191.51	190.57	190.52	191.96	192.11	192.18	192.18	192.11	192.16	193.91	192.57
P9A	198.85	185.06	NM	NM	NM	182.13	180.87	181.58	183.41	183.17	182.68	183.05	182.82	183.07	184.55	184.44
P9	199.04	185.89	NM	NM	NM	182.34	181.63	181.98	183.77	183.56	183.03	183.43	183.12	183.38	185.28	185.26
P11A	203.93															
P11	203.8															
P12A	203.83															
P12	203.49															
P13A	199.43															
P13	199.18															
P14A	203.9															
P14	204.01															
P15A	197.44															
P15	197.3															
MW25C	200															
MW12A	197.7															
MW12B	197.79															

NM = not measured
(a) based on 2/24/06 survey

Table 4.2.1b: GSM Ground Water Elevations
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Well ID	7/13/2000 water level	8/24/2000 water level	9/28/2000 water level	10/28/2000 water level	7/16/2001 water level	8/23/2001 water level	10/2/2001 water level	11/6/2001 water level	12/6/2001 water level	1/4/2002 water level	2/8/2002 water level	3/5/2002 water level	4/5/2002 water level	5/21/2002 water level	8/28/2002 water level	10/1/2002 water level
P10	178.17	170.09	175.79	173.72	175.69	171.85	169.97	169.67	169.29	169.31	170.08	170.92	175.04	179.06	169.79	170.8
P10A	178.33	173.86	175.64	175.19	175.76	173.5	173.45	173.43	173.42	173.4	174.63	174.76	175.21	179.09	173.46	173.45
MW03	176.29	171.04	175.89	174.28	175.37	171.81	dry	dry	dry	170.79	170.77	171.68	174.84	178.92	dry	dry
MW14	178.02	168.83	175.79	173.77	175.88	171.81	168.35	168.23	168.11	168.19	168.42	168.85	175.26	179.11	168.22	168.33
MW16	172.12	161.5	172.43	169.77	173.3	170.03	165.43	164.23	162.72	163.66	165.09	167.9	172.93	178.85	163.69	164.93
P8A	169.51	162.71	172.15	169.41	172.4	169.44	166.01	164.76	162.68	163.59	164.85	166.22	171.69	178.71	163.7	164.88
P8	174.03	172.6	176.03	174.44	176.09	173.5	172.86	172.39	172.03	172.59	173.2	173.54	175.59	179.16	172.3	172.8
P7A	160.76	160.01	169.64	166.21	169.76	166.6	163.05	161.73	159.55	160.65	161.41	163.92	169.94	178.95	161	161.92
P7	172.54	172.84	176.24	174.39	176.08	173.51	172.85	172.37	171.99	172.57	173.19	173.57	175.64	179.37	172.29	172.81
P6A	161.96	163.32	171.65	168.79	171.12	167.9	164.34	163.05	161.2	161.73	162.56	164.88	170.33	178.94	161.54	162.36
P6	172.99	176.6	178.55	174.93	176.7	173.87	173.19	172.56	172.29	172.76	173.38	173.88	176.29	180.6	172.58	173.12
P5A	158.76	160.36	176.05	166.48	169.65	166.34	162.56	161.1	159.19	159.72	159.91	162.57	169.07	178.95	159.8	159.85
P5	172.63	173.39	172.27	174.35	177.82	174.49	173.58	172.7	172.28	172.99	173.78	174.71	178.35	181.14	172.87	173.82
MW12	176.62	176.88	178	177.7	178.45	176.35	dry	dry	dry	dry	176.37	177.25	178.12	181.52	200.63	176.32
MW04	175.08	176.4	178.34	178.3	179.1	177.89	176.67	175.74	dry	175.19	177.39	177.26	178.2	179.63	176.09	176.14
MW15	176.23	177.41	179.13	179.03	180.25	179.02	177.58	176.6	174.62	176.03	178.1	178.47	179.32	181.18	176.63	176.92
MW17	176.29	176.72	178.39	177.92	179.42	178.15	176.86	176.08	174.44	175.63	177.61	177.63	178.52	180.2	176.19	176.33
P4	176.21	176.34	179.08	179.23	180.22	179.13	177.63	176.67	174.76	175.71	178.4	178.63	179.66	181.03	176.91	176.99
P4A	176.61	177.86	179.81	179.81	180.83	179.74	178.18	177.06	174.5	176.28	178.65	179.08	180.01	181.68	176.99	177.34
P3	177.86	178.67	180.69	180.63	182.59	181.24	179.35	177.81	177	177.38	179.82	181.09	182.15	185.59	178.7	179.24
P3A	178.11	178.02	179.97	179.95	181.32	180.13	178.47	177.27	175.03	176.7	178.94	179.5	180.41	182.48	177.53	177.86
25A	181.24	181.83	183.59	183.62	183.62	182.84	181.57	180.7	180.1	180.9	182.54	182.94	184.12	185.31	181.27	181.85
25B	177.03	176.99	178.87	178.74	178.15	177.36	176.56	176.14	175.79	176.32	177.31	177.69	178.7	179.39	175.79	176.7
P2A	177.82	178.2	180.19	180.21	181.24	180.14	178.53	177.35	174.76	178.62	178.67	179.47	180.4	182.2	177.3	177.71
P2	181.2	180.55	185.46	181.48	183.12	181.8	181.07	180.58	179.59	180.65	180.96	182.03	182.26	184.72	181.18	181.36
P1A	177.67	179.19	180.25	180.24	181.22	180.11	178.54	177.37	173.98	176.59	178.97	179.46	180.39	182.12	177.21	177.68
P1	190.57	188.46	190.47	190.74	190.66	189.95	188.94	187.83	187.24	188.07	189.34	190.84	191.38	191.65	189.47	189.5
MW28	189.42	187.52	189.98	190.15	190.22	189.53	188.42	187.25	186.52	187.09	188.95	190.35	190.87	191.27	188.16	188.49
MW06	193.62	191.74	194.19	194.36	194.6	193.93	192.84	191.7	190.98	191.61	193.4	194.81	195.37	195.78	192.68	192.98
MW27	192.25	190.69	192.1	192.24	193.09	192.6	191.58	190.52	189.72	190.39	192.35	193.74	194.41	194.78	191.57	191.93
P9A	182.3	181.93	183.72	183.49	191.36	190.87	190.04	189.29	188.75	189.15	190.41	191.27	191.75	191.55	181.13	181.43
P9	183.15	182.33	184.08	183.27	190.46	189.99	189.12	183.85	187.66	174.09	189.58	190.52	190.94	190.24	181.44	181.82
P11A																
P11																
P12A																
P12																
P13A																
P13																
P14A																
P14																
P15A																
P15																
MW25C																
MW12A																
MW12B																

NM = not measured
(a) based on 2/24/06 survey

Table 4.2.1b: GSM Ground Water Elevations
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Well ID	10/29/1992	12/23/2002	03/06/03	03/31/03	4/25/2003	5/29/2003	6/30/2003	7/31/2003	8/7/2003	9/30/2003	10/28/2003	12/23/2003	2/10/2004	3/16/2004	5/21/2004	6/8/2004
	water level	water level	water level	water level	water level	water level	water level	water level	water level	water level	water level	water level	water level	water level	water level	water level
P10	169.89	178.66	177.03	178.92	179.33	177.08	181.34	175.09	174.41	173.37	173.37	180.67	176.89	178.84	178.61	177.14
P10A	173.43	179.29	177.3	179.15	179.9	177.59	181.5	175.07	174.56	170.45	170.6	180.43	frozen	179.16	178.54	176.97
MW03	dry	179.14	176.85	178.8	179.7	177.08	181.41	174.69	173.97	dry	dry	180.79	176.51	178.52	178.31	176.78
MW14	168.34	179.28	177.37	179.11	179.87	177.58	181.72	175.19	174.45	168.46	168.49	180.76	177.03	179.07	178.75	177.3
MW16	165.29	176.07	175.76	177.62	176.69	173.4	180.91	171.79	171.33	166.33	166.62	179.03	173.44	178.77	175.59	173.99
P8A	165.06	174.78	174.83	176.75	175.25	171.48	180.63	170.33	169.86	166.47	166.82	178.17	171.86	178.54	176.99	173.08
P8	172.9	179.3	177.43	179	179.77	177.62	181.02	175.37	174.66	173.06	173.2	180.49	177.1	178.79	178.74	176.33
P7A	162.08	173.21	174.32	176.74	173.97	168.16	180.84	168.09	167.48	164.32	164.55	178.19	169.65	178.73	172.66	170.79
P7	172.91	179.52	177.48	179.18	180.04	177.72	181.73	175.37	174.66	173.05	173.2	181.04	177.18	178.88	178.89	177.4
P6A	162.53	173.62	174.34	176.76	173.95	169.35	180.99	168.28	167.75	164.22	164.41	178.28	169.92	178.89	173.18	171.06
P6	173.14	180.73	178.31	180.09	181.35	179.12	183.14	176.15	175.23	170.44	173.57	182.7	178.63	179.35	180.15	178.87
P5A	159.85	172.23	174.03	176.95	172.33	164.85	179.05	165.09	164.33	160.9	162.08	178.5	165.86	178.94	170.98	168.44
P5	173.67	181.2	179.12	180.56	181.63	179.61	183.37	177.38	176.23	173.23	174.1	182.99	179	179.51	180.32	180.03
MW12	176.28	181.46	181.01	183.83	181.9	180.45	182.14	177.93	177.28	200.63	200.63	182.68	179.41	180.19	181.01	179.51
MW04	176.17	179.77	178.67	179.96	179.68	178.29	181.55	178.19	177.48	176.49	176.32	180.17	178.48	180.27	179.79	178.43
MW15	176.94	181.2	180.48	182.03	180.54	179.72	183.48	179.49	178.72	176.92	176.96	181.67	179.82	184.09	181.26	179.43
MW17	176.33	180.23	179.36	180.42	179.95	178.91	182.54	178.7	178.09	176.58	176.48	180.85	179.01	182.07	180.44	178.79
P4	177.04	181.39	180.34	182.32	180.61	179.91	183.09	179.73	178.98	177.34	177.46	181.72	179.85	182.76	181.05	179.47
P4A	177.4	181.8	181.37	182.98	179.7	179.91	184.03	179.95	179.08	177.12	177.21	181.92	180.15	185.25	181.71	179.62
P3	179.35	186.02	183.06	186.18	185.38	185.29	186.92	182.15	179.96	179.09	179.62	186.93	182.95	185.78	184.13	182.18
P3A	177.92	182.64	181.67	183.58	181.97	181.45	184.87	180.79	181.26	177.83	177.92	182.42	181.09	185.17	182.53	180.67
25A	181.83	185.39	184.06	185.86	185.28	185.57	185.28	184.32	183.44	181.7	181.84	185.81	184.14	184.79	184.41	183.94
25B	176.87	179.63	178.44	179.37	179.17	178.62	179.44	177.38	177.06	176.07	176.37	179.44	177.58	178.36	177.98	178.15
P2A	177.73	182.25	181.82	183.49	181.14	180.7	184.63	180.54	179.68	177.52	177.61	182.67	180.82	186	182.29	180.26
P2	181.42	184.99	183.75	186.17	184.36	184.33	186.97	183.21	182.27	181.55	181.95	186.72	183.84	186.83	185.38	183.5
P1A	177.7	182.14	frozen	183.45	180.97	180.67	184.6	180.16	179.59	177.43	177.63	182.51	frozen	186.17	182.21	180.11
P1	189.5	191.56	frozen	191.95	191.64	191.67	191.42	190.84	190.81	189.14	189.85	191.72	frozen	191.46	191.23	191.04
MW28	188.62	191.25	190.63	191.92	191.54	191.6	191.54	190.74	190.57	188.7	189.43	191.71	191.15	195.57	195.46	195.25
MW06	193.04	195.77	frozen	196.39	196.09	196.11	195.51	195.15	195.09	193.11	193.79	196.1	frozen	195.82	195.76	195.54
MW27	192	194.53	194.41	195.41	195.35	195.03	195.52	194.23	194.02	192.13	192.33	195.51	194.63	195.55	194.8	194.42
P9A	181.35	184.94	frozen	185.6	184.81	185.29	186.42	184.9	183.47	181.29	181.53	185.35	frozen	187.6	184.73	184.07
P9	181.74	186.04	frozen	187.13	186.28	186.69	186.63	185.79	184.4	181.79	182.05	frozen	frozen	186.91	186.02	185.52
P11A									193.53	191.55	192.28	194.81	frozen	195.25	194.32	194.03
P11									193.29	191.34	192.12	194.5	frozen	194.5	194.02	193.86
P12A									179.49	177.27	177.48	181.89	frozen	187.85	181.83	179.63
P12									192.87	190.94	191.69	194.01	frozen	194.43	193.67	193.38
P13A									179.06	176.9	177.08	181.47	180.09	187.06	181.52	179.23
P13									180.35	178.66	178.62	182.68	frozen	185.21	182.31	180.98
P14A									167.02	165.35	165.78	NM	frozen	179.97	174.54	168.87
P14									177.13	dry	dry	181.66	179.29	181.33	181.32	179.33
P15A									168.69	166.25	166.94	174.59	169.54	179.35	174.02	169.65
P15									175.45	173.92	174.04	180.32	177.62	179.31	179.27	177.69
MW25C									176.94	175.96	176.27	179.34	177.45	177.98	178.05	177.59
MW12A																
MW12B																

NM = not measured
(a) based on 2/24/06 survey

Table 4.2.1b: GSM Ground Water Elevations
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

DRAFT

Well ID	6/25/2004 water level	8/9/2004 water level	9/10/2004 water level	9/10/2004 water level	12/2/2004 water level	2/8/2005 water level	2/28/2005 water level	3/18/2005 water level	4/16/2005 water level	5/19/2005 water level	6/20/2005 water level	8/2/2005 water level	9/14/2005 water level	9/16/2005 water level	9/21/2005 water level	9/30/2005 water level
P10	174.57	173.35	173.33	173.33	176.96	178.32	179.53	178.92	180.94	178.96	177.55	177.97	178.61	178.83	178.4	174.6
P10A	174.67	171.79	170.82	170.82	177.21	178.83	179.15	179	181.11	178.94	176.73	177.91	178.75	178.8	178.61	175.07
MW03	174.81	dry	dry	dry	176.62	178.47	179.36	178.69	180.85	178.75	175.28	176.15	178.34	178.59	178.1	174.89
MW14	174.78	168.46	168.45	168.45	177.23	178.9	179.7	179.11	181.14	179.15	175.81	176.66	178.92	179.13	178.69	174.84
MW16	172.12	167.76	166.68	166.68	175.05	175.6	176.09	175.99	179.53	176.25	173.91	175.44	178.36	178.48	177.61	173.12
P8A	171.17	168.26	167.22	167.22	173.72	174.99	175.62	175.63	179.15	176.11	174.21	175.99	178.4	178.5	177.6	173.21
P8	174.91	173.04	173.01	173.01	177.11	178.85	179.56	179.05	180.63	179.07	175.98	176.58	178.71	178.85	178.45	174.88
P7A	169.23	165.3	165.43	165.43	172.29	172.61	173.15	173.37	178.64	173.8	172.04	174.76	178.32	178.3	176.98	171.13
P7	174.9	173.03	173	173	177.21	178.97	179.75	179.18	181.09	179.2	175.96	177.14	178.81	178.95	177.51	174.88
P6A	169.49	165.69	165.86	165.86	173.73	173.05	173.67	173.75	178.93	174.15	172.46	174.49	178.54	178.45	177.07	171.49
P6	175.61	173.63	173.51	173.51	178.65	179.82	180.72	180.01	182.29	179.98	177.59	178.58	179.33	179.39	178.95	175.22
P5A	167.6	163.12	162.81	162.81	169.63	171.12	171.89	172.11	178.85	172.52	171.06	173.77	178.54	178.49	177.03	170.33
P5	176.52	174.04	173.86	173.86	179.09	179.97	180.86	180.14	182.47	180.08	177.49	179.05	179.5	179.59	179.1	175.65
MW12	177.88	dry	dry	dry	179.61	180.86	181.45	181.23	182.77	dry	178.8	179.6	180.41	180.28	179.6	176.67
MW04	177.63	176.43	176.7	176.7	178.04	179.52	179.7	179.65	180.81	180.34	179.61	180.11	180.76	177.56	175.65	dry
MW15	178.49	177.35	177.79	177.79	180.47	180.7	180.97	181.17	182.8	182.79	182.1	183.2	184.06	176.29	174.32	173.08
MW17	178.95	176.81	177.17	177.17	179.17	180.13	180.34	180.46	181.86	181.69	180.97	181.64	182.53	177.11	175.38	173.3
P4	178.57	177.38	177.74	177.74	180.04	180.7	180.85	181.08	182.15	181.98	181.36	181.56	182.8	177.63	175.76	174.63
P4A	178.7	177.67	178.21	178.21	181.02	181.19	181.4	181.74	183.31	183.76	183.18	182.65	185.26	173.17	171.12	170.52
P3	180.76	179.33	179.75	179.75	184.56	182.85	183.49	184.52	185.81	184.97	184.55	184.63	185.19	179.11	177.92	177.63
P3A	179.53	178.23	178.7	178.7	181.48	181.69	182.01	182.2	183.85	183.87	183.27	183.82	184.99	177.33	174.56	173.05
25A	183.21	182.35	182.48	182.48	184.22	184.04	184.31	184.28	184.62	184.45	184.24	183.57	184.65	183.51	181.76	181.21
25B	177.03	176.22	NM	NM	177.78	177.78	178.14	178.14	178.78	178.19	177.66	177.88	177.56	176.33	175.38	174.9
P2A	179.24	178.11	178.65	178.65	184.76	181.64	181.94	182.21	183.78	184.16	183.56	183.59	185.61	173.77	171.4	170.88
P2	182.39	182.07	182.04	182.04	181.62	184.14	184.59	184.92	186.34	186.05	185.42	185.15	186.38	182.19	182.24	182.14
P1A	179.15	178.08	178.58	178.58	181.24	181.58	181.87	182.17	183.72	184.19	183.6	183.7	185.7	172.89	170.74	170.37
P1	190.62	189.77	189.72	189.72	191.92	190.56	190.81	190.75	190.97	190.76	190.59	189.91	189.58	189.64	189.36	189.19
MW28	194.33	194.39	NM	NM	193.76	snow	194.95	194.9	195.22	194.73	194.39	193.9	193.18	193.21	192.86	NM
MW06	194.57	193.61	193.58	193.58	195.35	194.91	195.18	195.1	195.47	194.75	194.59	194.1	193.27	193.34	193.04	NM
MW27	193.08	192.43	192.53	192.53	194.24	192.86	194.06	194.06	194.38	193.92	191.53	192.26	192.98	192.35	190.49	NM
P9A	183.1	182.15	182.84	182.84	183.88	snow	snow	snow	185.33	185.34	185.14	185.38	186.68	184.51	181.8	180.87
P9	184.07	182.79	183.43	183.43	183.43	snow	snow	snow	186.13	185.93	185.77	185.89	186.78	185.51	182.02	181.41
P11A	193.1	192.22	192.57	192.57	194.26	snow	194.06	193.96	194.37	193.95	193.63	193.39	193.12	192.8	191.1	190.83
P11	193.09	192.16	192.41	192.41	194.03	snow	193.87	193.93	194.09	193.74	193.44	193.22	192.74	192.49	191.75	191.4
P12A	178.82	178.06	178.78	178.78	180.88	snow	181.53	182.16	183.28	184.39	183.95	186.99	188.11	169.44	165.5	165.95
P12	192.49	191.56	192.17	192.17	193.83	snow	193.68	193.64	193.94	193.6	193.3	192.99	192.75	192.38	191.58	191.29
P13A	178.43	177.6	178.37	178.37	180.58	snow	snow	181.76	183.03	184	183.55	186.04	186.45	170.05	166.58	166.76
P13	180.08	179.01	179.56	179.56	181.42	snow	snow	182.26	183.34	183.6	183.2	185.46	184.69	179.98	178.13	177.51
P14A	168.45	166.45	166.27	166.27	170.02	snow	170.98	170.9	175.52	171.88	170.54	173.82	179.21	178.51	173.7	168.94
P14	177.68	dry	dry	dry	178.64	snow	181.58	180.99	183.01	181.33	179.01	179.05	181.75	180.68	179.46	176.99
P15A	168.82	166.52	166.5	166.5	170.13	snow	171.83	171.72	172.18	172.45	170.71	174.45	178.85	NM	174.94	169.62
P15	175.94	173.98	174.16	174.16	177.29	snow	179.63	179.24	180.71	179.38	177.41	178.03	179.46	NM	178.33	175.69
MW25C	176.93	176.03	176.2	176.2	177.66	177.69	178.05	177.93	178.68	178.07	177.52	176.96	177.41	176.2	175.24	175.77
MW12A																
MW12B																

NM = not measured
(a) based on 2/24/06 survey

Table 4.2.1b: GSM Ground Water Elevations
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

Well ID	10/6/2005 water level	10/10/2005 water level	10/19/2005 water level	12/28/2005 water level	1/24/2006 water level	6/28/2006 water level	9/27/2006 water level	11/9/2006 water level	12/29/2006 water level	3/29/2007 water level	6/22/2007 water level	10/29/2007 water level	11/26/2007 water level	12/13/2007 water level	3/20/2008 water level	6/12/2008 water level
P10	dry	175.1	181.69	179.88	181.08	181.67	178.91	179.21	177.74	180.54	174.59	174.58			181.38	177.44
P10A	173.76	175.09	181.61	179.48	180.61	181.18	180	179.79	179.2	180.27	173.6	170.76	170.73	170.86	181.06	177.24
MW03	173.32	174.71	182.41	179.56	180.86	182.08	180.27	180.37	179.7	180.31	172.89	179.55			181.79	177.01
MW14	173.81	174.67	181.94	179.88	181.07	181.67	181.38	180.28	181.02	180.54	173.25	168.68	168.88		181.38	177.44
MW16	172.32	173.25	180.49	177.3	178.52	179.62	178.61	177.82	176.81	178.69	173.02	167.41	167.62	167.7	180.22	175.72
P8A	172.48	173.35	180.45	177.35	178.54	179.78	177.77	177.95	177.4	178.74	173.21	169.21	169.72	169.65	179.52	175.42
P8	173.97	174.73	181.31	179.7	180.55	181.03	180.4	179.71	179.95	180.23	173.87	172.82	173.08	173.08	180.76	177.44
P7A	170.49	171.39	179.68	174.94	176.36	178.19	177.3	175.78	176.5	177.15	172.32	167.06	167.37	167.38		
P7	173.97	174.71	182.16	179.94	181.14	181.81	181.14	179.88	180.56	180.65	173.85	172.83	173.07	173.08		
P6A	170.8	171.56	179.99	175.42	177	178.4	177.72	176.35	177.35	177.81	172.89	167.78	168.14	168.14		
P6	174.31	175.18	183.74	180.96	182.41	183.39	182.41	180.41	182.28	181.95	174.48	173.51	173.73	173.65		
P5A	169.71	170.68	179.93	174.32	175.8	178.15	177	175.66	176.64	177.24	172.65	167.02	167.32	167.37	179.13	173.91
P5	174.69	175.64	183.92	181.07	182.61	183.61	182.87	180.52	182.08	182.1	175.15	173.33	173.65	173.59	183.32	178.85
MW12	dry	176.02	183.82	181.84	183.47	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned
MW04	dry	dry	179.18	176.86	182.29	178.68	176.33	176.17	176.04	177.49	177.81	174.94			179.04	176.45
MW15	172.97	173.84	180.04	177.02	183.89	179.39	179.16	176.12	178.64	178.01	178.73	167.51	169.08	169.08	179.73	176.77
MW17	173.24	173.68	179.27	176.89	182.72	178.77	178.02	176.36	176.72	177.78	177.84	166.65	170.48	168.7	179.14	176.47
P4	174.49	175.56	179.48	177.14	184.14	179.23	178.78	176.63	177.96	177.71	178.72	174.34	174.79	175.06	179.25	176.93
P4A	170.95	172.55	179.3	175.22	185.47	176.95	175.77	173.52	175.38	174.76	178.45	161.66	164.82	165.08	176.93	176.05
P3	177.42	178.83	187.8	182.39	186.56	187.31	186.25	180.93	185.29	185.09	180.85	177	177	177.01		
P3A	173.14	174.85	181.95	178.17	185.72	181.08	180.82	175.01	179.62	179.39	179.67	163.58	166.61	166.91		
25A	181.06	181.38	186.41	184.02	185.45	186.35	184.86	183.44	184.16	184.83	183.24	181.35	181.73	181.59		
25B	174.86	175.27	179.35	176.97	179.94	178.09	178.96	174.72	177.77	176.35	176.45	173.43	173.9	173.87		
P2A	171.46	173.2	180.3	176.08	186.35	179.27	178.59	176.08	178.03	178.08	179.46	165.59	168.38			
P2	182.05	182.72	187.69	183.86	187.1	187.31	186.62	185.76	185.72	184.17	183.46	182.65	182.76	182.83		
P1A	171.01	172.75	179.83	175.21	186.59	177.59	176.8	174.49	175.21	175.37	179.28	162.34	165.97	166.24	177.54	176.79
P1	189	189.98	191.77	191.56	191.6	191.59	190.52	191.28	188.91	191.27	189.82	188.57	188.72	188.76	191.99	191.19
MW28	192.45	NM	NM	195.45	195.79	195.94	195.38	195.18	195.24	195.31	193.42					
MW06	192.64	NM	NM	195.71	196.04	196.23	193.96	195.79	192.86	195.6	193.51	191.96	192.29			
MW27	190.16	NM	NM	193.34	196.81	194.91	193.68	192.61	193.42	192.39	191.03	189.09	189.44			
P9A	180.61	181	186.34	183.57	186.28	185.82	184.94	183.33	184.65	184.2	183.64	181.54	181.83	181.74	184.25	183.2
P9	181.24	181.82	187.21	185.55	186.73	187.12	186	184.74	186.05	186.01	184.82	182.77	183.07	183.01	186.63	185.32
P11A	190.72	191.668	194.61	194.05	195.02	195.01	194.94	193.41	194.88	193.48	191.98	190.15	190.54	190.67	194.48	193.63
P11	191.24	192.35	194.55	194.12	194.54	194.47	192.78	193.88	192.53	194.01	192.22	190.47	190.84	190.95	194.2	193.64
P12A	166.96	168.77	176.38	170.87	187.05	172.17	172.28	166.08	171.21	165.51	183.87	159.4	161.58	161.89	168.76	172.92
P12	191.16	192.17	194.48	193.92	194.68	194.39	194.06	192.61	193.19	193.7	192.11	190.37	190.71	190.81	194.11	193.42
P13A	167.71	169.24	176.31	171.22	186.17	172.45	171.89	167.23	171.1	167.01	176.11	161.64	163.56	163.78	170.13	173.92
P13	177.48	177.6	181.17	179.61	185.34	181.88	181.45	179.06	181.19	179.93	180.67	177.27	177.68	177.51	180.74	179.35
P14A	168.48	170.08	178.61	171.98	175.16	172.7	172.1	173.5	171.42	177.85	174.47	165.35	165.78	165.71	180.39	170.55
P14	176.45	176.98	182.72	181.58	183.63	184.21	183.42	181.2	182.29	183.49	178.38	176.32		176.4	185.31	181.49
P15A	169.11	170.49	178.04	172.45	175.1	173.88	173.65	174.07	173.43	177.1	173.36	165.95	166.34	166.29	179.94	171.21
P15	174.8	174.8	181.32	179.74	180.78	180.77	180.08	179.03	180.1	180.39	174.89	173.21	174.03	173.84	181.39	177.92
MW25C	174.73	175.17	179.23	176.85	179.84	177.94	176.9	175.54	176.09	176.19	176.31	173.26	173.73	173.72		
MW12A						182.15	181.11	182.06	180.31	181.4	176.59	174.44				
MW12B						185.57	184.07	180.17	181.92		176.41	173.6	173.9	173.87		

NM = not measured
(a) based on 2/24/06 survey

Table 4.2.1b: GSM Ground Water Elevations
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

Well ID	9/26/2008 water level	10/24/2008 water level	11/21/2008 water level	3/18/2009 water level	5/12/2009 water level	8/17/2009 water level	10/22/2009 water level	2/12/2010 water level	6/30/2010 water level	7/12/2010 water level	7/14/2010 water level	8/23/2010 water level	10/11/2010 water level	11/10/2010 water level
P10	174.91	176.08	176.25	179.56	179.03	177.08	174.75	178.54	174.82	174.61	174.54	174.76	177.53	178.87
P10A	174.82	175.97	176.02	178.96	178.29	177.75	174.19	176.3	173.23	172.47	171.86	170.31	176.75	178.38
MW03	174.55		175.83	179.25	178.89	177.7	176.97	178.08	174.18	172.66	171.93	171.33	177.64	179.05
MW14	175.03	176.13	176.3	179.54	178.98	178.7	174.24	178.57	174.11	172.08	170.76	168.61	177.6	178.96
MW16	172.59	173.44	173.61	175.93	175.45	174.92	172.09	176.2	172.98	171.6	170.82	165.88	174.42	176.89
P8A	172.53	173.46	173.67	176.15	175.92	174.84	172.5	174.57	173.19	173.09	171.94	169.01	174.88	177.15
P8	175.16	176.2	176.39	179.37	178.63	177.68	174.57	178.52	174.38	172.44	173.42	172.63	177.43	178.69
P7A		170.7	170.92	172.77	172.5	172.55	170.03	174.21	171.84	170.54	170.09	165.03	171.95	175.43
P7		176.21	178.11	179.57	178.83	177.71	174.55	177.9	174.36	173.48	173.39	172.63	177.46	178.76
P6A		171.89	171.95	174.33	174.18	173.45	170.7	175.09	172.47	171.25	170.82	166.76	172.7	175.79
P6		177.22	177.97	180.78	180.14	178.88	175.76	179.64	175.33	174.39	174.29	173.33	178.42	179.27
P5A	169.43	170.19	170.47	172.39	172.36	172.46	169.71	174.21	172.05	170.67	170.05	165.13	171.63	171.52
P5	176.83	177.68	178.16	180.86	180.21	178.96	176.44	179.7	175.73	174.66	174.49	173.24	178.42	179.36
MW12	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned	abandoned
MW04	180.16	176.48	176.74	177.85	176.34	178.13	176.71	177.38	176.49	176.32	176.41	176.5	176.27	176.27
MW15	181.25	176.51	176.89	178.18	176.19	179.17	176.23	177.79	176.95	176.5	175.15	170.94	171.94	174.33
MW17	179.85	176.44	176.68	177.88										
P4	182.43	177.22	177.64	178.38	176.37	179.06	176.05	177.58	176.78	176.21	175.3	174.46	175.14	175.54
P4A	183.33	175.44	175.64	177.29	172.92	181.35	176.22	177.91	177.58	177.16	171.34	165.08	162.16	166.81
P3		179.17	180.28	181.22	179.69	183.02	180.53	180.31	179.43	178.99	177.57	177.03	177.18	179.09
P3A		177.29	177.97	179.13	176.35	181.73	177.66	178.72	178.11	177.6	173.58	172.31	172.3	172.3
25A		183.68	184.09	183.63	183.67	183.92	183.1	183.3	182.46	181.86	181.6	180.25	181.09	181.64
25B		176.57	177.1	176.92	175.59	178.23	176.75	177.48	176.78	176.38	175.26	173.84	174.11	175.03
P2A		177.03	177.54	178.77	175.43	181.63	176.93	180.08	178.57	178.11	173.43	168.94	164.8	170.56
P2		184.93	184.09	183.74	180.07	185.19	184.33	184.35	183.67	183.55	183.42	182.94	183.18	184.3
P1A	184.67	166.34	176.54	178.1	172.37	182.37	177.4	180.08	178.81	178.41	170.41	165.02	158.24	164.84
P1	190.62	186.8	190.88	191.15	191.28	190.65	190.83	190.85	190.18	189.71	189.68	188.62	189.42	190.81
MW28														
MW06		194.51												
MW27		193.54												
P9A	186.24	184.31	184.65	182.94	183.03	184	182.49	182.94	182.33	181.62	181.09	179.44	179.89	180.7
P9	186.27	185.75	186.04	184.94	185.33	185.5	184.48	184.88	184.09	183.13	181.7	175.33	181.64	182.88
P11A	194.22	193.91	194.25	193.5	193.27	193.47	193.49	193.78	192.6	192.18	191.81	190.21	190.98	192.47
P11	193.66	193.36	193.66	193.64	193.84	193.48	193.56	193.62	192.62	192.12	191.71	190.61	191.5	192.98
P12A	186.36	173.58	174.56	173.51	164.95	184.45	176.5	182.13	178.8	178.47	166.31	160.83	152.92	156.16
P12	193.65	193.15	193.44	193.26	193.73	193.41	193.48	193.55	192.47	192.01	191.76	181.3	191.4	192.83
P13A	185	173.45	174.67	174.02	167.03	183.03	176	177.57	177.86	177.57	167.94	162.86	155.51	158.54
P13	184.55	179.89	180.35	179.73	179.22	182.46	179.16	179.52	179.09	178.58	177.89	176.12	175.68	176.28
P14A	161.07	161.44	161.68	162.51	162.67	164.42	161.81	176.94	169.24	177.74	166.21	159.65	162.47	169.57
P14	179.07	178.96	179.34	182.32	181.61	180.99	179.02	181.8	178.93	178.19	177.83	176.86	179.03	180.9
P15A	163.71	164.06	164.42	165.43	165.34	167.1	164.41	170.36	169.82	168.52	167.31	161.76	165.14	170.83
P15	176.66	176.91	177	179.25	177.68	178.3	175.94	178.56	175.99	175.3	175.1	173.32	177.01	178.39
MW25C		176.44	176.97	176.8	175.42	178.17	176.66	177.39	176.69	178.33	175.13	179.72	173.97	174.91
MW12A		183.55	182	185.7	185.51	180.02	179.5	181.77	177.34	176.15	175.99	174.61	179.27	184.61
MW12B		177.04	176.91	177.79	176.5	177.11	174.18	178.02	175.58	174.44	173.93	171.13	174.99	177.71

NM = not measured
(a) based on 2/24/06 survey

TABLE 4.2.2: Appendix IX Ground Water Sampling Program **DRAFT**
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Well Number	Zone	Sample ID	Date Collected	Lab Report No.	Appendix IX	Major Cation/Anion	VOCs Only
MW01	OB	EP - MW01	01-09-95	3095-0013	√	√	
MW03	OB	EP - MW03	01-12-95	3095-0013	√	√	
MW04	OB	EP - MW04	01-17-95	3095-0013A	√[1]	√[1]	
MW05	OB	EP - MW05	01-11-95	3095-0013	√	√	
MW07	OB	EP - MW07	01-06-95	3095-0013	√	√	
MW13	BR	EP - MW13	01-10-95	3095-0013	√	√	
MW14	BR	EP - MW14	01-12-95	3095-0013	√	√	
MW15	BR	EP - MW15	01-17-95	3095-0013A	√	√	
MW15	BR	EP - MW15D	01-17-95	3095-0013A	√	√	
MW18	BR	EP - MW18	01-11-95	3095-0013	√	√	
MW20A	OB	EP - MW20A	01-11-95	3095-0013		√	
MW20B	BR	EP - MW20B	01-11-95	3095-0013		√	
MW21A	OB	EP - MW21A	01-13-95	3095-0013		√	
MW21B	BR	EP - MW21B	01-13-95	3095-0013A		√	
MW24A	OB	EP - MW24A	01-04-95	3095-0013		√	
MW24B	BR	EP - MW24B	01-05-95	3095-0013		√	
MW26	OB	EP - MW26	01-06-95	3095-0013	√		
MW28	OB	EP - MW28	01-10-95	3095-0013	√		
MW37	BR	EP - MW37	01-09-95	3095-0013	√	√	
trip blank		EP - TB11	01-06-95	3095-0013			√
trip blank		EP - TB12	01-09-95	3095-0013			√
trip blank		EP - TB13	01-10-95	3095-0013			√
trip blank		EP - TB14	01-11-95	3095-0013			√
trip blank		EP - TB15	01-12-95	3095-0013			√
trip blank		EP - TB16	01-17-95	3095-0013A			√
trip blank		EP - TB17	01-19-95	3095-0013A			√
field blank		EP - FB02	01-19-95	3095-0013A	√	√	√

Notes:

√[1] = Sample also used for matrix spike/matrix spike duplicate sample
Appendix IX = See Table 2.2.5 for list of analytical methods and analytes.
VOCs only = Samples only analyzed for volatile organic compounds in Table 2.2.5.

TABLE 4.2.3: Appendix IX Analytes
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Parameter	EPA Test Method Specified for Aqueous Samples	Water Detection Limits (µg/l)
Volatile Organic Compounds		
Acetonitrile	8015 (Note 1)	1000
Acrolein	8240	150
Acrylonitrile	8240	35 (no SW846)
1,4-Dioxane	8015 (Note 1)	1500
Ethyl cyanide	8015 (Note 1)	1000
Isobutyl alcohol	8015 (Note 1)	1000
Methacrylonitrile	8240	50
Benzene	8240	5
Methyl bromide	8240	10
Carbon disulfide	8240	10
Chloroethane	8240	10
Chlorobenzene	8240	10
2-Chloro-1,3-butadiene	8240	5
Chloroform	8240	5
Methyl chloride	8240	5
3-Chloropropene	8240	5
1,2-Dibromo-3-chloropropane	8240	10
1,2-Dibromoethane	8240	10
Dibromomethane	8240	5
1,4-Dichloro-2-butene	8240	10
Dichlorodifluoromethane	8240	10
1,1-Dichloroethane	8240	5
1,2-Dichloroethane	8240	5
1,2-Trans-dichloroethylene	8240	5
1,1-Dichloroethylene	8240	5
Methylene chloride	8240	5
1,2-Dichloropropane	8240	5
cis-1,3-Dichloropropylene	8240	5
trans-1,3-Dichloropropylene	8240	5
Chlorodibromomethane	8240	5
Dichlorobromomethane	8240	5
Ethyl methacrylate	8240	20
Iodomethane	8240	10
Methyl Ethyl Ketone	8240	10
Methyl methacrylate	8240	20
1,1,1,2-Tetrachloroethane	8240	50
1,1,2,2-Tetrachloroethane	8240	5
Tetrachloroethylene	8240	5
Carbon tetrachloride	8240	5
Toluene	8240	5
Bromoform	8240	5
1,1,1-Trichloroethane	8240	5
1,1,2-Trichloroethane	8240	5
Trichloroethylene	8240	5

Parameter	EPA Test Method Specified for Aqueous Samples	Water Detection Limits (µg/l)
Trichlorofluoromethane	8240	10
1,2,3-Trichloropropane	8240	10 (SW846 = 5)
Vinyl chloride	8240	10
Acetone	8240	10
Ethylbenzene	8240	5
2-Hexanone	8240	10
Methyl-iso-butyl ketone	8240	10
Styrene	8240	5
Vinyl acetate	8240	10
m-Xylene	8240	5
o+p-Xylenes	8240	5
2-chloroethyl vinyl ether	8240	See Note 2
Semi-Volatile Compounds		
Acetophenone	8270	10
2-Acetylaminofluorene	8270	10
4-Aminobiphenyl	8270	10
Aniline	8270	10
Aramite	8270	.00 (SW846 = 20)
Benzo(a)anthracene	8270	10
Benzo(b)fluoranthene	8270	10
Benzo(a)pyrene	8270	10
bis(2-Chloroethoxy)methane	8270	10
bis(2-chloroethyl)ether	8270	10
bis(2-Chloroisopropyl)ether	8270	10
bis(2-ethylhexyl)phthalate	8270	10
4-Bromophenyl phenyl ether	8270	10
Butyl Benzyl phthalate	8270	10
2-sec-butyl-4,6-dinitrophenol	8270	10
p-Chloroaniline	8270	10
p-Chloro-m-cresol	8270	10
2-Chloronaphthalene	8270	10
2-Chlorophenol	8270	10
Chrysene	8270	10
Acenaphthene	8270	10
Acenaphthylene	8270	10
Anthracene	8270	10
Benzo(ghi)perylene	8270	10
Benzo(k)fluoranthene	8270	10
Fluorene	8270	10
Phenanthrene	8270	10
Pyrene	8270	10
2-Nitrophenol	8270	10
o-Cresol	8270	10

TABLE 4.2.3: Appendix IX Analytes
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Parameter	EPA Test Method Specified for Aqueous Samples	Water Detection Limits (µg/l)
m+p-Cresols	8270	10
Diallate	8270	10
Dibenzo(a,h)anthracene	8270	10
Di-n-butyl phthalate	8270	10
1,2-Dichlorobenzene	8270	10
1,3-Dichlorobenzene	8270	10
1,4-Dichlorobenzene	8270	10
3,3'-Dichlorobenzidine	8270	40 (SW 846 = 20)
2,4-Dichlorophenol	8270	10
2,6-Dichlorophenol	8270	40 (SW 846 = 10)
Diethyl phthalate	8270	10
p-Dimethylaminoazobenzene	8270	10
7,12-Dimethylbenzo(a)anthracene	8270	40 (SW 846 = 10)
3,3'-Dimethylbenzidine	8270	40 (SW846 =10)
a,a-Dimethylphenethylamine	8270	100 (no SW846)
2,4-Dimethylphenol	8270	10
Dimethyl phthalate	8270	10
m-Dinitrobenzene	8270	10
4,6-Dinitro-o-cresol	8270	50
2,4-Dinitrophenol	8270	50
2,4-Dinitrotoluene	8270	10
2,6-Dinitrotoluene	8270	10
Di-n-octyl phthalate	8270	10
Diphenylamine	8270	10 (no SW846)
N-Nitrosodi-n-propylamine	8270	10
Ethyl methanesulfonate	8270	10
Fluoranthene	8270	10
Hexachlorobenzene	8270	10
Hexachlorobutadiene	8270	10
Hexachlorocyclopentadiene	8270	10
Hexachloroethane	8270	10
Isodrin	8080	0.1
Hexachlorophene	8270	(SW846 = 50) (Note 3)
Hexachloropropene	8270	10
Indeno(1,2,3-c,d)pyrene	8270	10
Isosafrole	8270	10
Methapyrilene	8270	10 (SW846=100)
3-Methylcholanthrene	8270	10
Methyl methanesulfonate	8270	10
Naphthalene	8270	10
1,4-Naphthoquinone	8270	00 (SW846 = 10)
1-Naphthylamine	8270	40 (SW846 = 10)
2-Naphthylamine	8270	40 (SW846 = 10)
p-Nitroaniline	8270	50 (SW846 = 20)

Parameter	EPA Test Method Specified for Aqueous Samples	Water Detection Limits (µg/l)
Nitrobenzene	8270	10
4-Nitrophenol	8270	50
4-Nitroquinoline-N-oxide	8270	50 (SW846 = 40)
N-Nitrosodiphenylamine	8270	10
N-Nitrosodi-n-butylamine	8270	10
N-Nitrosodiethylamine	8270	20
N-Nitrosodimethylamine	8270	10
N-Nitrosomethylethylamine	8270	10
N-Nitrosomorpholine	8270	10 (no SW846)
N-Nitrosopiperidine	8270	10
N-Nitrosopyrolidine	8270	10
5-Nitro-o-toluidine	8270	10
Pentachlorobenzene	8270	10
Pentachloroethane	8240	5
Pentachloronitrobenzene	8270	20
Pentachlorophenol	8270	50
Phenacetin	8270	20
Phenol	8270	10
o,m,p-Phenylenediamine	8270	IND (Note 3)
2-Picoline	8141	2
Pronamide	8270	10
Pyridine	8270	40 (no SW846)
Safrole	8270	10
1,2,4,5-Tetrachlorobenzene	8270	10
2,3,4,6-Tetrachlorophenol	8270	40 (SW846 = 10)
Tetraethyldithiopyrophosphate	8141	0.8
o-Toluidine	8270	10
1,2,4-Trichlorobenzene	8270	10
2,4,5-Trichlorophenol	8270	50 (SW846 = 10)
2,4,6-Trichlorophenol	8270	10
o,o,o-Triethyl phosphorothioate	8141	0.8
sym-Trinitrobenzene	8270	40 (SW846 = 10)
Benzyl alcohol	8270	10
Dibenzofuran	8270	10
Isophorone	8270	10
2-Methylnaphthalene	8270	10
o-Nitroaniline	8270	50
m-Nitroaniline	8270	50
4-Chlorophenyl phenyl ether	8270	10
Metals (Total and Dissolved), Cyanide and Sulfide		
Antimony	6010	60
Arsenic	7060	8
Barium	6010	20
Beryllium	6010	1.0

Parameter	EPA Test Method Specified for Aqueous Samples	Water Detection Limits (µg/l)
Cadmium	6010	4.0
Chromium	6010	10
Cobalt	6010	20
Copper	6010	10
Cyanide	335.2	5.0
Lead	7421	5.0
Mercury	7470	0.2
Nickel	6010	20
Selenium	7740	5
Silver	6010	10
Sulfide	9030A	1000
Tin	6010	20
Thallium, Total	7841	10
Vanadium	6010	20
Zinc	6010	20
PCB Compounds		
Aroclor 1016	8080	1.0
Aroclor 1221	8080	2.0
Aroclor 1232	8080	1.0
Aroclor 1242	8080	1.0
Aroclor 1248	8080	1.0
Aroclor 1254	8080	1.0
Aroclor 1260	8080	1.0
Organochlorine Pesticide Compounds		
Aldrin	8080	0.05
4,4'-DDD	8080	0.1
4,4'-DDE	8080	0.1
4,4'-DDT	8080	0.1
Dieldrin	8080	0.1
Endosulfan	8080	0.1
Endosulfan II	8080	0.1
Endosulfan sulfate	8080	0.1
Endrin	8080	0.1
Endrin aldehyde	8080	0.1
Heptachlor	8080	0.05
Heptachlor epoxide	8080	0.05
alpha-BHC	8080	0.05
beta-BHC	8080	0.05
gamma-BHC	8080	0.05
delta-BHC	8080	0.5
Methoxychlor	8080	0.5
Chlordane	8080	1.0
Kepone	8080	0.5
Toxaphene	8080	5.0
Chlorobenzilate	8080	3.5

Parameter	EPA Test Method Specified for Aqueous Samples	Water Detection Limits (µg/l)
Organophosphorus Pesticide Compounds		
Thionazin	8141	0.8
Disulfoton	8141	0.8
Methyl parathion	8141	0.8
Parathion	8141	0.8
Famphur	8141	0.8
Phorate	8141	0.8
Dimethoate	8141	0.8
Dioxin and Furan Compounds		
Polychlorinated P-dibenzodioxins	(4)	
Polychlorinated Dibenzofurans	(4)	
Herbicide Compounds		
2,4-D	8150	5.0
2,4,5-TP (Silvex)	8150	1.0
2,4,5-T	8150	1.0
Water Quality Parameters		
pH	SW9040/EPA150.1	
Alkalinity (as CaCO3)	EPA 310.1	
Dissolved oxygen	EPA 360.1	
Nitrite as N	EPA 353.2	
Chemical oxygen demand	EPA 410.4	
Ammonia (as N)	EPA 350.1	
Chloride		
Silica		
Total organic carbon		

Notes:

(1) These compounds exhibit very poor purging efficiencies and present analytical problems when using the purge and trap technique required under Method SW8240. These compounds are better determined with Method SW8015 using direct aqueous injection. Although the detection limits will be slightly higher compared to Method SW8240, the data are considered to be more reliable.
(2) This compound has been removed from the Appendix IX analyte list; therefore, it was not analyzed.
(3) The method detection limits for the Appendix IX compounds p-phenylenediamine and hexachlorophene cannot be determined using the recommended SW846 protocols. The reportable detection limits for these compounds have been designated "IND."
(4) Dioxins and furans were tested according to EPA Region 1 SAS Method for Dioxin.

µg/l = Micrograms per Liter

TABLE 4.2.4: Appendix IX Surface and Ground Water Quality Parameters and Major Cations and Anions **DRAFT**
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Parameter	EPA Test Method	Water Detection Limit
Water Quality Parameters		
pH	SW9040/EPA150.1	NA
Total dissolved solids	EPA 160.1	10 mg/L
Total suspended solids	EPA 160.2	5 mg/L
Biochemical oxygen demand	EPA 405.1	2 mg/L
Alkalinity (as CaCO3)	EPA 310.1	2 mg/L
Dissolved oxygen (field measurement)	EPA 360.1	1 mg/L
Nitrite as N	EPA 353.2	0.1 mg/L
Chemical oxygen demand	EPA 410.4	10 mg/L
Ammonia (NH3)	EPA 350.1	0.05 mg/L
Cyanide	EPA 335.4	0.025 mg/L
Major Cations/Anions		
Aluminum	SW6010	0.2 mg/L
Calcium	SW6010	5 mg/L
Chloride	EPA 325.2	3 mg/L
Iron	SW 6010	0.1 mg/L
Manganese	SW 6010	0.015 mg/L
Sodium	SW 6010	1 mg/L
Sulfate	EPA 375.3	10 mg/L
Magnesium	SW 6010	1 mg/L
Potassium	SW 6010	1 mg/L
Nitrate as N	EPA 353.2	0.1 mg/L
Phosphate	EPA 365.2	0.1 mg/L
Silica	EPA 370.1	0.1 mg/L
Ammonium	EPA 350.1	0.05 mg/L
Specific conductance	SW9050/EPA 120.1	10 µm/cm

Notes:

(1) Only surface water was analyzed for total dissolved solids, total suspended solids, biochemical oxygen demand, dissolved oxygen, nitrite, chemical oxygen demand, ammonia, and cyanide. Cyanide is included with metals for ground water.
(2) Only selected samples collected during the Appendix IX Sampling Event were tested for these parameters.

Table 4.2.5: Appendix IX Ground Water Sampling Event - Ground Water Quality Parameter and Major Cations/Anions
Revised Draft RFI Report DRAFT
BASF Corporation, Plainville, Massachusetts

SAMPLE LOCATION:		MW01	MW03	MW04	MW04	MW05	MW07	MW13	MW14	MW15
SAMPLE ID:		EP-MW01	EP-MW03	EP-MW04	EP-MW04D	EP-MW05	EP-MW07	EP-MW13	EP-MW14	EP-MW15
LABORATORY SDG NO.:		0013	0013	A0013	A0013	0013	0013	0013	0013	A0013
DATE SAMPLED:		1/9/1995	1/12/1995	1/17/1995	1/17/1995	1/11/1995	1/6/1995	1/10/1995	1/12/1995	1/17/1995
Water Quality Parameters										
pH	unit	6.17 J	6.0 J	6.3 J	--	5.67 J	5.81 J	6.65 J	5.86 J	6.41 J
Total organic carbon	µg/L	9790 J	1110 J	2170 J	--	4510 J	3420 J	2020 J	< 1000 J	9720 J
Alkalinity (as CaCO3)	µg/L	24800	29000	31400	--	11000	8400	55800	16600	44400
Major Cations/Anions										
Aluminum	µg/L	138	104	70.3	28.4	412	< 11.0	< 11.0	< 11.0	< 11.0
Ammonium	µg/L	220	140	< 50	--	90	< 50	50	680	100
Calcium	µg/L	15200	14200	12800	11700	4730	3300	17100	6030	19400
Chloride	µg/L	35800	32900	24700	--	17800	< 3000	23500	28400	34300
Iron	µg/L	190	< 21.0	194	171	398	< 21.0	2460	780	2530
Magnesium	µg/L	4390	2500	2340	2150	1090	1010	3350	1430	3660
Manganese	µg/L	241	163	145	133	345	465	772	770	449
Phosphate	µg/L	< 100	--	< 100	--	< 100	< 100	< 100	--	< 100
Potassium	µg/L	1700	1830	1180	1200	1090	< 580	1130	1600	778
Silica	µg/L	10400	13000	13100	--	8650	8030	19300	16400	20800
Sodium	µg/L	19200	28000	19800	18200	21500	2370	18200	21700	18200
Sulfate	µg/L	37000	32500	35000	--	33800	< 10000	11900	17700	33300
Specific conductance	µmhos/cm	254	280.0	216	--	167.0	46.9	214	189	284

Notes:

(1) "<xx" indicates the constitutent was detected at some level below the noted value. Some or all or the detected concentration may be attributed to blank contamination.

(2) "J" qualifier indicates estimated value.

(3) µmhos/cm - micromhos per centimeter.

(4) "--" indicates compound not detected or parameter not measured.

Table 4.2.5: Appendix IX Ground Water Sampling Event - Ground Water Quality Parameter and Major Cations/Anions
Revised Draft RFI Report DRAFT
BASF Corporation, Plainville, Massachusetts

SAMPLE LOCATION:		MW15	MW18	MW20A	MW20B	MW21A	MW21B	MW24A	MW24B	MW37
SAMPLE ID:		EP-MW15D	EP-MW18	EP-MW20A	EP-MW20B	EP-MW21A	EP-MW21B	EP-MW24A	EP-MW24B	EP-MW37
LABORATORY SDG NO.:		A0013	0013	0013	0013	0013	A0013	0013	0013	0013
DATE SAMPLED:		1/17/1995	1/11/1995	1/11/1995	1/11/1995	1/13/1995	1/13/1995	1/4/1995	1/5/1995	1/9/1995
Water Quality Parameters										
pH	unit	6.46	6.17 J	5.54 J	5.92 J	5.92 J	6.51 J	6.68 J	6.72 J	9.27 J
Total organic carbon	µg/L	5120	2390 J	1820 J	< 1000 J	2570 J	3610 J	< 1000 J	< 1000 J	7760 J
Alkalinity (as CaCO3)	µg/L	44200	14000	14000	22000	33600	15600	8200	45600	68800
Major Cations/Anions										
Aluminum	µg/L	13.4	< 11.0	185	< 11.0	69.9	22.0	193	< 11.0	< 11.0
Ammonium	µg/L	50 J	250	60	< 50	< 50	< 50	90	< 50	< 50
Calcium	µg/L	19000	11900	4000	8350	9520	28800	< 24.0	22800	27300
Chloride	µg/L	34000	37000	5200	17400	63400	73000	< 3000	14500	26500
Iron	µg/L	2590	13000	199	< 21.0	165	< 21.0	195	< 21.0	162
Magnesium	µg/L	3560	2180	840	1780	1960	7980	543	< 21.0	3280
Manganese	µg/L	452	748	44.2	18.7	30.5	14.9	13.6	353	452
Phosphate	µg/L	< 100	< 100	< 100	< 100	< 100	< 100	340 J	< 100	< 100
Potassium	µg/L	968	1360	2820	< 580	2250	772	659	< 580	2360
Silica	µg/L	20800	11800	11100	11200	14600	9570	8170	12300	14000
Sodium	µg/L	18300	25800	4720	7630	38000	9830	4810	5140	10300
Sulfate	µg/L	37000	14400	< 10000	10300	29600	16500	11100	14400	11100
Specific conductance	µmhos/cm	279	207	48.5	131	362	328	39.4	160	240

Notes:

(1) "<xx" indicates the constitutent was detected at some level below the noted value. Some or all or the detected concentration may be attributed to blank contamination.

(2) "J" qualifier indicates estimated value.

(3) µmhos/cm - micromhos per centimeter.

(4) "--" indicates compound not detected or parameter not measured.

Table 4.2.6: Round 1 Ground Water Sampling Event Program **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Well Number	Zone	Sample ID	Date Collected	Lab Report No.	VOCs (2)	Freon 12(4)	Metals (3) Filtered	Metals (3) Unfiltered	Cyanide	PCB's
MW01	OB	EP-MW01	03/02/95	3095-0220	√	√	√	√	√	
MW02	OB	EP-MW02	03/15/95	3095-0220A	√		√	√	√	
MW03	OB	EP-MW03	03/16/95	3095-0220B	√	√	√	√	√	
MW04	OB	EP-MW04	03/21/95	3095-0220B	√	√	√	√	√	√
MW05	OB	EP-MW05	03/16/95	3095-0220B	√	√	√	√	√	√
MW06	OB	EP-MW06	02/28/95	3095-0220	√		√	√	√	√
MW07	OB	EP-MW07	03/01/95	3095-0220	√	√	√	√	√	
MW08	OB	EP-MW08	03/16/95	3095-0220B	√		√	√	√	
MW09 (1)	OB	EP-MW09	03/08/95	3095-0220A	√[1]		√[1]	√[1]	√[1]	
MW12	OB	EP-MW12	03/20/95	3095-0220B	√		√	√	√	
MW13	BR	EP-MW13	03/14/95	3095-0220A	√	√	√	√	√	
MW14	BR	EP-MW14	03/21/95	3095-0220B	√	√	√	√	√	
MW15	BR	EP-MW15	03/22/95	3095-0220B	√	√	√	√	√	√
MW16	BR	EP-MW16	03/21/95	3095-0220B	√		√	√	√	
MW17 (1)	BR	EP-MW17	03/22/95	3095-0220B	√[1]		√[1]	√[1]	√[1]	√[1]
MW17 dup	BR	EP-MW17D	03/22/95	3095-0220B	√		√	√	√	√
MW18	BR	EP-MW18	03/10/95	3095-0220A	√	√	√	√	√	√
MW19	BR	EP-MW19	03/16/95	3095-0220B	√		√	√	√	
MW19 dup	BR	EP-MW19D	03/16/95	3095-0220B	√		√	√	√	
MW20A	OB	EP-MW20A	03/06/95	3095-0220	√		√	√	√	
MW20B	BR	EP-MW20B	03/06/95	3095-0220	√		√	√	√	
MW21A	OB	EP-MW21A	03/21/95	3095-0220B	√		√	√	√	
MW21B	BR	EP-MW21B	03/22/95	3095-0220B	√		√	√	√	
MW22A	OB	EP-MW22A	03/20/95	3095-0220B	√		√	√	√	
MW22B	BR	EP-MW22B	03/21/95	3095-0220B	√		√	√	√	
MW23A	OB	EP-MW23A	03/06/95	3095-0220	√		√	√		
MW23B	BR	EP-MW23B	03/06/95	3095-0220	√		√	√		
MW24A	OB	EP-MW24A	03/02/95	3095-0220	√		√	√		
MW24B	BR	EP-MW24B	03/02/95	3095-0220	√		√	√		
MW25A	OB	EP-MW25A	03/13/95	3095-0220A	√		√	√	√	√
MW25B	BR	EP-MW25B	03/13/95	3095-0220A	√		√	√	√	√
MW26	OB	EP-MW26	03/15/95	3095-0220A	√	√	√	√	√	
MW27	BR	EP-MW27	03/01/95	3095-0220	√		√	√	√	√
MW28	OB	EP-MW28	02/28/95	3095-0220	√	√	√	√	√	√
MW29 (1)	BR	EP-MW29	03/20/95	3095-0220B	√[1]		√[1]	√[1]	√[1]	
MW30A	OB	EP-MW30A	03/14/95	3095-0220A	√		√	√	√	√
MW30B	BR	EP-MW30B	03/14/95	3095-0220A	√		√	√	√	√
MW31A	OB	EP-MW31A	03/10/95	3095-0220A	√		√	√	√	
MW31B	BR	EP-MW31B	03/10/95	3095-0220A	√		√	√	√	
MW32A	OB	EP-MW32A	03/09/95	3095-0220A	√		√	√	√	

Table 4.2.6: Round 1 Ground Water Sampling Event Program **DRAFT**
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BASF Corporation, Plainville, Massachusetts

Well Number	Zone	Sample ID	Date Collected	Lab Report No.	VOCs (2)	Freon 12(4)	Metals (3) Filtered	Metals (3) Unfiltered	Cyanide	PCB's
MW32B	BR	EP-MW32B	03/09/95	3095-0220A	√		√	√	√	
MW33A	OB	EP-MW33A	03/03/95	3095-0220	√		√	√		
MW33A du	OB	EP-MW33AD	03/03/95	3095-0220	√		√	√		
MW33B	BR	EP-MW33B	03/03/95	3095-0220	√		√	√		
MW34	OB	EP-MW34	03/22/95	3095-0220C	√		√	√		
MW35	OB	EP-MW35	03/22/95	3095-0220C	√		√	√		
MW36	OB	EP-MW36	03/23/95	3095-0220C	√		√	√		
MW37	BR	EP-MW37	03/01/95	3095-0220	√	√	√	√	√	
Trip Blank		EP-TB24	02/28/95	3095-0220	√					
Trip Blank		EP-TB25	03/01/95	3095-0220	√					
Trip Blank		EP-TB26	03/02/95	3095-0220	√					
Trip Blank		EP-TB27	03/03/95	3095-0220	√					
Trip Blank		EP-TB28	03/06/95	3095-0220	√					
Trip Blank		EP-TB29	03/08/95	3095-0220A	√					
Trip Blank		EP-TB30	03/09/95	3095-0220A	√					
Trip Blank		EP-TB31	03/10/95	3095-0220A	√					
Trip Blank		EP-TB32	03/13/95	3095-0220A	√					
Trip Blank		EP-TB33	03/14/95	3095-0220A	√					
Trip Blank		EP-TB34	03/15/95	3095-0220A	√					
Trip Blank		EP-TB35	03/16/95	3095-0220B	√					
Trip Blank		EP-TB36	03/20/95	3095-0220B	√					
Trip Blank		EP-TB37	03/21/95	3095-0220B	√					
Trip Blank		EP-TB38	03/22/95	3095-0220C	√					
Trip Blank		EP-TB39	03/23/95	3095-0220C	√					
Trip Blank		EP-TB41	03/30/95	3095-0220C	√					
Field Blank		EP-FB06	03/14/95	3095-0220A	√		√	√	√	√
Field Blank		EP-FB07	03/23/95	3095-0220C	√		√	√	√	√

Notes:

BR = Bedrock Zone
OB = Overburden Zone
VOC = Volatile Organic Compounds
PCBs = Polychlorinated Biphenyls
(1) Sample designated for use as matrix spike/matrix spike duplicate.
(2) A list of VOCs to be analyzed by EPA Method 8240 is presented in Table 2.1.2
(3) Metals include both filtered and unfiltered metals. Specific analytes are listed in Table 2.1.4
(4) Freon 12 analysis was inadvertently not conducted during Appendix IX sampling event; analysis is included for selected wells in Round 1 event.
√ [1]= matrix spike/matrix spike duplicate sample

Table 4.2.7: RFI Phase I Ground Water, Soil, Sediment and Surface Water Sampling Programs - VOC Analytes
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BASF Corporation, Plainville, Massachusetts

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Analyte	Water Reporting Limits (µg/L) (2)	Soil Reporting Limits (µg/kg) (1)
1,1,1-trichloroethane	5	5
1,1,2,2-tetrachloroethane	5	5
1,1,2-trichloroethane	5	5
1,1-dichloroethane	5	5
1,1-dichloroethene	5	5
1,2-dichloroethane	5	5
1,2-dichloropropane	5	5
4-methyl-2-pentanone (methyl-iso-butyl-ketone)	50	10
2-chloroethyl vinyl ether	10	10
Benzene	5	5
Bromodichloromethane (dichlorobromomethane)	5	5
Bromoform	5	5
Bromomethane (methyl bromide)	10	10
Carbon tetrachloride	5	5
Chlorobenzene	5	5
Chloroethane	10	10
Chloroform	5	5
Chloromethane (methyl chloride)	10	10
Cis-1,3-dichloropropene	5	5
Dibromochloromethane (chlorodibromomethane)	5	5
Ethylbenzene	5	5
Freon 11 (trichlorofluoromethane)	10	10
Methylene chloride	5	5
Styrene	5	5
Tetrachloroethene	5	5
Toluene	5	5
Trans-1,2-dichloroethene	5	5
Trans-1,3-dichloropropene	5	5
Trichloroethene	5	5
Vinyl acetate	50	10
Vinyl chloride	10	10
1,2-dichlorobenzene(2)	5	5
1,4-dichlorobenzene(2)	5	5
1,3-dichlorobenzene (m-dichlorobenzene)	5	5
Xylenes, total	5	5

Notes:

(1) The final reporting limit achievable by the laboratory may be affected by matrix interferences, field blank/method blank contamination, etc.

(2) The results from 1,2-dichlorobenzene (1,2-DCB) and 1,4-DCB together are equivalent to o+p-DCB (Table I-8, RFI Proposal).

Table 4.2.8: RFI Phase I Ground Water, Soil, Sediment and Surface Water Sampling Programs - Metal Analytes
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BASF Corporation, Plainville Massachusetts

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Metals	EPA Test Method	Water Detection Limits (µg/L)	Soil Detection Limits (µg/kg)
Antimony	3010/6010	60	6000
Arsenic	3020/7060	8	800
Beryllium	3010/6010	1.0	100
Cadmium	3010/6010	4.0	400
Chromium (Total)	3010/6010	10	1000
Chromium (Hexavalent) (1)	7195	--	1000
Cobalt(2)	3010/6010	20	--
Copper	6010	--	1000
Cyanide (3)	335.2	25	--
Lead	3020/7421	5.0	500
Mercury	7470/7471	0.2	500
Nickel	3010/6010	20	2000
Selenium	3020/7740	5.0	500
Silver	3010/6010	10	1000
Thallium	3020/7841	10	1000
Zinc	3010/6010	20	2000

Notes:

(1) Hexavalent chromium was only run on selected soil samples collected during the soil sampling program.
(2) Cobalt was not analyzed for in ground water samples.
(3) Cyanide results from the surface water sampling program are included with the water quality results.
"--" indicates sample was not analyzed for specific metal.

Table 4.2.9: Round 2 Ground Water Sampling Event Program
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Well Number	Zone	Sample ID	Date Collected	Lab Report No.	VOCs (2)	Metals (3) Filtered	Metals (3) Unfiltered	PCBs
MW01	OB	EP-MW01-2	05/01/95	3095-0511	√	√	√	
MW02	OB	EP-MW02-2	05/04/95	3095-0511A	√	√	√	
MW03	OB	EP-MW03-2	05/10/95	3095-0511B	√	√	√	
MW04	OB	EP-MW04-2	05/12/95	3095-0511B	√	√	√	√
MW05	OB	EP-MW05-2	05/05/95	3095-0511A	√	√	√	√
MW06	OB	EP-MW06	04/26/95	3095-0511	√	√	√	√
MW07	OB	EP-MW07-2	04/27/95	3095-0511	√	√	√	
MW08	OB	EP-MW08-2	05/05/95	3095-0511A	√	√	√	
MW09	OB	EP-MW09-2	05/02/95	3095-0511	√	√	√	
MW12	OB	EP-MW12-2	05/12/95	3095-0511B	√	√	√	√
MW13	BR	EP-MW13-2	05/08/95	3095-0511B	√	√	√	
MW14	BR	EP-MW14-2	05/09/95	3095-0511B	√	√	√	
MW15	BR	EP-MW15-2	05/11/95	3095-0511B	√	√	√	√
MW16	BR	EP-MW16-2	05/09/95	3095-0511B	√	√	√	
MW17 (1)	BR	EP-MW17-2	05/12/95	3095-0511C	√ [1]	√ [1]	√ [1]	√ [1]
MW17 dup	BR	EP-MW17D-2	05/12/95	3095-0511C	√	√	√	√
MW18	BR	EP-MW18-2	05/04/95	3095-0511A	√	√	√	√
MW19	BR	EP-MW19-2	05/05/95	3095-0511A	√	√	√	
MW20A	OB	EP-MW20A-2	05/03/95	3095-0511A	√	√	√	
MW20B	BR	EP-MW20B-2	05/03/95	3095-0511A	√	√	√	
MW20B dup	BR	EP-MW20BD-2	05/03/95	3095-0511A	√	√	√	
MW21A	OB	EP-MW21A-2	05/11/95	3095-0511B	√	√	√	
MW21B	BR	EP-MW21B-2	05/11/95	3095-0511B	√	√	√	
MW22A	OB	EP-MW22A-2	05/10/95	3095-0511B	√	√	√	
MW22A dup	OB	EP-MW22AD-2	05/10/95	3095-0511B	√	√	√	
MW22B (1)	BR	EP-MW22B-2	05/10/95	3095-0511B	√ [1]	√ [1]	√ [1]	
MW23A	OB	EP-MW23A-2	05/02/95	3095-0511	√	√	√	
MW23B (1)	BR	EP-MW23B-2	05/02/95	3095-0511	√ [1]	√ [1]	√ [1]	
MW24A	OB	EP-MW24A-2	04/28/95	3095-0511	√	√	√	
MW24B	BR	EP-MW24B-2	04/27/95	3095-0511	√	√	√	
MW25A	OB	EP-MW25A-2	05/08/95	3095-0511B	√	√	√	√
MW25B	BR	EP-MW25B-2	05/05/95	3095-0511A	√	√	√	√
MW26	OB	EP-MW26-2	05/09/95	3095-0511B	√	√	√	
MW27	BR	EP-MW27-2	04/27/95	3095-0511	√	√	√	√
MW28	OB	EP-MW28	04/26/95	3095-0511	√	√	√	√
MW29	BR	EP-MW29-2	05/04/95	3095-0511A	√	√	√	
MW30A	OB	EP-MW30A-2	05/08/95	3095-0511B	√	√	√	√
MW30B	BR	EP-MW30B-2	05/08/95	3095-0511B	√	√	√	√
MW31A	OB	EP-MW31A-2	05/03/95	3095-0511A	√	√	√	
MW31B	BR	EP-MW31B-2	05/04/95	3095-0511A	√	√	√	
MW32A	OB	EP-MW32A-2	05/02/95	3095-0511	√	√	√	
MW32B	BR	EP-MW32B-2	05/03/95	3095-0511A	√	√	√	
MW33A	OB	EP-MW33A-2	04/28/95	3095-0511	√	√	√	

Table 4.2.9: Round 2 Ground Water Sampling Event Program
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Well Number	Zone	Sample ID	Date Collected	Lab Report No.	VOCs (2)	Metals (3) Filtered	Metals (3) Unfiltered	PCBs
MW33B	BR	EP-MW33B-2	04/28/95	3095-0511	√	√	√	
MW34	OB	EP-MW34-2	05/03 & 05/05/95	3095-0511A	√	√	√	
MW35	OB	EP-MW35-2	05/01/95	3095-0511	√	√	√	
MW36	OB	EP-MW36-2	05/01/95	3095-0511	√	√	√	
MW37	BR	EP-MW37-2	04/27/95	3095-0511	√	√	√	
Trip Blank		EP-TB45	04/26/95	3095-0511	√			
Trip Blank		EP-TB46	04/27/95	3095-0511	√			
Trip Blank		EP-TB47-2	04/28/95	3095-0511	√			
Trip Blank		EP-TB48-2	05/01/95	3095-0511	√			
Trip Blank		EP-TB49-2	05/02/95	3095-0511A	√			
Trip Blank		EP-TB50-2	05/03/95	3095-0511A	√			
Trip Blank		EP-TB51-2	05/04/95	3095-0511A	√			
Trip Blank		EP-TB52-2	05/05/95	3095-0511A	√			
Trip Blank		EP-TB53-2	05/08/95	3095-0511B	√			
Trip Blank		EP-TB54-2	05/09/95	3095-0511B	√			
Trip Blank		EP-TB55-2	05/10/95	3095-0511B	√			
Trip Blank		EP-TB56-2	05/11/95	3095-0511B	√			
Trip Blank		EP-TB57-2	05/12/95	3095-0511C				
Field Blank		EP-FB01-2	05/03/95	3095-0511A	√	√	√	√
Field Blank		EP-FB02-2	05/12/95	3095-0511C	√	√	√	√

Notes:

BR = Bedrock Zone
OB = Overburden Zone
VOC = Volatile Organic Compounds
PCBs = Polychlorinated Biphenyls
(1) Sample designated for use as matrix spike/matrix spike duplicate.
(2) A list of VOCs to be analyzed by EPA Method 8240 is presented in Table 4.2.3
(3) Metals include both filtered and unfiltered metals. Specific analytes are listed in Table 4.2.3
√ [1]= matrix spike/matrix spike duplicate sample.
dup = Duplicate Sample

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW01	MW01	MW01	MW01	MW01	MW02	MW02
SAMPLING ROUND:	App IX	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2
SAMPLE ID:	EP-MW-01	EP-MW-01	EP-MW-01-2	EP-MW-01-3	EP-MW-01-4	EP-MW-02	EP-MW-02-2
LABORATORY SDG NO.:	0013	0220	Z0511	B0934	A1863	A0220	A0511
DATE SAMPLED:	1/9/1995	3/2/1995	5/1/1995	5/6/1997	8/19/1997	3/15/1995	5/4/1995
DATE ANALYZED:	1/17/1995	3/13/1995	5/4/1995	5/9/1997	8/26/1997	3/28/1995	5/17/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	--	--	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	21	12	10	--	12	120	1100
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	6	45 J
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW02	MW02	MW03	MW03	MW03	MW03	MW03
SAMPLING ROUND:	Round 3	Round 4	App IX	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:	EP-MW-02-3	EP-MW-02-4	EP-MW-03	EP-MW-03	EP-MW-03-2	EP-MW-03-3	EP-MW-03-4
LABORATORY SDG NO.:	C0934	B1863	0013	B0220	B0511	D0934	C1863
DATE SAMPLED:	5/12/1997	8/21/1997	1/12/1995	3/16/1995	5/10/1995	5/15/1997	9/2/1997
DATE ANALYZED:	5/21/1997	8/27/1997	1/19/1995	3/22/1995	5/23/1995	5/23/1997	9/13/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	2800	960	900	53	260
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	19 J	6	--
1,1-dichloroethene	--	--	160	53	54	3 J	14
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	91	--	660	280	73	64
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	22	570	230	300	39	55
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW04	MW04	MW04	MW04	MW04	MW05	MW05
SAMPLING ROUND:	App IX	Round 1	Round 2	Round 3	Round 4	App IX	Round 1
SAMPLE ID:	EP-MW-04	EP-MW-04	EP-MW-04-2	EP-MW-04-3	EP-MW04-4	EP-MW05	EP-MW05
LABORATORY SDG NO.:	A0013	B0220	B0511	D0934	D1863	0013	B0220
DATE SAMPLED:	1/17/1995	3/21/1995	5/12/1995	5/16/1997	9/9/1997	1/11/1995	3/16/1995
DATE ANALYZED:	1/24/1995	4/1/1995	5/23/1995	5/27/1997	9/20/1997	1/18/1995	3/29/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	2400	4200	5000	4600	5300	15	14
1,1,2-trichloroethane	--	--	--	3 J	--	--	--
1,1-dichloroethane	--	--	--	76	--	2 J	4 J
1,1-dichloroethene	100 J	--	--	160	300 J	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	71 J	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	15	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	6000	11000	15000	7200	16000	28	27
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	560	920	1100	360	740	14	15
Vinyl chloride	--	--	--	47	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW05	MW05	MW05	MW06	MW06	MW06	MW06
SAMPLING ROUND:	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:	EP-MW05-2	EP-MW-05-3	EP-MW05-4	EP-MW06	EP-MW06	EP-MW-06-3	EP-MW06-4
LABORATORY SDG NO.:	A0511	C0934	C1863	0220	Z0511	B0934	A1863
DATE SAMPLED:	5/5/1995	5/8/1997	8/28/1997	2/28/1995	4/26/1995	5/6/1997	8/19/1997
DATE ANALYZED:	5/17/1995	5/20/1997	9/10/1997	3/12/1995	4/29/1995	5/9/1997	8/26/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	12	6	6	--	--	--	1 J
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	4 J	4 J	3 J	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	29	15	23	--	15	--	--
Toluene	--	--	--	--	0.6 J	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	11	12	22	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW07	MW07	MW07	MW07	MW07 (dup)	MW07	MW07
SAMPLING ROUND:	App IX	Round 1	Round 2	Resample	Resample	Round 3	Round 4
SAMPLE ID:	EP-MW07	EP-MW07	EP-MW07-2	EP-MW07-2A	EP-MW07-2A-D	EP-MW07-3	EP-MW07-4
LABORATORY SDG NO.:	0013	0220	Z0511	A1408	A1408	A0934	A1863
DATE SAMPLED:	1/6/1995	3/1/1995	4/27/1995	7/26/1996	7/26/1996	4/22/1997	8/12/1997
DATE ANALYZED:	1/1795	3/12/1995	5/3/1995	7/31/1996	7/31/1996	4/24/1997	8/18/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	--	--	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	3	8	--	--	--	--
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW08	MW08	MW08	MW08	MW09	MW09	MW09
SAMPLING ROUND:	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3
SAMPLE ID:	EP-MW08	EP-MW08-2	EP-MW-08-3	EP-MW08-4	EP-MW09	EP-MW09-2	EP-MW09-3
LABORATORY SDG NO.:	B0220	A0511	B0934	B1863	A0220	Z0511	A0934
DATE SAMPLED:	3/16/1995	5/5/1995	5/2/1997	8/26/1997	3/8/1995	5/2/1995	4/29/1997
DATE ANALYZED:	3/28/1995	5/17/1995	5/9/1997	9/4/1997	3/18/1995	5/9/1995	5/1/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	14	10	4 J	370	--	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	7 J	--	--	--
1,1-dichloroethene	--	--	--	17 J	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	4 J	--	130	--	2 J	--
Toluene	--	--	--	--	--	1 J	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	65	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW09	MW12	MW12	MW12	MW12	MW13	MW13
SAMPLING ROUND:	Round 4	Round 1	Round 2	Round 3	Round 4	App IX	Round 1
SAMPLE ID:	EP-MW09-4	EP-MW12	EP-MW12-2	EP-MW-12-3	EP-MW12-4	EP-MW13	EP-MW13
LABORATORY SDG NO.:	A1863	B0220	B0511	D0934	C1863	0013	A0220
DATE SAMPLED:	8/15/1997	3/20/1995	5/12/1995	5/15/1997	9/3/1997	1/10/1995	3/14/1995
DATE ANALYZED:	8/22/1997	3/29/1995	5/23/1995	5/23/1997	9/16/1997	1/19/1995	3/20/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	10	2300	1400	320	770	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	57 J	77	30	27	--	--
1,1-dichloroethene	0.6 J	140	93	27	38	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	0.8 J	1600	1000	280	480	--	--
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	2 J	120	170	90	150	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW13	MW13	MW13	MW14	MW14	MW14	MW14
SAMPLING ROUND:	Round 2	Round 3	Round 4	App IX	Round 1	Round 2	Round 3
SAMPLE ID:	EP-MW13-2	EP-MW-13-3	EP-MW13-4	EP-MW14	EP-MW14	EP-MW14-2	EP-MW-14-3
LABORATORY SDG NO.:	B0511	C0934	B1863	0013	B0220	B0511	C0934
DATE SAMPLED:	5/8/1995	5/6/1997	8/27/1997	1/12/1995	3/21/1995	5/9/1995	5/12/1997
DATE ANALYZED:	5/19/1995	5/9/1997	9/4/1997	1/19/1995	3/30/1995	5/22/1995	5/21/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	4 J	--	--	1700	1100	480	680
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	34 J	--	25	18
1,1-dichloroethene	--	--	--	100	88	35	37
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	6 J	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	2 J	--	--	--	--	--	--
Tetrachloroethene	4 J	--	4 J	700	660	300	310
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	4 J	--	--	260	230	120 J	120
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW14	MW15	MW15 (dup)	MW15	MW15	MW15	MW15 (dup)
SAMPLING ROUND:	Round 4	App IX	App IX	Round 1	Round 2	Round 3	Round 3
SAMPLE ID:	EP-MW14-4	EP-MW15	EP-MW15D	EP-MW15	EP-MW15-2	EP-MW-15-3	EP-MW-15-D-3
LABORATORY SDG NO.:	D1863	A0013	A0013	B0220	B0511	D0934	D0934
DATE SAMPLED:	9/9/1997	1/17/1995	1/17/1995	3/22/1995	5/11/1995	5/15/1997	5/15/1997
DATE ANALYZED:	9/21/1997	1/24/1995	1/24/1995	4/1/1995	5/23/1995	5/26/1997	5/26/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	1000	3600	3400	4000	2700	6100	6000
1,1,2-trichloroethane	--	--	--	--	--	4 J	4 J
1,1-dichloroethane	32 J	--	--	--	80 J	89 J	90
1,1-dichloroethene	58	120 J	--	--	--	160 J	160
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	180	13000	14000	17000	15000	13000	13000
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	160	1600	1700	1700	1400	520	520
Vinyl chloride	--	--	--	--	--	94 J	89

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	MW15	MW16	MW16	MW16	MW16	MW17	MW17 (dup)
SAMPLING ROUND:	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 1
SAMPLE ID:	EP-MW15-4	EP-MW16	EP-MW16-2	EP-MW-16-3	EP-MW16-4	EP-MW17	EP-MW17(D)
LABORATORY SDG NO.:	D1863	B0220	B0511	C0934	D1863	B0220	B0220
DATE SAMPLED:	9/8/1997	3/21/1995	5/9/1995	5/12/1997	9/9/1997	3/22/1995	3/22/1995
DATE ANALYZED:	9/20/1997	3/30/1995	5/22/1995	5/21/1997	9/20/1997	4/2/1995	3/31/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	8200 J	1300	750	1400	1800	6500 J	9200 J
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	96 J	23 J	16 J	15	26 J	--	63 J
1,1-dichloroethene	210 J	46 J	36	21	49 J	120 J	180 J
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	6600 J	350	320	86	170	4600	5800
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	260 J	130	130 J	49	110	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW17	MW17 (dup)	MW17	MW17	MW17 (dup)	MW18	MW18
SAMPLING ROUND:	Round 2	Round 2	Round 3	Round 4	Round 4	App IX	Round 1
SAMPLE ID:	EP-MW17-2	EP-MW17D-2	EP-MW-17-3	EP-MW17-4	EP-MW17D-4	EP-MW18	EP-MW18
LABORATORY SDG NO.:	C0511	C0511	D0934	D1863	D1863	0013	A0220
DATE SAMPLED:	5/12/1995	5/12/1995	5/14/1997	9/8/1997	9/8/1997	1/11/1995	3/10/1995
DATE ANALYZED:	5/23/1995	5/23/1995	5/22/1997	9/20/1997	9/20/1997	1/18/1995	3/20/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	8400	8600	9400	15000	18000	270	220
1,1,2-trichloroethane	--	--	2 J	--	--	--	--
1,1-dichloroethane	--	--	74	--	--	42	40
1,1-dichloroethene	--	--	120	--	--	11	8 J
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	5500	5700	4300	4300	5000	23	16
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	31	--	--	69	38
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW18	MW18	MW18	MW19	MW19 (dup)	MW19	MW19
SAMPLING ROUND:	Round 2	Round 3	Round 4	Round 1	Round 1	Round 2	Round 3
SAMPLE ID:	EP-MW18-2	EP-MW-18-3	EP-MW18-4	EP-MW19	EP-MW19(D)	EP-MW19-2	EP-MW-19-3
LABORATORY SDG NO.:	A0511	C0934	B1863	B0220	B0220	A0511	C0934
DATE SAMPLED:	5/4/1995	5/9/1997	8/28/1997	3/16/1995	3/16/1995	5/5/1995	5/8/1997
DATE ANALYZED:	5/10/1995	5/20/1997	9/4/1997	3/28/1995	3/28/1995	5/18/1995	5/20/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	170	8	19	630	710	530	790
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	33	14	12	14 J	16 J	12 J	17
1,1-dichloroethene	--	5	4 J	34	31	32	50
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	6 J	--
Tetrachloroethene	10	2 J	6	77	81	83	96
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	0.9 J	--	--	--	--
Trichloroethene	30	8	8	140	160	130	150
Vinyl chloride	--	4 J	4 J	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW19	MW20A	MW20A	MW20A	MW20A	MW20B	MW20B
SAMPLING ROUND:	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2
SAMPLE ID:	EP-MW19-4	EP-MW20A	EP-MW20A-2	EP-MW20A-3	EP-MW20A-4	EP-MW20B	EP-MW20B-2
LABORATORY SDG NO.:	C1863	0220	A0511	A0934	B1863	0220	A0511
DATE SAMPLED:	9/4/1997	3/6/1995	5/3/1995	4/29/1997	8/27/1997	3/6/1995	5/3/1995
DATE ANALYZED:	9/16/1997	3/14/1995	5/9/1995	5/2/1997	9/4/1997	3/14/1995	5/9/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	980	3 J	--	6	8	11	32
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	18 J	--	--	0.9 J	--	--	--
1,1-dichloroethene	9 J	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	140	--	2 J	--	0.7 J	--	--
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	170	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW20B (dup)	MW20B	MW20B	MW20B	MW20B (dup)	MW21A	MW21A
SAMPLING ROUND:	Round 2	Round 3	Round 4	Resample	Resample	Round 1	Round 2
SAMPLE ID:	EP-MW20BD-2	EP-MW-20B-3	EP-MW20B-4	EP-MW20B-5	EP-MW20BD-5	EP-MW21A	EP-MW21A-2
LABORATORY SDG NO.:	A0511	C0934	B1863	A0890	A0890	B0220	B0511
DATE SAMPLED:	5/3/1995	5/7/1997	8/26/1997	4/20/1998	4/20/1998	3/21/1995	5/11/1995
DATE ANALYZED:	5/9/1995	5/9/1997	8/29/1997	5/1/1998	5/1/1998	3/30/1995	5/22/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	32	4 J	380	--	7	190	340
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	5 J	--	--	46	120
1,1-dichloroethene	--	--	9 J	--	--	16	31
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	--	14	--	--	160	520
Toluene	--	--	0.8 J	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	12	--	--	120	140
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW21A	MW21A	MW21B	MW21B	MW21B	MW21B (dup)	MW21B
SAMPLING ROUND:	Round 3	Round 4	Round 1	Round 2	Round 3	Round 3	Round 4
SAMPLE ID:	EP-MW-21A-3	EP-MW21A-4	EP-MW21B	EP-MW21B-2	EP-MW-21B-3	EP-MW-21B-D-3	EP-MW21B-4
LABORATORY SDG NO.:	C0934	C1863	B0220	B0511	C0934	D0934	D1863
DATE SAMPLED:	5/13/1997	9/4/1997	3/22/1995	5/11/1995	5/13/1997	5/13/1997	9/5/1997
DATE ANALYZED:	5/21/1997	9/18/1997	4/2/1995	5/22/1995	5/21/1997	5/22/1997	9/19/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	440	280	1600	1800	1700	1800	1900
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	84	--	70	59 J	58	51	68 J
1,1-dichloroethene	27	--	78	55 J	70	61	93 J
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	30 J	--	--	--
Tetrachloroethene	1200	2000	1400	960	1000	1000	1100
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	4 J	--	--	--	--	--	--
Trichloroethene	170	140	200	180	190	180	220
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW22A	MW22A	MW22A (dup)	MW22A	MW22A	MW22B	MW22B
SAMPLING ROUND:	Round 1	Round 2	Round 2	Round 3	Round 4	Round 1	Round 2
SAMPLE ID:	EP-MW22A	EP-MW22A-2	EP-MW22AD-2	EP-MW-22A-3	EP-MW22A-4	EP-MW22B	EP-MW22B-2
LABORATORY SDG NO.:	B0220	B0511	B0511	B0934	C1863	B0220	B0511
DATE SAMPLED:	3/20/1995	5/10/1995	5/10/1995	5/1/1997	8/29/1997	3/21/1995	5/10/1995
DATE ANALYZED:	3/29/1995	5/20/1995	5/22/1995	5/5/1997	9/4/1997	3/31/1995	5/22/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	--	--	120	110
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	38	23
1,1-dichloroethene	--	--	--	--	--	8	4 J
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	3 J	4 J	--	--	--	17
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	66	45 J
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW22B	MW22B	MW22C	MW22C	MW22C	MW23A	MW23A
SAMPLING ROUND:	Round 3	Round 4	D-BR-Event	Round 3	Round 4	Round 1	Round 2
SAMPLE ID:	EP-MW-22B-3	EP-MW22B-4	EP-MW22C	EP-MW22C-3	EP-MW22C-4	EP-MW23A	EP-MW23A-2
LABORATORY SDG NO.:	C0934	C1863	A2113	A0934	A1863	0220	Z0511
DATE SAMPLED:	5/7/1997	8/28/1997	10/17/1996	4/25/1997	8/18/1997	3/6/1995	5/2/1995
DATE ANALYZED:	5/9/1997	9/4/1997	10/25/1996	4/30/1997	8/22/1997	3/14/1995	5/4/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	99	170	8	--	1 J	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	26	19	5	--	--	--	--
1,1-dichloroethene	--	4 J	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	3 J	--	--	--	--	--
Toluene	--	--	2 J	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	38	24	1 J	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW23A	MW23A	MW23B	MW23B	MW23B	MW23B	MW24A
SAMPLING ROUND:	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1
SAMPLE ID:	EP-MW23A-3	EP-MW23A-4	EP-MW23B	EP-MW23B-2	EP-MW23B-3	EP-MW23B-4	EP-MW24A
LABORATORY SDG NO.:	A0934	A1863	0220	Z0511	A0934	A1863	0220
DATE SAMPLED:	4/23/1997	8/13/1997	3/6/1995	5/2/1995	4/23/1997	8/13/1997	3/2/1995
DATE ANALYZED:	4/27/1997	8/22/1997	3/14/1995	5/4/1995	4/25/1997	8/18/1997	3/13/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	--	--	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW24A	MW24A	MW24A	MW24B	MW24B	MW24B	MW24B
SAMPLING ROUND:	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:	EP-MW24A-2	EP-MW24A-3	EP-MW24A-4	EP-MW24B	EP-MW24B-2	EP-MW-24B-3	EP-MW24B-4
LABORATORY SDG NO.:	Z0511	B0934	C1863	0220	Z0511	B0934	B1863
DATE SAMPLED:	4/28/1995	4/30/1997	8/29/1997	3/2/1995	4/27/1995	5/5/1997	8/22/1997
DATE ANALYZED:	5/3/1995	5/2/1997	9/4/1997	3/13/1995	5/3/1995	5/9/1997	8/27/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	--	--	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	2 J	--	10	--	3 J	--	--
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW24B (dup)	MW24C	MW24C	MW24C	MW25A	MW25A	MW25A
SAMPLING ROUND:	Round 4	D-BR-Event	Round 3	Round 4	Round 1	Round 2	Round 3
SAMPLE ID:	EP-MW24B-4-D	EP-MW24C	EP-MW24C-3	EP-MW24C-4	EP-MW25A	EP-MW25A-2	EP-MW-25A-3
LABORATORY SDG NO.:	B1863	A2113	A0934	B1863	A0220	B0511	D0934
DATE SAMPLED:	8/22/1997	10/16/1996	4/24/1997	8/21/1997	3/13/1995	5/8/1995	5/14/1997
DATE ANALYZED:	8/27/1997	10/25/1996	4/25/1997	8/27/1997	3/27/1995	5/20/1995	5/22/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	2 J	--	--	--	1900	2000	480
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	210	220	120
1,1-dichloroethene	--	--	--	--	130	89	58
1,2-dichloroethane	--	--	--	1 J	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	1 J	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	240	220	160
Toluene	--	2 J	--	2 J	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	2 J	--	--	--	690	600	430
Vinyl chloride	--	--	--	--	--	--	4 J

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	MW25A	MW25B	MW25B	MW25B	MW25B	MW26	MW26
SAMPLING ROUND:	Round 4	Round 1	Round 2	Round 3	Round 4	App IX	Round 1
SAMPLE ID:	EP-MW25A-4	EP-MW25B	EP-MW25B-2	EP-MW-25B-3	EP-MW25B-4	EP-MW26	EP-MW26
LABORATORY SDG NO.:	C1863	A0220	A0511	C0934	C1863	0013	A0220
DATE SAMPLED:	9/4/1997	3/13/1995	5/5/1995	5/9/1997	9/2/1997	1/6/1995	3/15/1995
DATE ANALYZED:	9/13/1997	3/27/1995	5/17/1995	5/21/1997	9/16/1997	1/18/1995	3/28/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	650 J	430	460	320	400	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	190	24 J	25	37	51	--	--
1,1-dichloroethene	90	--	--	7	--	--	--
1,2-dichloroethane	1 J	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	140	--	--	1 J	5 J	--	--
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	7	--	--	--	--	--	--
Trichloroethene	340 J	--	--	8	8 J	--	--
Vinyl chloride	5 J	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	MW26	MW26	MW26	MW27	MW27	MW27	MW27
SAMPLING ROUND:	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:	EP-MW26-2	EP-MW26-3	EP-MW26-4	EP-MW27	EP-MW27-2	EP-MW-27-3	EP-MW27-4
LABORATORY SDG NO.:	B0511	A0934	B1863	0220	Z0511	C0934	C1863
DATE SAMPLED:	5/9/1995	4/24/1997	8/25/1997	3/1/1995	4/27/1995	5/7/1997	9/3/1997
DATE ANALYZED:	5/20/1995	4/25/1997	8/29/1997	3/12/1995	5/3/1995	5/9/1997	9/16/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	0.8 J	17	3 J	23	12
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	1 J	--	1 J	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	2 J	1 J	33	7	640	85
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	3 J	2 J	15	7
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	MW27 (dup)	MW28	MW28	MW28	MW28	MW28	MW29
SAMPLING ROUND:	Round 4	App IX	Round 1	Round 2	Round 3	Round 4	Round 1
SAMPLE ID:	EP-MW27D-4	EP-MW28	EP-MW28	EP-MW28	EP-MW-28-3	EP-MW28-4	EP-MW29
LABORATORY SDG NO.:	C1863	0013	0220	Z0511	D0934	D1863	B0220
DATE SAMPLED:	9/3/1997	1/10/1995	2/28/1995	4/26/1995	5/13/1997	9/8/1997	3/20/1995
DATE ANALYZED:	9/16/1997	1/18/1995	3/13/1995	5/2/1995	5/22/1997	9/19/1997	3/29/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	10	320	410	400	510	1300	3800
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	3 J	--	120
1,1-dichloroethene	--	--	--	--	4 J	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	68	820	1600	1700	4800	9600	83 J
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	5	230	300	290	190	420 J	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW29	MW29	MW29	MW30A	MW30A	MW30A	MW30A
SAMPLING ROUND:	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:	EP-MW29-2	EP-MW-29-3	EP-MW29-4	EP-MW30A	EP-MW30A-2	EP-MW-30A	EP-MW30A-4
LABORATORY SDG NO.:	A0511	D0934	D1863	A0220	B0511	B0934	A1863
DATE SAMPLED:	5/4/1995	5/14/1997	9/5/1997	3/14/1995	5/8/1995	5/2/1997	8/21/1997
DATE ANALYZED:	5/17/1995	5/22/1997	9/19/1997	3/20/1995	5/20/1995	5/9/1997	8/27/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	4100	2200	2100	8	6	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	130	51	48 J	--	--	--	--
1,1-dichloroethene	--	27	31 J	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	7	5	--	--
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	26	--	--	1 J	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	MW30B	MW30B	MW30B	MW30B	MW31A	MW31A	MW31A
SAMPLING ROUND:	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3
SAMPLE ID:	EP-MW30B	EP-MW30B-2	EP-MW-30B-3	EP-MW30B-4	EP-MW31A	EP-MW31A-2	EP-MW31A-3
LABORATORY SDG NO.:	A0220	B0511	C0934	C1863	A0220	A0511	A0934
DATE SAMPLED:	3/14/1995	5/8/1995	5/9/1997	9/4/1997	3/10/1995	5/3/1995	4/28/1997
DATE ANALYZED:	3/20/1995	5/19/1995	5/20/1997	9/17/1997	3/18/1995	5/9/1995	5/1/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	33	28	19	22	--	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	36	30	26	25	--	--	--
1,1-dichloroethene	6	4 J	6	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	--	2	--	--	--	--
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	170	170	250	290	--	--	--
Vinyl chloride	4 J	3 J	4 J	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	MW31A	MW31B	MW31B	MW31B	MW31B	MW32A	MW32A
SAMPLING ROUND:	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2
SAMPLE ID:	EP-MW31A-4	EP-MW31B	EP-MW31B-2	EP-MW31B-3	EP-MW31B-4	EP-MW32A	EP-MW32A-2
LABORATORY SDG NO.:	A1863	A0220	A0511	B0934	A1863	A0220	Z0511
DATE SAMPLED:	8/14/1997	3/10/1995	5/4/1995	4/30/1997	8/18/1997	3/9/1995	5/2/1995
DATE ANALYZED:	8/22/1997	3/18/1995	5/10/1995	5/2/1997	8/22/1997	3/18/1995	5/9/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	--	--	--	6
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	--	3 J	--	--	--	2 J
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW32A	MW32A	MW32B	MW32B	MW32B	MW32B (dup)	MW32B
SAMPLING ROUND:	Round 3	Round 4	Round 1	Round 2	Round 3	Round 3	Round 4
SAMPLE ID:	EP-MW-32A-3	EP-MW32A-4	EP-MW32B	EP-MW32B-2	EP-MW-32B-3	EP-MW-32B-3-D	EP-MW32B-4
LABORATORY SDG NO.:	B0934	B1863	A0220	A0511	B0934	B0934	B1863
DATE SAMPLED:	5/5/1997	8/21/1997	3/9/1995	5/3/1995	5/1/1997	5/1/1997	8/25/1997
DATE ANALYZED:	5/9/1997	8/27/1997	3/20/1995	5/9/1995	5/5/1997	5/5/1997	8/28/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	0.70 J	6	3 J	4 J	2 J	2 J	4 J
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	2 J	--	--	--	--	1 J
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	4 J	--	2 J	--	0.30 J	2 J
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	1 J	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW33A	MW33A (dup)	MW33A	MW33A	MW33A	MW33B	MW33B
SAMPLING ROUND:	Round 1	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2
SAMPLE ID:	EP-MW33A	EP-MW33A (D)	EP-MW33A-2	EP-MW33A-3	EP-MW33A-4	EP-MW33B	EP-MW33B-2
LABORATORY SDG NO.:	0220	0220	Z0511	B0934	A1863	0220	Z0511
DATE SAMPLED:	3/3/1995	3/3/1995	4/28/1995	4/30/1997	8/20/1997	3/3/1995	4/28/1995
DATE ANALYZED:	3/14/1995	3/14/1995	5/3/1995	5/2/1997	8/26/1997	3/14/1995	5/3/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	--	--	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	2 J	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	3 J
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW33B	MW33B	MW33C	MW33C	MW33C	MW34	MW34
SAMPLING ROUND:	Round 3	Round 4	D-BR-Event	Round 3	Round 4	Round 1	Round 2
SAMPLE ID:	EP-MW-33B-3	EP-MW33B-4	EP-MW33C	EP-MW33C-3	EP-MW33C-4	EP-MW34	EP-MW34-2
LABORATORY SDG NO.:	B0934	B1863	A2113	A0934	A1863	C0220	A0511
DATE SAMPLED:	5/5/1997	8/27/1997	10/18/1996	4/24/1997	8/15/1997	3/22/1995	5/3/1995
DATE ANALYZED:	5/9/1997	9/4/1997	10/28/1996	4/25/1997	8/22/1997	4/10/1995	5/9/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	--	--	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	1 J	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	2 J	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--
Toluene	2 J	--	--	--	--	--	0.8 J
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	1 J	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW34	MW34	MW35	MW35	MW35	MW35	MW36
SAMPLING ROUND:	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1
SAMPLE ID:	EP-MW-34-3	EP-MW34-4	EP-MW35	EP-MW35-2	EP-MW35-3	EP-MW35-4	EP-MW36
LABORATORY SDG NO.:	B0934	C1863	C0220	Z0511	A0934	C1863	C0220
DATE SAMPLED:	5/2/1997	9/2/1997	3/22/1995	5/1/1995	4/25/1997	8/29/1997	3/23/1995
DATE ANALYZED:	5/9/1997	9/12/1997	3/31/1995	5/4/1995	4/30/1997	9/4/1997	3/31/1995
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	--	--	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	0.6 J	--	1 J	--	--
Tetrachloroethene	--	2 J	--	--	--	--	--
Toluene	2 J	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW36	MW36	MW36	MW37	MW37	MW37	MW37
SAMPLING ROUND:	Round 2	Round 3	Round 4	App IX	Round 1	Round 2	Resample
SAMPLE ID:	EP-MW36-2	EP-MW36-3	EP-MW36-4	EP-MW37	EP-MW37	EP-MW37-2	EP-MW37-2A
LABORATORY SDG NO.:	Z0511	A0934	A1863	0013	0220	Z0511	A1408
DATE SAMPLED:	5/1/1995	4/25/1997	8/13/1997	1/9/1995	3/1/1995	4/27/1995	7/26/1996
DATE ANALYZED:	5/4/1995	4/30/1997	8/18/1997	1/17/1995	3/12/1995	5/3/1995	7/30/1996
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	--	--	--	--
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	--	--	--	--
1,1-dichloroethene	--	--	--	--	--	--	--
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	25	--
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	MW37 (dup)	MW37	MW37	MW38	MW38	MW38	MW38
SAMPLING ROUND:	Resample	Round 3	Round 4	D-BR-Event	D-BR-Event	Round 3	Round 4
SAMPLE ID:	EP-MW37-2A-D	EP-MW37-3	EP-MW37-4	EP-MW38	EP-MW38-D	EP-MW38-3	EP-MW38-4
LABORATORY SDG NO.:	A1408	A0934	A1863	A2113	A2113	A0934	B1863
DATE SAMPLED:	7/26/1996	4/22/1997	8/12/1997	10/16/1996	10/16/1996	4/28/1997	8/22/1997
DATE ANALYZED:	7/30/1996	4/25/1997	8/18/1997	10/25/1996	10/25/1996	5/2/1997	8/28/1997
UNIT	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--	1700 J	1200 J	840	820
1,1,2-trichloroethane	--	--	--	--	--	--	--
1,1-dichloroethane	--	--	--	49 J	31 J	21 J	21 J
1,1-dichloroethene	--	--	--	55 J	38 J	31 J	36
1,2-dichloroethane	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloromethane (methyl chloride)	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	160 J	100 J	73	92
Toluene	--	--	--	--	--	--	--
Trans-1,2-dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	210 J	140 J	120	130 J
Vinyl chloride	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.10 Phase I and II Field Investigations - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	MW39	MW39	MW39
SAMPLING ROUND:	D-BR-Event	Round 3	Round 4
SAMPLE ID:	EP-MW39	EP-MW39-3	EP-MW39-4
LABORATORY SDG NO.:	A2113	A0934	A1863
DATE SAMPLED:	10/15/1996	4/23/1997	8/14/1997
DATE ANALYZED:	10/24/1996	4/25/1997	8/18/1997
UNIT	µg/L	µg/L	µg/L
1,1,1-trichloroethane	--	--	--
1,1,2-trichloroethane	--	--	--
1,1-dichloroethane	--	--	--
1,1-dichloroethene	--	--	--
1,2-dichloroethane	--	--	--
Benzene	--	--	--
Carbon disulfide	--	--	--
Chlorobenzene	--	--	--
Chloroethane	--	--	--
Chloromethane (methyl chloride)	--	--	--
Methylene chloride	--	--	--
Tetrachloroethene	--	--	1 J
Toluene	--	--	--
Trans-1,2-dichloroethene	--	--	--
Trichloroethene	--	--	--
Vinyl chloride	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/L = micrograms per liter.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:			MW01	MW01	MW01	MW01	MW01	MW02
SAMPLING ROUND:		BACKGROUND	App IX	Round 1	Round 2	Round 3	Round 4	Round 1
SAMPLE ID:		Characterized by the	EP-MW01	EP-MW01	EP-MW01-2	EP-MW-01-3	EP-MW01-4	EP-MW02
LABORATORY SDG NO.:		Maximum Detected	0013	0220	Z0511	B0934	A1863	A0220
DATE SAMPLED:		Value in MW-07 and MW-37	1/9/1995	3/2/1995	5/1/1995	5/6/1997	8/19/1997	3/15/1995
DATE ANALYZED:	MCL			3/13/1995	5/11/1995	5/19/1997	8/28/1997	3/22/1995
UNITS:	µg/l	µg/L	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	11.1 [3]	**28.1**	--	--	--	--	--
Arsenic	10	2	--	--	--	--	--	--
Beryllium	4	ND	--	--	--	--	1.2	--
Cadmium	5	ND	**513**	**520**	**397**	**222**	**413**	2.9
Chromium (Total)	100	5.6	--	34.3	3.4	1.0	37.0	--
Copper	1300 [2]	6.1	22.5 J	56.4	22.7	21.8	123 J	--
Lead	15 [2]	4.5	--	--	3.9	--	--	--
Mercury	2	0.32	--	--	--	--	--	--
Nickel	100	3.3	--	38.8	20.2	15.5	40.1	6.6 J
Selenium	50	ND	--	--	--	--	--	--
Silver	100 [1]	ND	--	8.2	--	--	30.4 J	--
Thallium	2	ND	--	--	--	--	--	--
Zinc	5000 [1]	65.4	--	172 J	--	95.9 J	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		MW02	MW02	MW02	MW02	MW02 (dup)	MW03	MW03	MW03
SAMPLING ROUND:		Round 2	Round 3	Round 4	Resample	Resample	App IX	Round 1	Round 2
SAMPLE ID:		EP-MW02-2	EP-MW-02-3	EP-MW02-4	EP-MW02-5	EP-MW02D-5	EP-MW03	EP-MW03	EP-MW03-2
LABORATORY SDG NO.:		A0511	C0934	B1863	A0890	A0890	0013	B0220	B0511
DATE SAMPLED:		5/4/1995	5/12/1997	8/21/1997	4/20/1998	4/20/1998	1/12/1995	3/16/1995	5/10/1995
DATE ANALYZED:	MCL	5/12/1995	5/23/1997	9/5/1997	5/6/1998	5/6/1998		3/28/1995	5/18/1995
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	1.4	--	--	--	--	**7.0**	**6.4**	**9.6**
Chromium (Total)	100	**1110**	7.8	**2760**	10.1	8.8	--	7.3	36.4
Copper	1300 [2]	27.0	--	35.9	--	--	33.7 J	44.6	63.3
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	**844**	--	**226**	--	--	8.5	14.3	18.8
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	55.3 J

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW03	MW03	MW04	MW04	MW04	MW04	MW04	MW05
SAMPLING ROUND:		Round 3	Round 4	App IX	Round 1	Round 2	Round 3	Round 4	App IX
SAMPLE ID:		EP-MW-03-3	EP-MW03-4	EP-MW04	EP-MW04	EP-MW04-2	EP-MW-04-3	EP-MW04-4	EP-MW05
LABORATORY SDG NO.:		D0934	C1863	A0013	B0220	B0511	D0934	D1863	0013
DATE SAMPLED:		5/15/1997	9/2/1997	1/17/1995	3/21/1995	5/12/1995	5/16/1997	9/9/1997	1/11/1995
DATE ANALYZED:	MCL	5/30/1997	9/16/1997		3/28/1995	5/18/1995	5/30/1997	9/19/1997	
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	**9.3**	**62.2 J**	3.2	1.7	--	3.3	**6.3**	--
Chromium (Total)	100	10.4	13.4	9.7	4.2	--	9.8	--	--
Copper	1300 [2]	66.3	353 J	--	--	4.8	--	--	--
Lead	15 [2]	--	--	--	--	--	--	**16.8**	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	45.2	**122 J**	--	--	--	--	--	9.2
Selenium	50	--	--	--	--	3.3 J	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	71.9	381 J	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW05	MW05	MW05	MW05	MW06	MW06	MW06	MW06
SAMPLING ROUND:		Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:		EP-MW05	EP-MW05-2	EP-MW-05-3	EP-MW05-4	EP-MW06	EP-MW06	EP-MW-06-3	EP-MW06-4
LABORATORY SDG NO.:		B0220	A0511	C0934	C1863	0220	Z0511	B0934	A1863
DATE SAMPLED:		3/16/1995	5/5/1995	5/8/1997	8/28/1997	2/28/1995	4/26/1995	5/6/1997	8/19/1997
DATE ANALYZED:	MCL	3/28/1995	5/12/1995	5/23/1997	9/16/1997	3/13/1995	5/11/1995	5/19/1997	8/28/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	--	--	--	--	1.4	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	3.2	4.1	1.8	--	--	--	2.6	**5.1**
Chromium (Total)	100	7.1	1.8	--	--	--	1.7	8.1	--
Copper	1300 [2]	--	--	--	--	--	--	--	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	14.6	15.8	--	16.4 J	--	--	7.2	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		MW07	MW07	MW07	MW07	MW07	MW08	MW08	MW08
SAMPLING ROUND:		App IX	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3
SAMPLE ID:		EP-MW07	EP-MW07	EP-MW07-2	EP-MW07-3	EP-MW07-4	EP-MW08	EP-MW08-2	EP-MW-08-3
LABORATORY SDG NO.:		0013	0220	Z0511	A0934	A1863	B0220	A0511	B0934
DATE SAMPLED:		1/6/1995	3/1/1995	4/27/1995	4/22/1997	8/12/1997	3/16/1995	5/5/1995	5/2/1997
DATE ANALYZED:	MCL		3/13/1995	5/11/1995	5/12/1997	8/28/1997	3/28/1995	5/12/1995	5/19/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	**11.1**	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	1.1	--
Chromium (Total)	100	--	5.6	1.8	--	--	24.7	11.1	18.7
Copper	1300 [2]	--	--	--	1.0 J	--	--	--	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	0.23	--	--	--	--
Nickel	100	--	--	--	--	--	5.1	--	2.1
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	65.4	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW08	MW09	MW09	MW09	MW09	MW12	MW12	MW12
SAMPLING ROUND:		Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3
SAMPLE ID:		EP-MW08-4	EP-MW09	EP-MW09-2	EP-MW09-3	EP-MW09-4	EP-MW12	EP-MW12-2	EP-MW-12-3
LABORATORY SDG NO.:		B1863	A0220	Z0511	A0934	A1863	B0220	B0511	D0934
DATE SAMPLED:		8/26/1997	3/8/1995	5/2/1995	4/29/1997	8/15/1997	3/20/1995	5/12/1995	5/15/1997
DATE ANALYZED:	MCL	9/5/1997	3/22/1995	5/11/1995	5/12/1997	8/28/1997	3/28/1995	5/18/1995	5/30/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	**7.4**	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	**15.6**	**26.8**	**8.7**
Chromium (Total)	100	28.9	--	--	2.1 J	--	8.3	--	7.8
Copper	1300 [2]	--	--	--	3.1 J	--	672	924	194
Lead	15 [2]	--	--	--	3.0 J	--	--	--	1.1 J
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	12.9	2.0 J	--	14.0	--	25.0	**142**	16.4
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	61.3 J	--	17.7	--	220	600 J	119

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW12	MW13	MW13	MW13	MW13	MW13	MW14	MW14
SAMPLING ROUND:		Round 4	App IX	Round 1	Round 2	Round 3	Round 4	App IX	Round 1
SAMPLE ID:		EP-MW12-4	EP-MW13	EP-MW13	EP-MW13-2	EP-MW-13-3	EP-MW13-4	EP-MW14	EP-MW14
LABORATORY SDG NO.:		C1863	0013	A0220	B0511	C0934	B1863	0013	B0220
DATE SAMPLED:		9/3/1997	1/10/1995	3/14/1995	5/8/1995	5/6/1997	8/27/1997	1/12/1995	3/21/1995
DATE ANALYZED:	MCL	9/16/1997		3/22/1995	5/18/1995	5/23/1997	9/5/1997		3/28/1995
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	4.7	2.5 J	1.9	1.4 J	--	3.6	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	--	--	--	--	--	--	--	1.1
Copper	1300 [2]	--	--	--	--	--	--	--	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	1.1 J	--	--	--	11.8	--
Selenium	50	--	--	2.2	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		MW14	MW14	MW14	MW15	MW15 (dup)	MW15	MW15	MW15
SAMPLING ROUND:		Round 2	Round 3	Round 4	App IX	App IX	Round 1	Round 2	Round 3
SAMPLE ID:		EP-MW14-2	EP-MW-14-3	EP-MW14-4	EP-MW15	EP-MW15D	EP-MW15	EP-MW15-2	EP-MW-15-3
LABORATORY SDG NO.:		B0511	C0934	D1863	A0013	A0013	B0220	B0511	D0934
DATE SAMPLED:		5/9/1995	5/12/1997	9/9/1997	1/17/1995	1/17/1995	3/22/1995	5/11/1995	5/15/1997
DATE ANALYZED:	MCL	5/18/1995	5/23/1997	9/19/1997			3/28/1995	5/18/1995	5/30/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	1.8	--	--	--	--	--	--
Chromium (Total)	100	--	9.1	--	--	--	1.7	--	--
Copper	1300 [2]	2.9	--	--	4.3 J	--	--	--	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	--	--	--	--	--	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	18.9	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW15 (dup)	MW15	MW16	MW16	MW16	MW16	MW17	MW17 (dup)
SAMPLING ROUND:		Round 3	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 1
SAMPLE ID:		EP-MW-15-D-3	EP-MW15-4	EP-MW16	EP-MW16-2	EP-MW-16-3	EP-MW16-4	EP-MW17	EP-MW17(D)
LABORATORY SDG NO.:		D0934	D1863	B0220	B0511	C0934	D1863	B0220	B0220
DATE SAMPLED:		5/15/1997	9/8/1997	3/21/1995	5/9/1995	5/12/1997	9/9/1997	3/22/1995	3/22/1995
DATE ANALYZED:	MCL	5/30/1997	9/19/1997	3/28/1995	5/18/1995	5/23/1997	9/19/1997	3/28/1995	3/28/1995
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	--	--	32.0	--	30.5	30.8	1.2	1.6
Copper	1300 [2]	--	--	--	3.3	--	--	--	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	20.8	18.1	46.7	31.3	--	--
Selenium	50	--	--	--	3.4 J	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW17	MW17 (dup)	MW17	MW17	MW17 (dup)	MW18	MW18	MW18
SAMPLING ROUND:		Round 2	Round 2	Round 3	Round 4	Round 4	App IX	Round 1	Round 2
SAMPLE ID:		EP-MW17-2	EP-MW17D-2	EP-MW-17-3	EP-MW17-4	EP-MW17D-4	EP-MW18	EP-MW18	EP-MW18-2
LABORATORY SDG NO.:		C0511	C0511	D0934	D1863	D1863	0013	A0220	A0511
DATE SAMPLED:		5/12/1995	5/12/1995	5/14/1997	9/8/1997	9/8/1997	1/11/1995	3/10/1995	5/4/1995
DATE ANALYZED:	MCL	5/18/1995	5/18/1995	5/30/1997	9/19/1997	9/19/1997		3/22/1995	5/12/1995
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	--	--	--	--	--	2.4 J	2.4	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	--	--	--	--	--	--	--	1.4
Copper	1300 [2]	--	--	--	--	--	--	--	--
Lead	15 [2]	--	--	1.5 J	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	--	--	--	--	3.9 J	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW18	MW18	MW19	MW19 (dup)	MW19	MW19	MW19	MW20A
SAMPLING ROUND:		Round 3	Round 4	Round 1	Round 1	Round 2	Round 3	Round 4	Round 1
SAMPLE ID:		EP-MW-18-3	EP-MW18-4	EP-MW19	EP-MW19(D)	EP-MW19-2	EP-MW-19-3	EP-MW19-4	EP-MW20A
LABORATORY SDG NO.:		C0934	B1863	B0220	B0220	A0511	C0934	C1863	0220
DATE SAMPLED:		5/9/1997	8/28/1997	3/16/1995	3/16/1995	5/5/1995	5/8/1997	9/4/1997	3/6/1995
DATE ANALYZED:	MCL	5/23/1997	9/5/1997	3/28/1995	3/28/1995	5/12/1995	5/23/1997	9/16/1997	3/13/1995
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	3.3	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	--	--	1.4	1.3	--	--	--	--
Copper	1300 [2]	--	--	--	--	--	--	--	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	--	--	--	--	--	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		MW20A	MW20A	MW20A	MW20B	MW20B	MW20B (dup)	MW20B	MW20B
SAMPLING ROUND:		Round 2	Round 3	Round 4	Round 1	Round 2	Round 2	Round 3	Round 4
SAMPLE ID:		EP-MW20A-2	EP-MW20A-3	EP-MW20A-4	EP-MW20B	EP-MW20B-2	EP-MW20BD-2	EP-MW-20B-3	EP-MW20B-4
LABORATORY SDG NO.:		A0511	A0934	B1863	0220	A0511	A0511	C0934	B1863
DATE SAMPLED:		5/3/1995	4/29/1997	8/27/1997	3/6/1995	5/3/1995	5/3/1995	5/7/1997	8/26/1997
DATE ANALYZED:	MCL	5/12/1995	5/12/1997	9/5/1997	3/13/1995	5/12/1995	5/12/1995	5/23/1997	9/5/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	**8.9**	--	--	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	1.3	--	--	--	--	--	--	--
Chromium (Total)	100	1.8	--	--	--	--	--	--	--
Copper	1300 [2]	--	--	--	3.4	--	--	--	--
Lead	15 [2]	--	1.4 J	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	--	--	--	--	--	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	18.4	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW21A	MW21A	MW21A	MW21A	MW21B	MW21B	MW21B	MW21B (dup)
SAMPLING ROUND:		Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 3
SAMPLE ID:		EP-MW21A	EP-MW21A-2	EP-MW-21A-3	EP-MW21A-4	EP-MW21B	EP-MW21B-2	EP-MW-21B-3	EP-MW-21B-D-3
LABORATORY SDG NO.:		B0220	B0511	C0934	C1863	B0220	B0511	C0934	D0934
DATE SAMPLED:		3/21/1995	5/11/1995	5/13/1997	9/4/1997	3/22/1995	5/11/1995	5/13/1997	5/13/1997
DATE ANALYZED:	MCL	3/28/1995	5/18/1995	5/28/1997	9/16/1997	3/28/1995	5/18/1995	5/28/1997	5/30/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	1.9	--	--	--	1.2	--	--	--
Copper	1300 [2]	--	--	--	--	--	--	--	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	--	14.2 J	--	--	--	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW21B	MW22A	MW22A	MW22A (dup)	MW22A	MW22A	MW22B	MW22B
SAMPLING ROUND:		Round 4	Round 1	Round 2	Round 2	Round 3	Round 4	Round 1	Round 2
SAMPLE ID:		EP-MW21B-4	EP-MW22A	EP-MW22A-2	EP-MW22AD-2	EP-MW-22A-3	EP-MW22A-4	EP-MW22B	EP-MW22B-2
LABORATORY SDG NO.:		D1863	B0220	B0511	B0511	B0934	C1863	B0220	B0511
DATE SAMPLED:		9/5/1997	3/20/1995	5/10/1995	5/10/1995	5/1/1997	8/29/1997	3/21/1995	5/10/1995
DATE ANALYZED:	MCL	9/19/1997	3/28/1995	5/18/1995	5/18/1995	5/19/1997	9/16/1997	3/28/1995	5/17/1995
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	3.3	--	--	**12.2**	--	--	--
Chromium (Total)	100	--	1.3	--	2.5	1.2	--	1.4	--
Copper	1300 [2]	--	--	17.5	17.8	18.2	--	--	--
Lead	15 [2]	--	12.2	**98.7**	**97.2**	**83.2**	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	--	--	5.3	--	--	--
Selenium	50	--	--	3.3 J	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	83.0 J	81.0 J	73.4 J	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW22B	MW22B	MW22C	MW22C	MW22C	MW23A	MW23A	MW23A
SAMPLING ROUND:		Round 3	Round 4	DBR-Event	Round 3	Round 4	Round 1	Round 2	Round 3
SAMPLE ID:		EP-MW-22B-3	EP-MW22B-4	EP-MW22C	EP-MW22C-3	EP-MW22C-4	EP-MW23A	EP-MW23A-2	EP-MW23A-3
LABORATORY SDG NO.:		C0934	C1863	A2113	A0934	A1863	0220	Z0511	A0934
DATE SAMPLED:		5/7/1997	8/28/1997	10/17/1996	4/25/1997	8/18/1997	3/6/1995	5/2/1995	4/23/1997
DATE ANALYZED:	MCL	5/23/1997	9/16/1997	10/31/1996	5/12/1997	8/28/1997	3/13/1995	5/11/1995	5/12/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	**8.3**	--	--	--	**7.6**
Arsenic	10	--	--	--	12.5	15.3	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	1.2	--	--	--	--
Chromium (Total)	100	--	--	**106**	35.0 J	18.4	--	1.4	--
Copper	1300 [2]	--	--	--	3.0 J	--	--	--	2.3 J
Lead	15 [2]	1.6	--	--	2.1 J	--	--	--	1.8 J
Mercury	2	--	--	--	0.29	--	--	--	--
Nickel	100	--	--	--	11.4	--	--	--	--
Selenium	50	--	--	--	--	2.5	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	36.0	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW23A	MW23B	MW23B	MW23B	MW23B	MW24A	MW24A	MW24A
SAMPLING ROUND:		Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3
SAMPLE ID:		EP-MW23A-4	EP-MW23B	EP-MW23B-2	EP-MW23B-3	EP-MW23B-4	EP-MW24A	EP-MW24A-2	EP-MW24A-3
LABORATORY SDG NO.:		A1863	0220	Z0511	A0934	A1863	0220	Z0511	B0934
DATE SAMPLED:		8/13/1997	3/6/1995	5/2/1995	4/23/1997	8/13/1997	3/2/1995	4/28/1995	4/30/1997
DATE ANALYZED:	MCL	8/28/1997	3/13/1995	5/11/1995	5/12/1997	8/28/1997	3/13/1995	5/11/1995	5/19/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	**7.1**	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	1.7	--	--	--	--	--
Chromium (Total)	100	--	--	1.1	--	--	--	1.0	1.2
Copper	1300 [2]	--	--	--	--	--	--	--	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	17.1	--	--	--	--	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	19.1	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW24A	MW24B	MW24B	MW24B	MW24B	MW24B (dup)	MW24C	MW24C
SAMPLING ROUND:		Round 4	Round 1	Round 2	Round 3	Round 4	Round 4	DBR-Event	Round 3
SAMPLE ID:		EP-MW24A-4	EP-MW24B	EP-MW24B-2	EP-MW-24B-3	EP-MW24B-4	EP-MW24B-4-D	EP-MW24C	EP-MW24C-3
LABORATORY SDG NO.:		C1863	0220	Z0511	B0934	B1863	B1863	A2113	A0934
DATE SAMPLED:		8/29/1997	3/2/1995	4/27/1995	5/5/1997	8/22/1997	8/22/1997	10/17/1996	4/24/1997
DATE ANALYZED:	MCL	9/16/1997	3/13/1995	5/11/1995	5/19/1997	9/5/1997	9/5/1997	10/31/1996	5/12/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	**9**
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	22.0	--	--	1.7	--	--	33.0	36.5 J
Copper	1300 [2]	--	--	--	--	--	--	--	5.9 J
Lead	15 [2]	--	--	--	1.0	--	--	--	1.0 J
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	--	2.2	--	--	--	10.4
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	1.6 J	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	30.7

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW24C	MW25A	MW25A	MW25A	MW25A	MW25B	MW25B	MW25B
SAMPLING ROUND:		Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3
SAMPLE ID:		EP-MW24C-4	EP-MW25A	EP-MW25A-2	EP-MW-25A-3	EP-MW25A-4	EP-MW25B	EP-MW25B-2	EP-MW-25B-3
LABORATORY SDG NO.:		B1863	A0220	B0511	D0934	C1863	A0220	A0511	C0934
DATE SAMPLED:		8/21/1997	3/13/1995	5/8/1995	5/14/1997	9/4/1997	3/13/1995	5/5/1995	5/9/1997
DATE ANALYZED:	MCL	9/5/1997	3/22/1995	5/18/1995	5/30/1997	9/16/1997	3/22/1995	5/12/1995	5/23/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	1.2	3.8	--	--	--	--
Chromium (Total)	100	**146**	--	--	--	--	--	2.2	--
Copper	1300 [2]	--	--	10.8	--	--	--	--	--
Lead	15 [2]	**16.9**	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	4.1 J	14.9	25.5	--	1.5 J	12.0	--
Selenium	50	--	--	3.7 J	--	--	--	--	--
Silver	100 [1]	--	--	--	--	7.4 J	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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Revised Draft RFI Report

BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW25B	MW26	MW26	MW26	MW26	MW26	MW27	MW27
SAMPLING ROUND:		Round 4	App IX	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2
SAMPLE ID:		EP-MW25B-4	EP-MW26	EP-MW26	EP-MW26-2	EP-MW26-3	EP-MW26-4	EP-MW27	EP-MW27-2
LABORATORY SDG NO.:		C1863	0013	A0220	B0511	A0934	B1863	0220	Z0511
DATE SAMPLED:		9/2/1997	1/6/1995	3/15/1995	5/9/1995	4/24/1997	8/25/1997	3/1/1995	4/27/1995
DATE ANALYZED:	MCL	9/16/1997		3/22/1995	5/18/1995	5/12/1997	9/5/1997	3/13/1995	5/11/1995
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	**36.9**	--	--	**8.0**	--	--	--
Arsenic	10	--	--	--	--	--	--	6.0	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	2.4	--	--	2.9	**8.2**	**8.4**	1.4
Chromium (Total)	100	--	--	31.2 J	--	--	--	5.0	1.4
Copper	1300 [2]	--	6.6 J	7.0	--	--	--	21.9	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	15.5 J	--	--	12.9	--	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	6.3	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	21.8	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

DRAFT

Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW27	MW27	MW27 (dup)	MW28	MW28	MW28	MW28	MW28
SAMPLING ROUND:		Round 3	Round 4	Round 4	App IX	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:		EP-MW-27-3	EP-MW27-4	EP-MW27D-4	EP-MW28	EP-MW28	EP-MW28	EP-MW-28-3	EP-MW28-4
LABORATORY SDG NO.:		C0934	C1863	C1863	0013	0220	Z0511	D0934	D1863
DATE SAMPLED:		5/7/1997	9/3/1997	9/3/1997	1/10/1995	2/28/1995	4/26/1995	5/13/1997	9/8/1997
DATE ANALYZED:	MCL	5/23/1997	9/16/1997	9/16/1997		3/13/1995	5/11/1995	5/30/1997	9/19/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	3.6	--	4.9	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	**12.8 J**	--	**6.6**	--	--	**13.1**	--
Chromium (Total)	100	--	--	--	--	4.4	1.1	--	--
Copper	1300 [2]	--	262 J	--	--	--	--	--	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	54.0 J	--	--	--	--	--	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	446 J	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW29	MW29	MW29	MW29	MW30A	MW30A	MW30A	MW30A
SAMPLING ROUND:		Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:		EP-MW29	EP-MW29-2	EP-MW-29-3	EP-MW29-4	EP-MW30A	EP-MW30A-2	EP-MW-30A	EP-MW30A-4
LABORATORY SDG NO.:		B0220	A0511	D0934	D1863	A0220	B0511	B0934	A1863
DATE SAMPLED:		3/20/1995	5/4/1995	5/14/1997	9/5/1997	3/14/1995	5/8/1995	5/2/1997	8/21/1997
DATE ANALYZED:	MCL	3/28/1995	5/12/1995	5/30/1997	9/19/1997	3/22/1995	5/18/1995	5/19/1997	8/28/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	2.6	--	--	--	**142**	10.1 J	--	--
Beryllium	4	--	--	--	--	**21.6**	--	--	1.3
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	3.2	4.3	16.2	16.1	**188 J**	--	1.8	--
Copper	1300 [2]	--	--	9.6	--	361	50.4	--	44.1 J
Lead	15 [2]	--	--	1.4 J	--	**254**	**23.9**	--	--
Mercury	2	--	--	--	--	0.35	--	--	--
Nickel	100	--	--	--	--	**315 J**	62.6	7.0	39.6
Selenium	50	--	--	--	--	8.4	5.3 J	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	536 J	96.3 J	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		MW30B	MW30B	MW30B	MW30B	MW31A	MW31A	MW31A	MW31A
SAMPLING ROUND:		Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:		EP-MW30B	EP-MW30B-2	EP-MW-30B-3	EP-MW30B-4	EP-MW31A	EP-MW31A-2	EP-MW31A-3	EP-MW31A-4
LABORATORY SDG NO.:		A0220	B0511	C0934	C1863	A0220	A0511	A0934	A1863
DATE SAMPLED:		3/14/1995	5/8/1995	5/9/1997	9/4/1997	3/10/1995	5/3/1995	4/28/1997	8/14/1997
DATE ANALYZED:	MCL	3/22/1995	5/18/1995	5/23/1997	9/16/1997	3/22/1995	5/12/1995	5/12/1997	8/28/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	**7.1**	--
Arsenic	10	3.3	--	3.8	--	4.0	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	--	--	--	--	**136 J**	9.4	--	--
Copper	1300 [2]	--	--	--	--	21.6	--	--	--
Lead	15 [2]	--	--	--	--	12.6	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	2.3 J	--	--	--	**109 J**	19.9	2.2	--
Selenium	50	--	--	--	--	2.0	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	62.9 J	--	--	--	57.3 J	--	33.7	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		MW31B	MW31B	MW31B	MW31B	MW32A	MW32A	MW32A	MW32A
SAMPLING ROUND:		Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:		EP-MW31B	EP-MW31B-2	EP-MW31B-3	EP-MW31B-4	EP-MW32A	EP-MW32A-2	EP-MW-32A-3	EP-MW32A-4
LABORATORY SDG NO.:		A0220	A0511	B0934	A1863	A0220	Z0511	B0934	B1863
DATE SAMPLED:		3/10/1995	5/4/1995	4/30/1997	8/18/1997	3/9/1995	5/2/1995	5/5/1997	8/21/1997
DATE ANALYZED:	MCL	3/22/1995	5/12/1995	5/19/1997	8/28/1997	3/22/1995	5/11/1995	5/19/1997	9/5/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	--
Arsenic	10	--	--	--	--	11.7	5.0 J	--	4.4
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	--	2.0	4.0	--	81.7 J	26.8	--	11.1
Copper	1300 [2]	2.7	--	--	--	49.1	34.2	--	--
Lead	15 [2]	--	--	1.5	--	**28.4**	**22.4**	--	--
Mercury	2	--	--	--	NA (11)	--	--	--	--
Nickel	100	2.2 J	--	2.5	--	65.7 J	27.4	2.1	--
Selenium	50	2.4	--	--	--	3.7	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	114 J	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		MW32B	MW32B	MW32B	MW32B (dup)	MW32B	MW33A	MW33A (dup)	MW33A
SAMPLING ROUND:		Round 1	Round 2	Round 3	Round 3	Round 4	Round 1	Round 1	Round 2
SAMPLE ID:		EP-MW32B	EP-MW32B-2	EP-MW-32B-3	EP-MW-32B-3-D	EP-MW32B-4	EP-MW33A	EP-MW33A (D)	EP-MW33A-2
LABORATORY SDG NO.:		A0220	A0511	B0934	B0934	B1863	0220	0220	Z0511
DATE SAMPLED:		3/9/1995	5/3/1995	5/1/1997	5/1/1997	8/25/1997	3/3/1995	3/3/1995	4/28/1995
DATE ANALYZED:	MCL	3/22/1995	5/12/1995	5/19/1997	5/19/1997	9/5/1997	3/13/1995	3/13/1995	5/11/1995
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	3.9 J	--	--	--
Arsenic	10	1.4	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	--	--	1.2	1.1	--	8.2	4.2	4.6
Copper	1300 [2]	--	--	--	--	--	3.6	--	--
Lead	15 [2]	--	--	1.0	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	8.7 J	--	--	2.3	--	8.7	--	9.1
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		MW33A	MW33A	MW33B	MW33B	MW33B	MW33B	MW33C	MW33C
SAMPLING ROUND:		Round 3	Round 4	Round 1	Round 2	Round 3	Round 4	DBR-Event	Round 3
SAMPLE ID:		EP-MW33A-3	EP-MW33A-4	EP-MW33B	EP-MW33B-2	EP-MW-33B-3	EP-MW33B-4	EP-MW33C	EP-MW33C-3
LABORATORY SDG NO.:		B0934	A1863	0220	Z0511	B0934	B1863	A2113	A0934
DATE SAMPLED:		4/30/1997	8/20/1997	3/3/1995	4/28/1995	5/5/1997	8/27/1997	10/18/1996	4/24/1997
DATE ANALYZED:	MCL	5/19/1997	8/28/1997	3/13/1995	5/11/1995	5/19/1997	9/5/1997	10/31/1996	5/12/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	**7.2**
Arsenic	10	--	--	5.4 J	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	1.7	--	--	--	1.3	--	--	47.4 J
Copper	1300 [2]	--	--	--	--	--	--	--	11.0
Lead	15 [2]	1.1 J	--	--	--	--	--	4.2	2.8 J
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	4.5	--	--	--	--	--	--	33.3
Selenium	50	--	--	5.0	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	72.7

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		MW33C	MW34	MW34	MW34	MW34	MW35	MW35	MW35
SAMPLING ROUND:		Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3
SAMPLE ID:		EP-MW33C-4	EP-MW34	EP-MW34-2	EP-MW-34-3	EP-MW34-4	EP-MW35	EP-MW35-2	EP-MW35-3
LABORATORY SDG NO.:		A1863	C0220	A0511	B0934	C1863	C0220	Z0511	A0934
DATE SAMPLED:		8/15/1997	3/22/1995	5/5/1995	5/2/1997	9/2/1997	3/22/1995	5/1/1995	4/25/1997
DATE ANALYZED:	MCL	8/28/1997	4/4/1995	5/12/1995	5/19/1997	9/16/1997	4/4/1995	5/11/1995	5/12/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	--	--	--	--	**7.8**
Arsenic	10	--	--	--	16.3	7.9	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	1.1	1.6	--	--	--	--	--
Chromium (Total)	100	11.4	13.4	2.4	75.8	14.0	1.4	--	--
Copper	1300 [2]	--	--	--	25.0	--	--	--	--
Lead	15 [2]	--	--	--	7.9	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	**237**	43.7	**226**	42.0 J	--	--	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	90.2

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:		MW35	MW36	MW36	MW36	MW36	MW37	MW37	MW37
SAMPLING ROUND:		Round 4	Round 1	Round 2	Round 3	Round 4	App IX	Round 1	Round 2
SAMPLE ID:		EP-MW35-4	EP-MW36	EP-MW36-2	EP-MW36-3	EP-MW36-4	EP-MW37	EP-MW37	EP-MW37-2
LABORATORY SDG NO.:		C1863	C0220	Z0511	A0934	A1863	0013	0220	Z0511
DATE SAMPLED:		8/29/1997	3/23/1995	5/1/1995	4/25/1997	8/13/1997	1/9/1995	3/1/1995	4/27/1995
DATE ANALYZED:	MCL	9/16/1997	4/4/1995	5/11/1995	5/12/1997	8/28/1997		3/13/1995	5/11/1995
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	--	--	--	**8.2**	--	--	--	--
Arsenic	10	--	--	--	--	--	2.3 J	2.0	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	--	1.4	--	4.6 J	--	--	--	2.4
Copper	1300 [2]	--	--	--	--	--	--	--	--
Lead	15 [2]	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--
Nickel	100	--	--	--	--	--	--	--	--
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	--	--	--	--	--
Zinc	5000 [1]	--	--	--	--	--	--	--	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		MW37	MW37	MW38	MW38	MW38	MW38	MW39	MW39
SAMPLING ROUND:		Round 3	Round 4	DBR-Event	DBR-Event	Round 3	Round 4	DBR-Event	Round 3
SAMPLE ID:		EP-MW37-3	EP-MW37-4	EP-MW38	EP-MW38-D	EP-MW38-3	EP-MW38-4	EP-MW39	EP-MW39-3
LABORATORY SDG NO.:		A0934	A1863	A2113	A2113	A0934	B1863	A2113	A0934
DATE SAMPLED:		4/22/1997	8/12/1997	10/16/1996	10/16/1996	4/28/1997	8/22/1997	10/15/1996	4/23/1997
DATE ANALYZED:	MCL	5/12/1997	8/28/1997	10/31/1996	10/31/1996	5/12/1997	9/5/1997	10/31/1996	5/12/1997
UNITS:	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Antimony	6	**8.2**	--	**6.2 J**	--	**9.8**	--	5.1 J	**8.0**
Arsenic	10	--	--	--	--	--	--	--	--
Beryllium	4	--	--	--	--	--	--	--	--
Cadmium	5	--	--	--	--	--	--	--	--
Chromium (Total)	100	2.9 J	--	--	--	2.7 J	--	--	3.3 J
Copper	1300 [2]	6.1 J	--	--	--	--	--	--	8.5 J
Lead	15 [2]	4.5 J	--	--	2.0	--	--	2.1	1.2 J
Mercury	2	0.32	--	--	--	--	--	--	--
Nickel	100	3.3	--	--	--	3.0	--	--	2.2
Selenium	50	--	--	--	--	--	--	--	--
Silver	100 [1]	--	--	--	--	--	--	--	--
Thallium	2	--	--	--	**15.5**	--	--	**11.4**	--
Zinc	5000 [1]	16.7	--	--	--	31.0	--	--	49.4

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.11 Phase I and II Field Investigations - Detected Metals

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SAMPLE LOCATION:		**MW39**
SAMPLING ROUND:		**Round 4**
SAMPLE ID:		**EP-MW39-4**
LABORATORY SDG NO.:		**A1863**
DATE SAMPLED:		**8/14/1997**
DATE ANALYZED:	**MCL**	**8/28/1997**
UNITS:	**µg/l**	**µg/l**
Antimony	6	--
Arsenic	10	--
Beryllium	4	--
Cadmium	5	--
Chromium (Total)	100	--
Copper	1300 [2]	--
Lead	15 [2]	--
Mercury	2	--
Nickel	100	--
Selenium	50	--
Silver	100 [1]	--
Thallium	2	--
Zinc	5000 [1]	--

Notes:

(1) Secondary MCL.

(2) Action Level.

(3) Maximum antimony results in background is anomalous (see text for details).

(4) "ND" indicates compound not detected in background.

(5) Only maximum concentration presented for background due to low detection frequency.

(6) **Bold** indicates exceeded MCL.

(7) µg/l = micrograms per liter.

(8) -- metal not detected.

(9) Date analyzed varies for antimony, lead, mercury and selenium.

See laboratory reports for actual dates analyzed.

(10) "J" qualifier indicates estimated value.

(11) Insuffcient sample volume and for mercury analysis in MW31B, Round 4.

Table 4.2.12 Phase I and II Field Investigations - Detected PCBs

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	MW01	MW03	MW04	MW04	MW04	MW05	MW05	MW05	MW05	MW05
SAMPLING ROUND:	App IX	App IX	App IX	Round 1	Round 2	App IX	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:	EP-MW01	EP-MW03	EP-MW04	EP-MW04	EP-MW04-2	EP-MW05	EP-MW05	EP-MW05-2	EP-MW-05-3	EP-MW05-4
LABORATORY SDG NO.:	0013	0013	A0013	B0220	B0511	0013	B0220	A0511	C0934	C1863
DATE SAMPLED:	1/9/1995	1/12/1995	1/17/1995	3/21/1995	5/12/1995	1/11/1995	3/16/1995	5/5/1995	5/8/1997	8/28/1997
DATE ANALYZED:	1/26/1995	1/27/1995	2/4/1995	3/29/1995	5/17/1995	1/26/1995	3/22/1995	5/16/1995	5/23/1997	9/11/1997
UNIT	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Aroclor 1016	--	--	--	--	--	--	--	--	--	0.94 J
Aroclor 1232	--	--	--	--	--	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--	--	0.26 J	0.92 J	--
Aroclor 1248	--	--	--	--	--	1.5 J	1.3 J	--	--	--
Aroclor 1254	--	--	--	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/l = micrograms per Liter.

Table 4.2.12 Phase I and II Field Investigations - Detected PCBs

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SAMPLE LOCATION:	MW06	MW06	MW06	MW06	MW07	MW12	MW13	MW14	MW15	MW15 (dup)
SAMPLING ROUND:	Round 1	Round 2	Round 3	Round 4	App IX	Round 2	App IX	App IX	App IX	App IX
SAMPLE ID:	EP-MW06	EP-MW06	EP-MW-06-3	EP-MW06-4	EP-MW07	EP-MW12-2	EP-MW13	EP-MW14	EP-MW15	EP-MW15D
LABORATORY SDG NO.:	0220	Z0511	B0934	A1863	0013	B0511	0013	0013	A0013	A0013
DATE SAMPLED:	2/28/1995	4/26/1995	5/6/1997	8/19/1997	1/6/1995	5/12/1995	1/10/1995	1/12/1995	1/17/1995	1/17/1995
DATE ANALYZED:	3/9/1995	5/3/1995	5/13/1997	8/28/1997	1/26/1995	5/21/1995	1/26/1995	1/27/1995	2/4/1995	2/4/1995
UNIT	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Aroclor 1016	--	--	--	--	--	--	--	--	--	--
Aroclor 1232	--	--	--	--	--	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--	--	--	--	--
Aroclor 1248	--	--	--	--	--	--	--	--	--	--
Aroclor 1254	--	--	--	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/l = micrograms per Liter.

Table 4.2.12 Phase I and II Field Investigations - Detected PCBs

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SAMPLE LOCATION:	MW15	MW15	MW17	MW17 (dup)	MW17	MW17 (dup)	MW18	MW18	MW18	MW18
SAMPLING ROUND:	Round 1	Round 2	Round 1	Round 1	Round 2	Round 2	App IX	Round 1	Round 2	Round 3
SAMPLE ID:	EP-MW15	EP-MW15-2	EP-MW17	EP-MW17(D)	EP-MW17-2	EP-MW17D-2	EP-MW18	EP-MW18	EP-MW18-2	EP-MW-18-3
LABORATORY SDG NO.:	B0220	B0511	B0220	B0220	C0511	C0511	0013	A0220	A0511	C0934
DATE SAMPLED:	3/22/1995	5/11/1995	3/22/1995	3/22/1995	5/12/1995	5/12/1995	1/11/1995	3/10/1995	5/4/1995	5/9/1997
DATE ANALYZED:	3/29/1995	5/17/1995	3/30/1995	3/30/1995	5/18/1995	5/18/1995	1/26/1995	3/22/1995	5/16/1995	5/23/1997
UNIT	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Aroclor 1016	--	--	--	--	--	--	--	--	--	--
Aroclor 1232	--	--	--	--	--	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--	--	--	--	--
Aroclor 1248	--	--	--	--	--	--	1.1 J	1.0 J	1.30 J	0.73 J
Aroclor 1254	--	--	--	--	--	--	--	0.16 J	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/l = micrograms per Liter.

Table 4.2.12 Phase I and II Field Investigations - Detected PCBs
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	MW18	MW25A	MW25A	MW25A	MW25A (dup)	MW25A	MW25B	MW25B	MW25B	MW25B
SAMPLING ROUND:	Round 4	Round 1	Round 2	Round 3	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4
SAMPLE ID:	EP-MW18-4	EP-MW25A	EP-MW25A-2	EP-MW-25A-3	EP-MW-25A-D-3	EP-MW25A-4	EP-MW25B	EP-MW25B-2	EP-MW-25B-3	EP-MW25B-4
LABORATORY SDG NO.:	B1863	A0220	B0511	D0934	D0934	C1863	A0220	A0511	C0934	C1863
DATE SAMPLED:	8/28/1997	3/13/1995	5/8/1995	5/14/1997	5/14/1997	9/4/1997	3/13/1995	5/5/1995	5/9/1997	9/2/1997
DATE ANALYZED:	9/11/1997	3/22/1995	5/16/1995	5/17/1997	5/17/1997	9/12/1997	3/22/1995	5/16/1995	5/13/1997	9/6/1997
UNIT	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Aroclor 1016	--	--	--	--	--	--	--	--	--	--
Aroclor 1232	--	--	--	--	--	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--	--	--	--	--
Aroclor 1248	1.4	--	--	--	--	--	--	--	--	--
Aroclor 1254	--	--	--	--	--	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/l = micrograms per Liter.

Table 4.2.12 Phase I and II Field Investigations - Detected PCBs
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	MW26	MW27	MW27	MW27	MW27	MW27 (dup)	MW28	MW28	MW28	MW28
SAMPLING ROUND:	App IX	Round 1	Round 2	Round 3	Round 4	Round 4	App IX	Round 1	Round 2	Round 3
SAMPLE ID:	EP-MW26	EP-MW27	EP-MW27-2	EP-MW-27-3	EP-MW27-4	EP-MW27D-4	EP-MW28	EP-MW28	EP-MW28	EP-MW-28-3
LABORATORY SDG NO.:	0013	0220	Z0511	C0934	C1863	C1863	0013	0220	Z0511	D0934
DATE SAMPLED:	1/6/1995	3/1/1995	4/27/1995	5/7/1997	9/3/1997	9/3/1997	1/10/1995	2/28/1995	4/26/1995	5/13/1997
DATE ANALYZED:	1/26/1995	3/9/1995	5/3/1995	5/13/1997	9/6/1997	9/6/1997	1/26/1995	3/9/1995	5/3/1995	5/23/1997
UNIT	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Aroclor 1016	--	--	--	--	--	--	--	--	--	--
Aroclor 1232	--	--	--	--	--	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--	--	0.82 J	0.38 J	--
Aroclor 1248	--	--	--	--	--	--	0.87 J	--	--	0.58 J
Aroclor 1254	--	0.28 J	--	--	--	--	0.47 J	--	--	0.46 J

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/l = micrograms per Liter.

Table 4.2.12 Phase I and II Field Investigations - Detected PCBs
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	MW28	MW30A	MW30A	MW30B	MW30B	MW37
SAMPLING ROUND:	Round 4	Round 1	Round 2	Round 1	Round 2	App IX
SAMPLE ID:	EP-MW28-4	EP-MW30A	EP-MW30A-2	EP-MW30B	EP-MW30B-2	EP-MW37
LABORATORY SDG NO.:	D1863	A0220	B0511	A0220	B0511	0013
DATE SAMPLED:	9/8/1997	3/14/1995	5/8/1995	3/14/1995	5/8/1995	1/9/1995
DATE ANALYZED:	9/12/1997	3/22/1995	5/19/1995	3/22/1995	5/16/1995	1/26/1995
UNIT	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Aroclor 1016	--	--	--	--	--	--
Aroclor 1232	1.9 J	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--
Aroclor 1248	--	--	--	--	--	--
Aroclor 1254	0.89 J	--	--	--	--	--

Notes:

"J" qualifier indicates estimated value.

"--" indicates not detected.

µg/l = micrograms per Liter.

Table 4.4.1: Phase I and II Surface Water Level Measurement **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

Staff Gauge Location	Round	Date	Staff Gauge Reading (ft)	Staff Gauge Reference Mark Reading (ft)	Reference Mark Elevation (ft, NGVD)	Water Level Elevation (ft, NGVD)
SW01	1	3/31/1995	1.45	1.08	169.25	169.62
SW01	2	5/17/1995	1.30	--	--	169.47
SW01	--	6/2/1995	1.08	--	--	169.25
SW01	3	4/17/1997	1.98	--	--	170.15
SW01	4	6/2/1995	0.72	--	--	168.89
SW02	1	4/3/1995	2.78	2.31	171.21	171.68
SW02	2	5/17/1995	2.74	--	--	171.64
SW02	--	6/2/1995	2.31	--	--	171.21
SW02	3	4/17/1997	2.81	--	--	171.71
SW02	4	8/11/1997	0.85	--	--	169.75
SW03	--	6/2/1995	--	--	--	173.15
SW03	3	4/17/1997	0.41	3	174.31	171.72
SW03	4	8/11/1997	0.28	--	--	171.59
SW04	--	6/2/1995	--	--	--	173.93
SW04	3	4/17/1997	0.89	3	176.56	174.45
SW04	4	8/11/1997	0.04	--	--	173.60
SW05	--	6/12/1995	--	--	--	193.82
SW05	3	4/17/1997	1.27	3	195.66	193.93
SW05	4	8/11/1997	0	--	--	192.66
Turnpike Lake	2	5/15/1995	1.88	--	--	196.07
Turnpike Lake	--	6/2/1995	1.48	1.48	195.67	195.67
Turnpike Lake	3	4/17/1997	2.98	--	--	197.17
Turnpike Lake	4	8/11/1997	0.58	--	--	194.77

Notes:

(1) Elevation measurements referenced to National Geodetic Vertical Datum (NGVD) of 1929.

(2) Surface water elevations from June 2 and June 12, 1995 were measured and recorded by surveyor.

Table 4.4.2: Surface Water Field Measurements (Rounds 1, 2, 3, and 4)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Sample Location	Round	Date	pH	Temp. (^oC)	Specific Conductance (µmhos/cm)	Dissolved Oxygen (mg/L)
Unnamed Streams						
SW01	1	3/31/1995	6.82	9.8	120	6.70
SW01	2	5/17/1995	6.33	14.5	120	8.15
SW01	3	5/19/1997	6.59	12.3	218	10.70
SW01	4	9/11/1997	5.7	14.52	164	10.95
SW02	1	4/3/1995	7.55	9.0	120	6.70
SW02	2	5/17/1995	6.52	15.1	120	8.48
SW02	2	5/18/1995	6.54	16.4	135	7.97
SW02	3	5/20/1997	6.15	12.0	261	9.21
SW02	4	9/11/1997	6	14.6	181	10.04
SW03	1	4/3/1995	6.17	11.0	165	8.65
SW03	2	5/17/1995	6.04	9.5	150	4.91
SW03	3	5/20/1997	6.04	10.4	223	9.77
SW03	4	See Notes				
SW04	1	4/3/1995	7.17	10	110	6.49
SW04	2	5/17/1995	6.44	15	125	8.55
SW04	3	5/20/1997	6.58	13.5	233	10.20
SW04	4	9/11/1997	6.34	16.5	130	9.38
Below Spillway						
SW05	1	4/3/1995	6.89	11.5	115	8.45
SW05	2	5/17/1995	6.31	15.8	130	8.16
SW05	3	5/20/1997	6.64	14.2	242	9.00
SW05	4	See Notes				
Turnpike Lake						
SW06	1	4/10/1995	7.08	8.7	120	8.33
SW06	2	5/18/1995	6.40	15.8	130	6.79
SW06	3	5/20/1997	6.72	13.9	239	10.20
SW06	4	9/10/1997	6.73	22.1	170	8.17
SW07	1	4/10/1995	6.99	9.0	120	8.66
SW07	2	5/18/1995	6.88	15.5	125	7.11
SW07	3	5/19/1997	6.68	14.2	238	7.92
SW07	4	9/10/1997	6.98	21.8	172	11.56
Turnpike Lake - Northwest Outlet						
SW08	1	4/10/1995	7.04	8.5	125	8.55
SW08	2	5/18/1995	7.26	14.5	145	7.48
SW08	3	5/19/1997	6.8	15.3	257	9.29
SW08	4	9/10/1997	7.03	20.25	177	12.32
Turnpike Lake - Background Surface Water Samples						

Table 4.4.2: Surface Water Field Measurements (Rounds 1, 2, 3, and 4)
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BASF Corporation, Plainville, Massachusetts

Sample Location	Round	Date	pH	Temp. (^{o}C)	Specific Conductance (µmhos/cm)	Dissolved Oxygen (mg/L)
SW09	1	4/5/1995	6.78	5.5	125	7.60
SW09	2	5/15/1995	6.34	12.7	155	9.61
SW09A	3	5/19/1997	6.7	15.3	241	9.43
SW09A	4	9/10/1997	6.6	18.07	173	8.65
SW10	1	4/5/1995	6.70	5.0	125	7.30
SW10	2	5/15/1995	6.31	15.0	163	9.61
SW10A	3	5/19/1997	6.49	15.9	311	9.04
SW10A	4	9/10/1997	6.46	20.3	200	11.84
SW12	3	5/19/1997	6.68	15.1	237	9.16
SW12	4	9/10/1997	6.67	19.35	213	9.62
SW13	3	5/19/1997	6.73	15.5	242	9.26
SW13	4	See Notes				
Lake Mirimichi						
SW11	1	3/31/1995	7.05	10.0	120	7.60
SW11	2	5/15/1995	5.92	12.1	125	9.35
SW11	3	5/19/1997	6.78	12.9	233	10.21
SW11	4	9/10/1997	6.09	17.08	162	6.91

Notes:

Samples SW03, SW05 and SW13 were not collected during Round 4 due to insufficient water.

Table 4.4.3: Rounds 1, 2, 3 and 4 Stream Profile Measurements and Calculated Discharge
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Location Type	Location	Round	Date	Stream or Culvert Width (ft)	Distance from Depth Measurement to Bank (ft)	Stream Section (#)	Section Area (ft^2)	Depth of Water (feet)	Measured Flow Rate (feet/sec)	Calculated Discharge (cfs)
Sawmill Brook	**SW01**	1	3/31/1995	27.0	3.0			0.57	0.05	
					6.0			0.85	0.33	
					9.0			0.74	0.14	
					12.0			0.96	0.08	
					15.0			0.72	0.56	
					18.0			1.03	0.68	
					21.0			1.19	0.52	
					24.0			0.70	0.27	6.45
Sawmill Brook	**SW01**	2	5/17/1995	17.2	1.0			0.37	0.18	
					4.0			1.25	0.6	
					7.0			1.42	0.73	
					10.0			0.70	0.06	
					13.0			0.35	0.03	
					16.0			1.05	0.47	6.02
Culvert ID 3.0'*	**SW01**	3	5/19/1997	3.00	0.75	A	0.5150	0.73	0.70	0.36
					1.50	B	0.8390	0.80	0.90	0.76
					2.25	C	0.5150	0.73	1.70	0.88
									Total	1.99
Culvert ID 3.0'*	**SW01**	4	9/11/1997	3.00	0.75	A	0.2704	0.40	1.10	0.30
					1.50	B	0.4656	0.60	1.21	0.56
					2.25	C	0.2704	0.20	0.73	0.20
									Total	1.06
Sawmill Brook	**SW02**	1	4/3/1995	12.63	3.0			0.76	0.49	
					6.0			1.57	0.59	
					9.0			0.80	0.57	
					12.0			0.72	0.84	2.53

Table 4.4.3: Rounds 1, 2, 3 and 4 Stream Profile Measurements and Calculated Discharge
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Location Type	Location	Round	Date	Stream or Culvert Width (ft)	Distance from Depth Measurement to Bank (ft)	Stream Section (#)	Section Area (ft^2)	Depth of Water (feet)	Measured Flow Rate (feet/sec)	Calculated Discharge (cfs)
Sawmill Brook	**SW02**	2	5/17/1995	11.2	2.0			1.01	0.16	
					4.0			1.83	0.01	
					6.0			1.05	0.01	
					8.0			1.25	0.71	
					10.0			1.29	0.60	2.14
Sawmill Brook	**SW02**	3	5/20/1997	8.30	2.00	A	1.8400	1.00	0.31	0.57
					4.00	B	3.6660	1.50	0.37	1.36
					6.00	C	1.6439	1.00	0.36	0.59
									Total	2.52
Sawmill Brook	**SW02**	4	9/11/1997	1.70	0.55	A	0.0875	0.30	0.00	0.00
					0.85	B	0.0170	0.30	0.11	0.00
					1.40	C	0.1250	0.30	0.03	0.00
									Total	0.01
Tributary to Sawmill Brook	**SW03**	1	4/3/1995	7.78	1.0			0.15	0.06	
					2.0			0.21	0.06	
					3.0			0.16	0.13	
					4.0			0.12	0.02	
					5.0			0.20	0.04	
					6.0			0.19	0.05	
					7.0			0.11	0.03	0.13
Tributary to Sawmill Brook	**SW03**	2	5/17/1995	6.0	1.0			0.24	0.09	
					2.0			0.34	0.02	
					3.0			0.31	0.08	
					4.0			0.29	0.02	
					5.0			0.29	0.01	0.28

Table 4.4.3: Rounds 1, 2, 3 and 4 Stream Profile Measurements and Calculated Discharge
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Location Type	Location	Round	Date	Stream or Culvert Width (ft)	Distance from Depth Measurement to Bank (ft)	Stream Section (#)	Section Area (ft^2)	Depth of Water (feet)	Measured Flow Rate (feet/sec)	Calculated Discharge (cfs)
Tributary to Sawmill Brook	**SW03**	3	5/20/1997	2.00	0.50	A	0.0917	0.20	0.44	0.04
					1.00	B	0.2667	0.50	0.08	0.02
					1.50	C	0.0917	0.20	0.12	0.01
									Total	0.07
Tributary to Sawmill Brook	**SW03**	4	9/11/1997	≅1.0	0.25	A	0.0417	<0.2	stagnant	stagnant
					0.50	B	0.0667	<0.2	stagnant	stagnant
					0.75	C	0.0417	<0.2	stagnant	stagnant
									Total	stagnant
Sawmill Brook	**SW04**	1	4/3/1995	5.73	1.0			0.38	0.43	
					2.0			0.57	0.24	
					3.0			0.70	1.73	
					4.0			0.75	1.18	
					5.0			0.44	0.63	5.28
Sawmill Brook	**SW04**	2	5/17/1995	6.0	1.0			0.27	0.51	
					2.0			0.54	0.79	
					3.0			0.77	1.42	
					4.0			0.78	1.66	
					5.0			0.71	0.57	3.2
Sawmill Brook	**SW04**	3	5/20/1997	5.50	1.38	A	0.3046	0.25	2.38	0.72
					2.75	B	0.7639	0.50	2.05	1.57
					4.13	C	0.3065	0.25	1.60	0.49
									Total	2.78
Sawmill Brook	**SW04**	4	9/11/1997	1.87	0.47	A	0.0777	<0.2	None	None
					0.94	B	0.1247	<0.2	None	None
					1.40	C	0.0777	<0.2	None	None
									Total	None

Table 4.4.3: Rounds 1, 2, 3 and 4 Stream Profile Measurements and Calculated Discharge
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Location Type	Location	Round	Date	Stream or Culvert Width (ft)	Distance from Depth Measurement to Bank (ft)	Stream Section (#)	Section Area (ft^2)	Depth of Water (feet)	Measured Flow Rate (feet/sec)	Calculated Discharge (cfs)
Below Spillway	**SW05**	1	4/3/1995	5.39	1.0			0.73	1.19	
					2.0			0.56	3.3	
					3.0			0.53	2.9	
					4.0			0.32	2.31	
					5.0			0.25	1.04	10.41
Below Spillway	**SW05**	2	5/17/1995	6.5	1.0			0.70	1.02	
					2.0			0.62	2.43	
					3.0			0.69	2.63	
					4.0			0.56	0.94	
					5.0			0.38	0.49	4.72
Below Spillway	**SW05**	3	5/20/1997	-----	Dry					
Below Spillway	**SW05**	4	9/11/1997	-----	Dry					
Inlet Mirimichi	**SW11**	1	3/31/1995	17.40	4.0			0.32	1.87	
					7.0			1.02	1.08	
					10.0			1.05	0.31	
					13.0			1.13	0.25	
					16.0			0.85	0.12	
					17.0			0.46	0.01	7.81
Inlet Mirimichi	**SW11**	2	5/15/1995	16.7	1.0			0.5	0.08	
					4.0			1.05	1.68	
					7.0			1.05	1.45	
					10.0			1.15	0.67	
					13.0			1.3	0.14	
					16.0			0.38	0.04	12.51

Table 4.4.3: Rounds 1, 2, 3 and 4 Stream Profile Measurements and Calculated Discharge
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Location Type	Location	Round	Date	Stream or Culvert Width (ft)	Distance from Depth Measurement to Bank (ft)	Stream Section (#)	Section Area (ft^2)	Depth of Water (feet)	Measured Flow Rate (feet/sec)	Calculated Discharge (cfs)
Culvert ID 3.8'	**SW11**	3	5/19/1997	3.80	0.95	A	1.4982	1.52	2.10	3.15
(Inlet Mirimichi)					1.90	B	2.2000	1.76	2.25	4.95
					2.85	C	1.4959	1.52	2.10	3.14
									Total	11.24
Culvert ID 3.8'	**SW11**	4	9/10/1997	3.80	0.95	A	0.4358	0.60	0.00	0.00
(Inlet Mirimichi)					1.90	B	0.9573	0.80	0.10	0.10
					2.85	C	0.5155	0.50	0.62	0.32
									Total	0.42

Notes:
(*) Because there was no discernible channel, a culvert was selected.

Table 4.4.4: Round 1 Surface Water Sampling Program
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Sample Location	Sample ID	Sample Collection Date	Matrix	VOCs (1)	Metals (2)	Major Anions/Cations (3)	Water Quality (4)
Surface Water Samples from Unnamed Streams							
SW-01	EP-SW01	3/31/1995	water	X [5]	X [5]	X [5]	X [5]
SW-02	EP-SW02	4/3/1995	water	X	X	X	X
SW-03	EP-SW03	4/3 & 5/8/95	water	X	X	X	X
SW-04	EP-SW04	4/3/1995	water	X	X	X	X
Surface Water Sample from Below Spillway							
SW-05	EP-SW05	4/3 & 5/8/95	water	X	X	X	X
Lake Surface Water Samples							
SW-06	EP-SW06	4/10/1995	water		X	X	X
SW-07	EP-SW07	4/10/1995	water		X	X	X
SW-07 (dup)	EP-SW07D	4/10/1995	water		X	X	X
Lake Surface Water Sample - Northwest Outlet							
SW-08	EP-SW08	4/10/1995	water		X	X	X
Background Surface Water Samples - Turnpike Lake							
SW-09	EP-SW09	4/5/1995	water	X	X	X	X
SW-10	EP-SW10	4/5/1995	water	X	X	X	X
Inlet Lake Mirimichi							
SW-11	EP-SW11	3/31/1995	water	X	X	X	X
QA/QC Samples							
trip blank	EP-TB42	3/31/1995	water	X			
trip blank	EP-TB43	4/3/1995	water	X			
trip blank	EP-TB44	4/5/1995	water	X			
field blank	EP-FB08	4/5/1995	water	X	X	X	X

Notes:

(1) VOCs - Volatile organic compounds by EPA Method 8240. Table 4.1.2 presents the list of analytes.
(2) Metals - Priority Pollutant Metals. Table 4.1.4 presents the list of analytes.
(3) Major Cations and Anions. Table 4.2.4 presents the list of analytes.
(4) Water Quality Parameters. Table 4.2.4 presents the list of analytes.
(5) Sample selected for matrix spike/matrix spike duplicate analysis.

Table 4.4.5: Round 2 Surface Water Sampling Program **DRAFT**
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Sample Location	Sample ID	Sample Collection Date	Matrix	VOCs (1)	Metals (2)	Major Anions/Cations (3)	Water Quality (4)
Surface Water Samples from Unnamed Streams							
SW-01	EP-SW01-2	5/17/1995	water	X	X	X	X
SW-01 (dup)	EP-SW01D-2	5/17/1995	water	X	X	X	X
SW-02	EP-SW02-2	5/17/1995	water	X		X	X
SW-02	EP-SW02-2	5/18/1995	water		X		
SW-03	EP-SW03-2	5/17/1995	water	X	X	X	X
SW-04	EP-SW04-2	5/17/1995	water	X	X	X	X
Surface Water Sample from Below Spillway							
SW-05	EP-SW05-2	5/17/1995	water	X [5]	X [5]	X [5]	X [5]
Lake Surface Water Samples							
SW-06	EP-SW06-2	5/18/1995	water		X	X	X
SW-07	EP-SW07-2	5/18/1995	water		X	X	X
Lake Surface Water Sample - Northwest Outlet							
SW-08	EP-SW08-2	5/18/1995	water		X	X	X
Background Surface Water Samples - Turnpike Lake							
SW-09	EP-SW09-2	5/15/1995	water		X	X	X
SW-10	EP-SW10-2	5/15/1995	water		X	X	X
Inlet Lake Mirimichi							
SW-11	EP-SW11-2	5/15/1995	water	X	X	X	X
QA/QC Samples							
trip blank	EP-TB58-2	5/15/1995	water	X			
trip blank	EP-TB59-2	5/17/1995	water	X			
trip blank	EP-TB60-2	5/18/1995	water	X			
field blank	EP-SWFB01-2	5/18/1995	water	X	X	X	X

Notes:
(1) VOCs - Volatile organic compounds by EPA Method 8240. Table 4.2.3 presents the list of analytes.
(2) Metals - Priority Pollutant Metals. Table 4.2.3 presents the list of analytes.
(3) Major Cations and Anions. Table 4.2.4 presents the list of analytes.
(4) Water Quality Parameters. Table 4.2.4 presents the list of analytes.
(5) Sample selected for matrix spike/matrix spike duplicate analysis.

Table 4.4.6: Phase I and II Sampling Program - Detected VOCs, PCBs and Metals
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BASF Corporation, Plainville, Massachusetts

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SAMPLE LOCATION:	SW-01	SW-01	SW-01	SW-01	SW-01	SW-02	SW-02	SW-02	SW-02	SW-03	SW-03
SAMPLE ID:	EP-SW01	EP-SW01-2	EP-SW01D-2	EP-SW-01-3	EP-SW01-4	EP-SW02	EP-SW02-2	EP-SW-02-03	EP-SW02-4	EP-SW03	EP-SW03-2
LABORATORY SDG. NO:	Z0386	Z0602	Z0602	1130A	2216A	Z0386	Z0602	1130A	2216A	Z0386	Z0602
DATE SAMPLED:	3/31/1995	5/17/1995	5/17/1995	5/19/1997	9/11/1997	4/3/1995	5/17/1995	5/20/1997	9/11/1997	4/3/1995	5/17/1995
SAMPLING ROUND:	Round 1	Round 2	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2
UNITS:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Volatile Organic Compounds (VOCs)											
1,1,1-Trichloroethane	4 J	6	6	10	17	3 J	6	6	130	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	1 J	5 U
1,1-Dichloroethane	5 U	5 U	5 U	1 J	5 U	5 U	5 U	5 U	7 J	5 U	5 U
1,1-Dichloroethene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 J	5 U	5 U
4-Methyl-2-pentanone	50 U	10 U	10 U	1 J	50 U	50 U	10 U	10 U	100 U	10 U	10 U
Carbon tetrachloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	19	5 U	5 U
Methylene chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	3 J	5 U
Tetrachloroethene	4 J	5	5	10	25	4 J	6	8	210	5 U	5 U
Trichloroethene	5 U	0.8 J	1 J	2 J	5	5 U	1 J	2 J	33	5 U	5 U
Polychlorinated Biphenyls (PCBs)											
No Samples Contained PCBs Above	--	--	--	--	--	--	--	--	--	--	--
Detection Limits	--	--	--	--	--	--	--	--	--	--	--
Metals											
Antimony	2.0 U	4.2	3.5	<8.4	1.1 U	2.0 U	3	<7.5	1.1 U	2.0 U	3.0 U
Arsenic	1.0 U	1.0 U	1.0 U	3.0 U	3.0 U	1.0 U	1.0 U	3.0 U	3.0 U	1.0 U	1.0 U
Cadmium	1.0 U	1.0 U	1.0 U	1.6	1.0 U	1.0 U	1.0 U	1.4	1.4	1.0 U	1.0 U
Chromium	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	<1.5	1.0 UJ	1.0 U
Copper	2.0 U	2.0 U	2.0 U	<1.8	1.0 UJ	2.0 U	2.0 U	1.0 U	1.0 UJ	2.0 U	2.0 U
Lead	1.5	< 2.9 J	< 2.8 J	3.0	<1.2	1.0 U	< 3.4 J	2	<2.5	1.0 U	< 2.4 J
Mercury	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	1.0 UJ	< 2.1	< 2.1	<1.7	<3.0	1.0 UJ	< 3.4	<2.9	<4.4	1.0 UJ	< 3.3
Selenium	2.0 U	3.0 U	3.0 U	1.0 UJ	1.0 U	2.0 U	3.0 U	1.0 UJ	1.0 U	2.0 U	3.0 U
Silver	1.0 U	1.7	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U
Zinc	< 37.8	68.7	< 31.8	<11.2	6.0 U	< 19.2	127	<11.6	28.3	< 13.6	< 27.8

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
µg/L = micrograms per liter
NA = not analyzed

Table 4.4.6: Phase I and II Sampling Program - Detected VOCs, PCBs and Metals
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BASF Corporation, Plainville, Massachusetts

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SAMPLE LOCATION:	SW-03	SW-04	SW-04	SW-04	SW-04	SW-04	SW-05	SW-05	SW-05	SW-06	SW-06
SAMPLE ID:	EP-SW-03-03	EP-SW04	EP-SW04-2	EP-SW-04-03	EP-SW04-4	EP-SW04D-4	EP-SW05	EP-SW05-2	EP-SW-05-03	EP-SW06	EP-SW06-2
LABORATORY SDG. NO:	1130A	Z0386	Z0602	1130A	2216A	2216A	Z0386	Z0602	1130A	Z0386	Z0602
DATE SAMPLED:	5/20/1997	4/3/1995	5/17/1995	5/20/1997	9/11/1997	9/11/1997	4/3/1995	5/17/1995	5/20/1997	4/10/1995	5/18/1995
SAMPLING ROUND:	Round 3	Round 1	Round 2	Round 3	Round 4	Round 4	Round 1	Round 2	Round 3	Round 1	Round 2
UNITS:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Volatile Organic Compounds (VOCs)											
1,1,1-Trichloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA
1,1-Dichloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA
1,1-Dichloroethene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA
4-Methyl-2-pentanone	10 U	50 U	10 U	10 U	50 U	50 U	10 U	10 U	10 U	NA	NA
Carbon tetrachloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA
Methylene chloride	5 U	5 U	5 U	5 U	5 U	5 U	1 J	5 U	1 U	NA	NA
Tetrachloroethene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA
Trichloroethene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA
Polychlorinated Biphenyls (PCBs)											
No Samples Contained PCBs Above	--	--	--	--	--	--	--	--	--	--	--
Detection Limits	--	--	--	--	--	--	--	--	--	--	--
Metals											
Antimony	<9.0	2.0 U	3.4	<7.6	1.1 U	1.1 U	2.0 U	4.5	<8.1	4.7	4
Arsenic	3.0 U	1.0 U	1.0 U	3.0 U	3.0 U	3.0 U	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U
Cadmium	1.0 U	1.0 U	1.0 U	2.2	4.3	3.1	1.0 U	1.0 U	4.2	1.0 U	1.0 U
Chromium	1.0 U	1.0 UJ	1.0 U	1.0 U	<1.7	<1.5	1.0 UJ	1.0 U	1.0 U	169	1.0 U
Copper	1.0 U	2.0 U	2.0 U	<1.1	<1.3 J	1.0 UJ	2.0 U	12.4	1.0 U	26.8	2.0 U
Lead	1.3	1.0 U	< 3.1 J	2.4	<4.7	<3.4	1.0 U	< 3.3 J	1.3	4.9	< 4.9 J
Mercury	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.21	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	<2.4	1.0 UJ	< 3.6	<2.8	<4.4	<3.5	1.0 UJ	10.6	<2.0	229	< 2.5
Selenium	1.0 UJ	2.0 U	3.0 U	1.0 UJ	1.0 U	1	2.0 U	3.0 U	1.0 UJ	2.0 U	3.0 U
Silver	1.0 UJ	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 UJ	46.7	1.0 U
Zinc	<15.3	< 21.8	< 29.5	<14.9	6.0 U	6.0 U	< 19.6	< 35.0	<23.1	< 30.9	< 36.8

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
µg/L = micrograms per liter
NA = not analyzed

Table 4.4.6: Phase I and II Sampling Program - Detected VOCs, PCBs and Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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SAMPLE LOCATION:	SW-06	SW-6	SW-07	SW-07	SW-07	SW-07	SW-7	SW-08	SW-08	SW-08	SW-08	SW-09
SAMPLE ID:	EP-SW-06-03	EP-SW6-4	EP-SW07	EP-SW07D	EP-SW07-2	EP-SW-07-3	EP-SW7-4	EP-SW08	EP-SW08-2	EP-SW-08-3	EP-SW8-4	EP-SW09
LABORATORY SDG. NO:	1130A	2216A	Z0386	Z0386	Z0602	1130A	2216A	Z0386	Z0602	1130A	2216A	Z0386
DATE SAMPLED:	5/20/1997	9/10/1997	4/10/1995	4/10/1995	5/18/1995	5/19/1997	9/10/1997	4/10/1995	5/18/1995	5/19/1997	9/10/1997	4/5/1995
SAMPLING ROUND:	Round 3	Round 4	Round 1	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1
UNITS:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Volatile Organic Compounds (VOCs)												
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs)												
No Samples Contained PCBs Above	--	--	--	--	--	--	--	--	--	--	--	--
Detection Limits	--	--	--	--	--	--	--	--	--	--	--	--
Metals												
Antimony	<6.3	<1.2 J	2.0 U	2.0 U	3.8	<7.4	1.1 U	2.0 U	3.3	<6.4	1.1 U	2.0 U
Arsenic	3.0 U	3.0 U	1.0 U	1.0 U	1.0 U	3.0 U	3.0 U	1.0 U	1.0 U	3.0 U	3.0 U	1.0 U
Cadmium	1.0 U	54.4	1.0 U	1.0 U	1.9	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chromium	1.0 U	<5.9	1.0 UJ	1.0 UJ	1.0 U	1.0 U	<1.3	1.0 UJ	1.0 U	1.0 U	<1.1	6.9 J
Copper	<1.3	26.4 J	2.0 U	2.0 U	2.0 U	<1.4	1.0 UJ	2.0 U	2.0 U	1.0 U	1.0 U	4.2
Lead	1.0 U	24.7	1.4	1.7	19.7	3.3	2.7	1.3	< 4.0 J	1.0 U	<1.8	3.5
Mercury	0.20 U	<0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	<6.9	<6.4	1.0 UJ	1.0 UJ	13.4	<1.9	<4.2	1.0 UJ	< 5.1	<3.8	<3.8	12.1 J
Selenium	1.0 UJ	1.0 U	2.0 U	2.0 U	3.0 U	1.0 UJ	1.0 U	2.0 U	3.0 U	1.0 UJ	1.0 U	2.0 U
Silver	1.0 UJ	16.0 J	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 UJ	1.0 UJ	18.9
Zinc	<16.3	64.9	< 25.8	< 27.8	< 29.8	<12.1	6.0 U	< 21.1	< 12.7	<21.2	6.0 U	< 44.6

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
µg/L = micrograms per liter
NA = not analyzed

Table 4.4.6: Phase I and II Sampling Program - Detected VOCs, PCBs and Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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SAMPLE LOCATION:	SW-09	SW-09A	SW-9A	SW-10	SW-10	SW-10A	SW-10A	SW-11	SW-11	SW-11	SW-11
SAMPLE ID:	EP-SW09-2	EP-SW-9A-3	EP-SW9A-4	EP-SW10	EP-SW10-2	EP-SW-10A-3	EP-SW10A-4	EP-SW11	EP-SW11-2	EP-SW-11-3	EP-SW-11-D-3
LABORATORY SDG. NO:	Z0602	1130A	2216A	Z0386	Z0602	1130A	2216A	Z0386	Z0602	1130A	1130A
DATE SAMPLED:	5/15/1995	5/19/1997	9/10/1997	4/5/1995	5/15/1995	5/19/1997	9/10/1997	3/31/1995	5/15/1995	5/19/1997	5/19/1997
SAMPLING ROUND:	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 3
UNITS:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Volatile Organic Compounds (VOCs)											
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	5 U	2 J	1 J	2 J
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	5 U	0.4 J	5 U	5 U
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	NA	50 U	10 U	10 U	10 U
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U
Methylene chloride	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	2 J	2 J	1 J	1 J
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	1 J
Polychlorinated Biphenyls (PCBs)											
No Samples Contained PCBs Above	--	--	--	--	--	--	--	--	--	--	--
Detection Limits	--	--	--	--	--	--	--	--	--	--	--
Metals											
Antimony	3.0 U	<8.7	1.1 UJ	2.0 U	3.2	<6.8	1.1 UJ	2.0 U	3.0 U	<6.2	<6.0
Arsenic	1.0 U	3.0 U	3.0 U	1.0 U	1.3	3.0 U	3.0 U	1.0 U	1.0 U	3.0 U	3.0 U
Cadmium	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chromium	1.5	1.0 U	<1.1	1.0 UJ	1.0 U	1.0 U	<1.1	1.0 UJ	1.0 U	1.0 U	1.0 U
Copper	3.6	1.0 U	<1.0 U	2.0 U	2.0 U	1.0 U	<1.3	2.0 U	3.7	1.0 U	1.0 U
Lead	12.4 J	2.1	<2.9	2.0	< 2.1 J	1.0 U	1.0 U	2.1	< 2.8 J	1.9	2.5
Mercury	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	< 3.1	<2.1	<3.7	1.0 UJ	< 1.9	<3.4	<2.1	1.0 UJ	< 3.6	<2.5	<1.6
Selenium	3.0 U	1.0 UJ	1.0 U	2.0 U	3.0 U	1.0 UJ	1.0 U	2.0 U	3.0 U	1.0 UJ	1.0 UJ
Silver	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 UJ	1.0 UJ	29.7	1.0 U	1.0 UJ	1.0 UJ
Zinc	< 42.4	<18.8	6.0 U	< 38.8	< 32.1	<39.3	6.0 U	< 22.2	< 46.0	<11.0	<12.3

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
µg/L = micrograms per liter
NA = not analyzed

Table 4.4.6: Phase I and II Sampling Program - Detected VOCs, PCBs and Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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SAMPLE LOCATION:	SW-11	SW-12	SW-12	SW-13
SAMPLE ID:	EP-SW11-4	EP-SW-12-3	EP-SW12-4	EP-SW-13-3
LABORATORY SDG. NO:	2216A	1130A	2216A	1130A
DATE SAMPLED:	9/10/1997	5/19/1997	9/10/1997	5/19/1997
SAMPLING ROUND:	Round 4	Round 3	Round 4	Round 3
UNITS:	µg/L	µg/L	µg/L	µg/L
Volatile Organic Compounds (VOCs)				
1,1,1-Trichloroethane	5 U	NA	NA	NA
1,1,2,2-Tetrachloroethane	5 U	NA	NA	NA
1,1-Dichloroethane	5 U	NA	NA	NA
1,1-Dichloroethene	5 U	NA	NA	NA
4-Methyl-2-pentanone	50 U	NA	NA	NA
Carbon tetrachloride	5 U	NA	NA	NA
Methylene chloride	5 U	NA	NA	NA
Tetrachloroethene	1 J	NA	NA	NA
Trichloroethene	5 U	NA	NA	NA
Polychlorinated Biphenyls (PCBs)				
No Samples Contained PCBs Above	--	--	--	--
Detection Limits	--	--	--	--
Metals				
Antimony	1.1 U	<5.8	1.1 UJ	<7.8
Arsenic	3.0 U	3.0 U	3.0 U	3.0 U
Cadmium	1.0 U	1.0 U	1.0 U	1.0 U
Chromium	1.0 U	1.0 U	1.0 U	1.0 U
Copper	1.0 U	1.0 U	1.0 U	<1.4
Lead	1.0 U	1.0	7.0	1.3
Mercury	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	<2.2	<2.7	<3.8	<3.2
Selenium	1.0 U	1.0 UJ	1.0 U	1.0 UJ
Silver	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
Zinc	8.4	<9.1	6.0 U	<12.9

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
µg/L = micrograms per liter
NA = not analyzed

Table 4.4.7: Phase I and II Sampling Program
Major Cations and Anions
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:		SW-01	SW-01	SW-01	SW-01	SW-01	SW-02	SW-02
SAMPLE ID:		EP-SW01	EP-SW01-2	EP-SW01D-2	EP-SW-01-3	EP-SW01-4	EP-SW02	EP-SW02-2
LABORATORY SDG. NO:		Z0386	Z0602	Z0602	1130A	2216A	Z0386	Z0602
DATE SAMPLED:		3/31/1995	5/17/1995	5/17/1995	5/19/1997	9/11/1997	4/3/1995	5/17/1995
SAMPLING ROUND:		Round 1	Round 2	Round 2	Round 3	Round 4	Round 1	Round 2
Major Cations and Anions	**Units**							
Aluminum	µg/L	< 42.9 J	< 93.4	< 155	140	32.0 U	39.0 U	< 92.2
Ammonium	mg/L	0.04U	0.05	0.06	0.10 J	<0.079	0.04U	0.05
Calcium	µg/L	< 5790	6080	6150	6210	8820	< 5830	5990
Chloride	mg/L	35.7	35.8	36.8	27.8	41.0	36.9	36.6
Conductivity	µmhos/cm	169	151	156	142	199	172	152
Iron	µg/L	213 J	446	432	695	289 J	179 J	502
Magnesium	µg/L	< 1250	1360	1380	1390	2090	< 1260	1310
Manganese	µg/L	19.5	38.9	38.2	69.3	36.0	17.4	38.5
Nitrate as N	mg/L	0.29J	<0.32	<0.31	0.57	1.22	0.15J	<0.14
Phosphate	mg/L	<0.10	0.10U	0.10U	0.10 U	0.10 U	<0.10	0.10U
Potassium	µg/L	< 770	687	741	<770	1120	< 743	685
Silica	mg/L	4.0U	4.0U	4.0U	6.5	11.4	4.0U	4.0U
Sodium	µg/L	18600	17200	17700	15000	25800	19800	17400
Sulfate	mg/L	13.2	14.4	20.6	10.0 U	10.0 U	15.2	13.6

Notes:

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Table 4.4.7: Phase I and II Sampling Program
Major Cations and Anions
Revised Draft RFI Report
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SAMPLE LOCATION:		SW-02	SW-02	SW-03	SW-03	SW-03	SW-04	SW-04
SAMPLE ID:		EP-SW-02-03	EP-SW02-4	EP-SW03	EP-SW03-2	EP-SW-03-03	EP-SW04	EP-SW04-2
LABORATORY SDG. NO:		1130A	2216A	Z0386	Z0602	1130A	Z0386	Z0602
DATE SAMPLED:		5/20/1997	9/11/1997	4/3/1995	5/17/1995	5/20/1997	4/3/1995	5/17/1995
SAMPLING ROUND:		Round 3	Round 4	Round 1	Round 2	Round 3	Round 1	Round 2
Major Cations and Anions	**Units**							
Aluminum	µg/L	<67.6	170	39.0 U	< 104	125	39.0 U	< 117
Ammonium	mg/L	0.040 U	<0.13	0.04U	0.08	0.055 J	0.04U	0.06
Calcium	µg/L	6380	8690	11400	10200	7110	< 5630	5500
Chloride	mg/L	37.4	45.5	54.8	53.2	22.8	35	35.7
Conductivity	µmhos/cm	168	222	229	214	133	152	148
Iron	µg/L	551	1090 J	< 65.1 J	58.2	558	195 J	496
Magnesium	µg/L	1400	1970	< 2550	2300	1480	< 1200	1210
Manganese	µg/L	58.0	144	13.9	11.3	134	12.0	29.5
Nitrate as N	mg/L	0.28	1.67	0.76J	0.6	1.34	0.10U	0.10U
Phosphate	mg/L	0.10 U	0.10 U	<0.10	0.10U	0.10 U	<0.10	0.10U
Potassium	µg/L	<845	1380	< 1640	1420	<869	< 715	635
Silica	mg/L	4.0 U	11.0	10.9	11.2	6.8	4.0U	4.0U
Sodium	µg/L	20800	28900	23800	20900	14000	19500	16700
Sulfate	mg/L	10.0 U	10.0 U	10.0U	17.3	10.0 U	12.8	20.2

Notes:

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Table 4.4.7: Phase I and II Sampling Program
Major Cations and Anions
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SAMPLE LOCATION:		SW-04	SW-04	SW-04	SW-05	SW-05	SW-05	SW-06
SAMPLE ID:		EP-SW-04-03	EP-SW04-4	EP-SW04D-4	EP-SW05	EP-SW05-2	EP-SW-05-03	EP-SW06
LABORATORY SDG. NO:		1130A	2216A	2216A	Z0386	Z0602	1130A	Z0386
DATE SAMPLED:		5/20/1997	9/11/1997	9/11/1997	4/3/1995	5/17/1995	5/20/1997	4/10/1995
SAMPLING ROUND:		Round 3	Round 4	Round 4	Round 1	Round 2	Round 3	Round 1
Major Cations and Anions	**Units**							
Aluminum	µg/L	124	201	99.2	< 66.3 J	< 149	<67.2	< 192 J
Ammonium	mg/L	0.040 U	<0.042	<0.042	0.04U	0.04U	0.040 U	0.04U
Calcium	µg/L	5530	6570	6460	< 5300	5540	5750	< 5200
Chloride	mg/L	33.8	35.8	35.7	34.3	35.5	36.0	34.5
Conductivity	µmhos/cm	151	155	156	151	148	157	156
Iron	µg/L	669	1620 J	925 J	< 88.4 J	303	408	1120 J
Magnesium	µg/L	1180	1450	1420	< 1140	1220	1210	< 1140
Manganese	µg/L	33.6	36.4	20.5	7.8	24.6	34.2	183
Nitrate as N	mg/L	0.10 U	0.10 U	0.11	0.10U	0.10U	0.10 U	0.10U
Phosphate	mg/L	0.10 U	0.10 U	0.10 U	<0.10	0.10U	0.10 U	<0.10
Potassium	µg/L	<651	730	722	< 707	675	<676	< 711
Silica	mg/L	4.0 U	7.2	7.1	4.0U	4.0U	4.0 U	4.0U
Sodium	µg/L	18200	22100	21900	19000	16900	19100	18800
Sulfate	mg/L	10.0 U	10.0 U	10.0 U	11.5	18.9	10.0 U	12.8

Notes:

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Table 4.4.7: Phase I and II Sampling Program
Major Cations and Anions
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SAMPLE LOCATION:		SW-06	SW-06	SW-06	SW-07	SW-07	SW-07	SW-07
SAMPLE ID:		EP-SW06-2	EP-SW-06-03	EP-SW6-4	EP-SW07	EP-SW07D	EP-SW07-2	EP-SW-07-3
LABORATORY SDG. NO:		Z0602	1130A	2216A	Z0386	Z0386	Z0602	1130A
DATE SAMPLED:		5/18/1995	5/20/1997	9/10/1997	4/10/1995	4/10/1995	5/18/1995	5/19/1997
SAMPLING ROUND:		Round 2	Round 3	Round 4	Round 1	Round 1	Round 2	Round 3
Major Cations and Anions	**Units**							
Aluminum	µg/L	< 149	<46.0	805	< 70.1 J	< 105 J	< 149	156
Ammonium	mg/L	0.04U	0.040 U	0.91 J	0.04U	0.04U	0.04U	0.040 U
Calcium	µg/L	5940	5800	9190	< 6450	5320	5770	5770
Chloride	mg/L	35.5	36.4	50.7	35	35.5	33.3	35.7
Conductivity	µmhos/cm	157	158	197	157	155	151	153
Iron	µg/L	320	370	2320 J	171 J	1190 J	289	578
Magnesium	µg/L	1300	1200	1860	< 1480	< 1160	1270	1220
Manganese	µg/L	33.0	33.3	96.0	7.5	13.0	27.0	52.9
Nitrate as N	mg/L	0.10U	0.10 U	0.10 U	0.10U	2.62J	0.10U	0.10 U
Phosphate	mg/L	0.10U	0.10 U	0.10 U	<0.10	<0.10	0.10U	0.10 U
Potassium	µg/L	716	<662	632	< 957	770	692	<680
Silica	mg/L	4.0U	4.0 U	4.0 U	4.0U	4.0U	4.0U	4.0 U
Sodium	µg/L	18000	19200	28300	23600	18800	17300	18900
Sulfate	mg/L	10.7	10.0 U	10.0 U	10.7	12.3	10.7	10.0 U

Notes:

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Table 4.4.7: Phase I and II Sampling Program
Major Cations and Anions
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SAMPLE LOCATION:		SW-07	SW-08	SW-08	SW-08	SW-08	SW-09	SW-09	SW-09A
SAMPLE ID:		EP-SW7-4	EP-SW08	EP-SW08-2	EP-SW-08-3	EP-SW8-4	EP-SW09	EP-SW09-2	EP-SW-9A-3
LABORATORY SDG. NO:		2216A	Z0386	Z0602	1130A	2216A	Z0386	Z0602	1130A
DATE SAMPLED:		9/10/1997	4/10/1995	5/18/1995	5/19/1997	9/10/1997	4/5/1995	5/15/1995	5/19/1997
SAMPLING ROUND:		Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3
Major Cations and Anions	**Units**								
Aluminum	µg/L	39.6	< 165 J	< 153	<48.0	32.0 U	210 J	685	<77.2
Ammonium	mg/L	<0.080	0.04U	0.04U	0.040 U	<0.26	0.04U	0.04U	0.061 J
Calcium	µg/L	8030	< 6600	8450	6040	7780	< 4810	4260	5350
Chloride	mg/L	50.6	35.6	41.2	39.1	53.0	50	44.3	37.5
Conductivity	µmhos/cm	203	164	170	161	206	200	167	155
Iron	µg/L	672 J	233 J	503	382	778 J	693 J	1640	487
Magnesium	µg/L	1770	< 1470	1680	1240	1740	< 1250	1180	1170
Manganese	µg/L	38.7	6.5	73.0	31.1	63.1	36.7	64.1	37.6
Nitrate as N	mg/L	0.10 U	0.10U	0.10U	0.10 U	0.10 U	0.10U	0.10U	0.10 U
Phosphate	mg/L	0.10 U	<0.10	0.10U	0.10 U	0.10 U	<0.10	0.10U	0.10 U
Potassium	µg/L	816	< 899	1140	<693	716	< 748	630	<662
Silica	mg/L	4.0 U	4.0U	4.0U	4.0 U	4.0 U	4.0U	4.0U	4.0 U
Sodium	µg/L	28600	23100	25800	20200	29400	26500	20300	19600
Sulfate	mg/L	10.0 U	11.9	<10.0	10.0 U	10.0 U	10.0U	14.8	10.0 U

Notes:

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Table 4.4.7: Phase I and II Sampling Program
Major Cations and Anions
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SAMPLE LOCATION:		SW-09A	SW-10	SW-10	SW-10A	SW-10A	SW-11	SW-11
SAMPLE ID:		EP-SW9A-4	EP-SW10	EP-SW10-2	EP-SW-10A-3	EP-SW10A-4	EP-SW11	EP-SW11-2
LABORATORY SDG. NO:		2216A	Z0386	Z0602	1130A	2216A	Z0386	Z0602
DATE SAMPLED:		9/10/1997	4/5/1995	5/15/1995	5/19/1997	9/10/1997	3/31/1995	5/15/1995
SAMPLING ROUND:		Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2
Major Cations and Anions	**Units**							
Aluminum	µg/L	112	< 116 J	< 149	<47.7	32.0 U	< 93.1 J	< 137
Ammonium	mg/L	<0.056	0.04U	0.04U	0.15 J	<0.070	0.04U	0.04U
Calcium	µg/L	8600	< 7210	7040	7520	9410	< 6090	5830
Chloride	mg/L	51.4	45.6	46.5	47.9	57.8	35.4	33.8
Conductivity	µmhos/cm	206	195	185	210	219	164	148
Iron	µg/L	1360 J	330 J	262	326	299 J	217 J	547
Magnesium	µg/L	1820	< 1300	1280	1350	2130	< 1340	1280
Manganese	µg/L	101	14.2	23.1	37.1	12.3	37.2	71.7
Nitrate as N	mg/L	0.10 U	0.10U	0.10U	0.10 U	0.10 U	0.22J	0.22
Phosphate	mg/L	0.10 U	<0.10	0.10U	0.10 U	0.10 U	<0.10	0.10U
Potassium	µg/L	843	< 906	794	<894	1200	< 798	709
Silica	mg/L	4.0 U	4.0U	4.0U	4.0 U	4.0 U	4.0U	4.0U
Sodium	µg/L	28100	23400	21300	23400	31200	19400	15700
Sulfate	mg/L	10.0 U	14	13.2	10.0 U	10.0 U	10.7	14.4

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Table 4.4.7: Phase I and II Sampling Program
Major Cations and Anions
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SAMPLE LOCATION:		SW-11	SW-11	SW-11	SW-12	SW-12	SW-13
SAMPLE ID:		EP-SW-11-3	EP-SW-11-D-3	EP-SW11-4	EP-SW-12-3	EP-SW12-4	EP-SW-13-3
LABORATORY SDG. NO:		1130A	1130A	2216A	1130A	2216A	1130A
DATE SAMPLED:		5/19/1997	5/19/1997	9/10/1997	5/19/1997	9/10/1997	5/19/1997
SAMPLING ROUND:		Round 3	Round 3	Round 4	Round 3	Round 4	Round 3
Major Cations and Anions	**Units**						
Aluminum	µg/L	<87.6	<85.5	32.0 U	<50.3	32.0 U	<59.2
Ammonium	mg/L	0.042 J	0.27 J	<0.048	0.041 J	<0.040 R	0.052 J
Calcium	µg/L	6260	6360	8730	5440	9010	5400
Chloride	mg/L	32.5	32.8	39.5	34.7	66.0	37.1
Conductivity	µmhos/cm	152	155	183	152	253	150
Iron	µg/L	711	690	416 J	370	756 J	397
Magnesium	µg/L	1350	1370	2070	1180	1970	1190
Manganese	µg/L	115	116	72.5	36.4	39.8	30.8
Nitrate as N	mg/L	0.25	0.26	0.60	0.10 U	0.10 U	0.10 U
Phosphate	mg/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Potassium	µg/L	<778	<789	1060	<639	862	<663
Silica	mg/L	4.0 U	4.0 U	10.4	4.0 U	7.9	4.0 U
Sodium	µg/L	18000	18100	25000	17900	34400	19500
Sulfate	mg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

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TABLE 4.4.8: Phase I and II Sampling Program - Water Quality Analyses

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SAMPLE LOCATION:		SW-01	SW-01	SW-01	SW-01	SW-01	SW-02	SW-02	SW-02
SAMPLE ID:		EP-SW01	EP-SW01-2	EP-SW01D-2	EP-SW-01-3	EP-SW01-4	EP-SW02	EP-SW02-2	EP-SW-02-03
LABORATORY SDG. NO:		Z0386	Z0602	Z0602	1130A	2216A	Z0386	Z0602	1130A
DATE SAMPLED:		3/31/1995	5/17/1995	5/17/1995	5/19/1997	9/11/1997	4/3/1995	5/17/1995	5/20/1997
SAMPLING ROUND:		Round 1	Round 2	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3
Water Quality Analyses	**Units**								
Alkalinity (as CaCO3)	mg/L	42	12	13	13.4	16.8	10.8	14	13.8
Ammonia	mg/L	0.04U	0.05	0.06	0.10 J	<0.079	0.04U	0.05	0.040 U
Biochemical oxygen demand	mg/L	2.0U	2.0J	2.0J	2 U	2 U	4	2.0J	3
Chemical oxygen demand	mg/L	12	12	10.0U	16.1	10.5	16.4	12	16.1
Cyanide	mg/L	0.01U	0.01U	0.01U	NA	NA	0.01U	0.01U	NA
Nitrite as N	mg/L	0.006	<0.006	0.005U	0.006	0.005 U	0.005U	<0.007	0.005 U
pH	unitless	6.08 J	6.58 J	6.63 J	6.54 J	7.20	6.69 J	6.78 J	6.62 J
Total dissolved solids	mg/L	119	77	81	254 J	117	97	79	117 J
Total suspended solids	mg/L	5.0U	5.0U	5.0U	13	10 U	5.0U	5.0U	8.0

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TABLE 4.4.8: Phase I and II Sampling Program - Water Quality Analyses

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Revised Draft RFI Report
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SAMPLE LOCATION:	SW-02	SW-03	SW-03	SW-03	SW-04	SW-04	SW-04	SW-04	SW-04
SAMPLE ID:	EP-SW02-4	EP-SW03	EP-SW03-2	P-SW-03-03	EP-SW04	EP-SW04-2	EP-SW-04-03	EP-SW04-4	P-SW04D-4
LABORATORY SDG. NO:	2216A	Z0386	Z0602	1130A	Z0386	Z0602	1130A	2216A	2216A
DATE SAMPLED:	9/11/1997	4/3/1995	5/17/1995	5/20/1997	4/3/1995	5/17/1995	5/20/1997	9/11/1997	9/11/1997
SAMPLING ROUND:	Round 4	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3	Round 4	Round 4
Water Quality Analyses									
Alkalinity (as CaCO3)	15.8	17.4	16	12.2	9.4	10	10.0	14.3	13.3
Ammonia	<0.13	0.04U	0.08	0.055 J	0.04U	0.06	0.040 U	<0.042	<0.042
Biochemical oxygen demand	2 U	2.0U	2.0J	2	2.0U	2.0J	3	2 U	2 U
Chemical oxygen demand	10.0 U	10.0U	10.0U	10.0 U	23	14.2	13.7	10.0 U	10.0 U
Cyanide	NA	0.01U	0.01U	NA	0.01U	0.01U	NA	NA	NA
Nitrite as N	0.005 U	0.005U	0.005U	0.005 U	0.005U	<0.007	0.008	0.007	0.005 U
pH	6.86	6.14 J	6.02 J	6.19 J	6.62 J	6.76 J	6.61 J	7.20	7.13
Total dissolved solids	117	139	135	95 J	86	71	85 J	92	83
Total suspended solids	10 U	12	5.0U	5.0 U	5.0U	5.0U	5.0 U	27 J	10 U

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TABLE 4.4.8: Phase I and II Sampling Program - Water Quality Analyses

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SAMPLE LOCATION:	SW-05	SW-05	SW-05	SW-06	SW-06	SW-06	SW-06	SW-07	SW-07
SAMPLE ID:	EP-SW05	EP-SW05-2	P-SW-05-03	EP-SW06	EP-SW06-2	EP-SW-06-03	EP-SW6-4	EP-SW07	EP-SW07D
LABORATORY SDG. NO:	Z0386	Z0602	1130A	Z0386	Z0602	1130A	2216A	Z0386	Z0386
DATE SAMPLED:	4/3/1995	5/17/1995	5/20/1997	4/10/1995	5/18/1995	5/20/1997	9/10/1997	4/10/1995	4/10/1995
SAMPLING ROUND:	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3	Round 4	Round 1	Round 1
Water Quality Analyses									
Alkalinity (as CaCO3)	8	10	11.6	9.2	11.2	10.4	10.4	10.2	3.8
Ammonia	0.04U	0.04U	0.040 U	0.04U	0.04U	0.040 U	0.91 J	0.04U	0.04U
Biochemical oxygen demand	3	2.0J	3	2.0UJ	2.0U	2 U	18	2.0UJ	2.0J
Chemical oxygen demand	14.2	16.4	11.2	16.4	14.2	13.7	38.3	16.4	12
Cyanide	0.01U	0.01U	NA	0.01U	0.01U	NA	NA	0.022	0.01U
Nitrite as N	0.005U	0.005U	0.005 U	0.005U	0.005U	0.005 U	0.011	0.005U	0.005U
pH	6.57 J	6.71 J	6.64 J	6.79 J	6.64 J	6.76 J	6.45	6.71 J	5.98 J
Total dissolved solids	82	86	98 J	91	90	98 J	142	86	95
Total suspended solids	5.0U	5.0U	5.0 U	6	5.0U	5.0 U	340 J	7	5

Notes:
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(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.

TABLE 4.4.8: Phase I and II Sampling Program - Water Quality Analyses

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SAMPLE LOCATION:	SW-07	SW-07	SW-07	SW-08	SW-08	SW-08	SW-08	SW-09	SW-09
SAMPLE ID:	EP-SW07-2	EP-SW-07-3	EP-SW7-4	EP-SW08	EP-SW08-2	EP-SW-08-3	EP-SW8-4	EP-SW09	EP-SW09-2
LABORATORY SDG. NO:	Z0602	1130A	2216A	Z0386	Z0602	1130A	2216A	Z0386	Z0602
DATE SAMPLED:	5/18/1995	5/19/1997	9/10/1997	4/10/1995	5/18/1995	5/19/1997	9/10/1997	4/5/1995	5/15/1995
SAMPLING ROUND:	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2
Water Quality Analyses									
Alkalinity (as CaCO3)	10.8	10.4	36.0	7.2	13.8	10.2	14.0	6.2	7
Ammonia	0.04U	0.040 U	<0.080	0.04U	0.04U	0.040 U	<0.26	0.04U	0.04U
Biochemical oxygen demand	2.0U	2 U	2 U	2.0UJ	2.0U	3	2 U	2.0U	2
Chemical oxygen demand	12	18.6	27.2	18.6	14.2	16.1	16.1	23	29.6
Cyanide	0.01U	NA	NA	0.01U	0.01U	NA	NA	0.01U	0.01U
Nitrite as N	0.005U	0.005 U	0.011	0.005U	<0.006	0.005 U	0.007	0.006	<0.007
pH	6.65 J	6.77 J	7.65	6.62 J	6.71 J	6.89 J	6.79	6.36 J	6.95 J
Total dissolved solids	91	159 J	143	90	110	155 J	147	114	125
Total suspended solids	5.0U	5.0 U	10 U	7	5.0U	5.0 U	10 U	5.0U	16

Notes:
(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.

TABLE 4.4.8: Phase I and II Sampling Program - Water Quality Analyses

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SAMPLE LOCATION:	SW-09A	SW-09A	SW-10	SW-10	SW-10A	SW-10A	SW-11	SW-11	SW-11
SAMPLE ID:	EP-SW-9A-3	EP-SW9A-4	EP-SW10	EP-SW10-2	EP-SW-10A-3	EP-SW10A-4	EP-SW11	EP-SW11-2	EP-SW-11-3
LABORATORY SDG. NO:	1130A	2216A	Z0386	Z0602	1130A	2216A	Z0386	Z0602	1130A
DATE SAMPLED:	5/19/1997	9/10/1997	4/5/1995	5/15/1995	5/19/1997	9/10/1997	3/31/1995	5/15/1995	5/19/1997
SAMPLING ROUND:	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3
Water Quality Analyses									
Alkalinity (as CaCO3)	10.0	20.0	10.8	13	12.4	20.0	52	14	13.8
Ammonia	0.061 J	<0.056	0.04U	0.04U	0.15 J	<0.070	0.04U	0.04U	0.042 J
Biochemical oxygen demand	6	<5	2.0U	2	2 U	2 U	2.0U	2.0U	2 U
Chemical oxygen demand	18.6	24.4	12	14.2	11.2	24.4	16.4	18.6	13.7
Cyanide	NA	NA	0.01U	0.01U	NA	NA	0.01U	0.01U	NA
Nitrite as N	0.005 U	0.009	0.005U	<0.005	0.005 U	0.006	0.006	<0.006	0.005 U
pH	6.75 J	6.40	6.66 J	6.76 J	6.96 J	7.01	6.24 J	6.82 J	6.74 J
Total dissolved solids	166 J	128	98	131	221 J	154	113	115	194 J
Total suspended solids	5.0 U	14 J	20	5.0U	5.0 U	10 U	5.0U	5.0U	5.0

Notes:
(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.

TABLE 4.4.8: Phase I and II Sampling Program - Water Quality Analyses

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SAMPLE LOCATION:	SW-11	SW-11	SW-12	SW-12	SW-13
SAMPLE ID:	EP-SW-11-D-3	EP-SW11-4	EP-SW-12-3	EP-SW12-4	EP-SW-13-3
LABORATORY SDG. NO:	1130A	2216A	1130A	2216A	1130A
DATE SAMPLED:	5/19/1997	9/10/1997	5/19/1997	9/10/1997	5/19/1997
SAMPLING ROUND:	Round 3	Round 4	Round 3	Round 4	Round 3
Water Quality Analyses					
Alkalinity (as CaCO3)	13.8	17.0	10.0	16.0	9.8
Ammonia	0.27 J	<0.048	0.041 J	<0.040 R	0.052 J
Biochemical oxygen demand	2 U	2 U	3	<3	6
Chemical oxygen demand	18.6	27.2	30.8	21.6	18.6
Cyanide	NA	NA	NA	NA	NA
Nitrite as N	0.005 U	0.009	0.020	0.008	0.035
pH	6.67 J	7.14	6.83 J	6.75	6.76 J
Total dissolved solids	181 J	130	166 J	190	170 J
Total suspended solids	5.0 U	10 U	5.0	10 U	5.0

Notes:
(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.

Table 4.5.1: Phase I Sediment Sampling Program **DRAFT**
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Sample Location	Sample ID	Sample Collection Date	VOCs[1]	SVOCs [2]	Metals [3]	SEM/ AVS [4]	PCBs [5]	Total Organic Carbon	Cation Exchange Capacity	pH	Moist. Content
Sediment Samples from Unnamed Streams											
SD-01	EP-SD01	5/19/1995	√		√			√	√	√	√
SD-02	EP-SD02	5/19/1995	√		√			√	√	√	√
SD-03	EP-SD03	5/19/1995	√		√			√	√	√	√
SD-04	EP-SD04	5/19/1995	√		√			√	√	√	√
SD-05	EP-SD05	5/26/1995	√		√[6]			√[6]	√	√	√
SD-05 (dup)	EP-SD05D	5/26/1995	√		√			√	√	√	√
Sediment Samples from Turnpike Lake - South Embayment											
SD-06	EP-SD06	4/10/1995		√	√		√	√	√	√	√
SD-06 (dup)	EP-SD06D	4/10/1995		√	√		√	√	√	√	√
SD-12	EP-SD12	5/26/1995			√			√	√	√	√
SD-13	EP-SD13	5/26/1995			√			√	√	√	√
SD-14	EP-SD14	5/26/1995			√			√	√	√	√
SD-15	EP-SD15	5/26/1995			√			√	√	√	√
SD-16	EP-SD16	5/26/1995			√			√	√	√	√
SD-17	EP-SD17	5/26/1995			√			√	√	√	√
SD-18	EP-SD18	5/30/1995			√			√	√	√	√
SD-19	EP-SD19	5/30/1995			√	√		√	√	√	√
SD-20	EP-SD20	4/10/1995		√	√		√	√	√	√	√
SD-21	EP-SD21	4/10/1995		√[6]	√[6]		√[6]	√[6]	√[6]	√[6]	√[6]
SD-22	EP-SD22	5/30/1995			√			√	√	√	√
SD-23	EP-SD23	5/30/1995			√			√	√	√	√
SD-24	EP-SD24	5/30/1995			√	√		√	√	√	√
SD-24 (dup)	EP-SD24D	5/30/1995			√	√		√	√	√	√
SD-25	EP-SD25	5/26/1995			√			√	√	√	√
SD-26	EP-SD26	5/30/1995			√			√	√	√	√
SD-27	EP-SD27	5/30/1995			√			√	√	√	√
SD-28	EP-SD28	5/30/1995			√	√		√	√	√	√
SD-37	EP-SD37	5/26/1995			√			√	√	√	√
Sediment Samples from Turnpike Lake - West of AOC A											
SD-07	EP-SD07	5/22/1995			√			√	√	√	√
SD-29	EP-SD29	5/22/1995			√			√	√	√	√
SD-30	EP-SD30	5/22/1995			√			√	√	√	√
SD-31	EP-SD31	5/22/1995			√			√	√	√	√
SD-32	EP-SD32	5/22/1995			√			√	√	√	√
SD-33	EP-SD33	5/22/1995			√			√	√	√	√
SD-34	EP-SD34	5/22/1995			√	√		√	√	√	√
SD-35	EP-SD35	5/22/1995			√	√		√	√	√	√
Sediment Sample from Storm Water Retention Basin (AOC #44)											
SD-36	EP-SD36	5/19/1995			√			√	√	√	√

Table 4.5.1: Phase I Sediment Sampling Program **DRAFT**
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Sample Location	Sample ID	Sample Collection Date	VOCs(1)	SVOCs (2)	Metals (3)	SEM/ AVS (4)	PCBs (5)	Total Organic Carbon	Cation Exchange Capacity	pH	Moist. Content
Lake Sediment Sample at Northwest Outlet											
SD-08	EP-SD08	5/22/1995			√			√	√	√	√
Background Lake Sediment Samples											
SD-09	EP-SD09	5/30/1995			√			√	√	√	√
SD-10	EP-SD10	5/30/1995			√			√	√	√	√
QA/QC Samples											
Trip Blank	EP-TB61	5/19/1995	√								
Trip Blank	EP-TB62	5/26/1995	√		√			√		√	
Field Blank	EP-SDFB01	5/26/1995	√		√			√		√	
Field Blank	EP-SDFB02	5/30/1995			√			√		√	

Notes:

(1) VOCs - Volatile organic compounds by EPA Method 8240. Table 4.2.3 presents the list of analytes.

(2) SVOCs - Semi-volatile organic compounds by EPA Method 8270. Table 4.2.3 presents the list of analytes.

(3) Metals - Priority Pollutant Metals. Table 4.2.3 presents the list of analytes.

(4) SEM/AVS - Acid Volatile Sulfide/Simultaneously Extracted Metals per USEPA's *Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment* , dated December 1991. Table 2.1.4 presents the list of analytes.

(5) PCBs - Polychlorinated biphenyls.

(6) Sample selected for matrix spike/matrix spike duplicate analysis.

Table 4.5.2: Phase I Sediment Thickness Measurements **DRAFT**
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Sample Location	Lake Depth or Depth to Top of Sediments (ft)	Depth to Refusal (ft)	Sediment Thickness (ft)
South Embayment (AOC 13)			
SD06	3.35	5.17	1.82
SD12	4.07	4.12	0.05
SD13	1.57	1.60	0.03
SD14	4.00	5.97	1.97
SD15	3.82	4.68	0.86
SD16	1.85	2.09	0.24
SD17	1.30	1.99	0.69
SD18	1.98	2.35	0.37
SD20	3.17	4.78	1.61
SD21	3.78	4.27	0.49
SD23	4.33	4.75	0.42
SD24	1.63	1.67	0.04
SD25	4.18	6.15	1.97
SD26	2.88	3.15	0.27
SD27	1.40	1.87	0.47
SD37	3.33	4.75	1.42
West of the Facility (AOC 13)			
SD07	4.70	5.37	0.67
SD29	1.35	1.43	0.08
SD30	3.10	3.22	0.12
SD31	4.53	5.58	1.05
SD32	1.01	1.01	0.00
SD33	4.25	4.28	0.03
SD34	2.73	2.78	0.05
SD35	0.45	0.45	0.00
Northwest Outlet			
SD08	4.00	4.83	0.83
Background - Turnpike Lake			
SD09	3.46	3.56	0.10
SD10	5.28	7.10	1.82

Table 4.5.3: Sediment Sampling Program - Metals and Physical Properties Results

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	**SD-01**	**SD-02**	**SD-02**	**SD-03**	**SD-04**	**SD-05**	**SD-05**	**SD-06**
SAMPLE ID:	**EP-SD01**	**EP-SD02**	**EP-SD-02-2**	**EP-SD03**	**EP-SD04**	**EP-SD05**	**EP-SD05D**	**EP-SD06**
LABORATORY SDG NO.:	**Z0632**	**Z0632**	**0826A**	**Z0632**	**Z0632**	**Z0632**	**Z0632**	**Z0429**
DATE SAMPLED:	**5/19/1995**	**5/19/1995**	**4/15/1997**	**5/19/1995**	**5/19/1995**	**5/26/1995**	**5/26/1995**	**4/10/1995**
PHASE:	**I**	**I**	**II**	**I**	**I**	**I**	**I**	**I**
Miscellaneous Analyses *(Units Variable)*								
Percent moisture (%)	90.5	82.8	14.1	74.7	59.9	49.9	51.3	81.9
pH (pH Units)	6.73 J	6.59 J	--	5.98 J	6.47 J	6.51 J	6.54 J	6.48 J
Total organic carbon (mg/kg)	156000	108000	--	88500	32400	38800	37900	82500
Cation exchange capacity (meq/100g)	16.4 J	23.7 J	--	17.2 J	10.2 J	< 18.4 J	< 17.2 UJ	34.5 J
Metals								
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Antimony	< 44.7	23.2 U	<0.72	15.8 U	10.0 U	12.0	8.2 U	3.3 U
Arsenic	3.2	12.8	0.47	0.8 U	4.0	0.7	2.0 U	1.5
Beryllium	2.1 U	1.2 U	0.27	0.79 U	0.50 U	0.40 U	0.41 U	1.2
Cadmium	45.7	25.4	0.06 UJ	1.6 U	24.8	23.4	25.3	7.8 J
Chromium	21.0	38.9	12.3	21.4	25.7	14.0	11.5	18.7
Copper	35.3 J	71.0 J	5.0	10.8 J	23.4 J	15.1 J	7.8 J	44.7
Lead	119	263	3.8 J	42.0	99.8	50.3 J	45.3	22.7 J
Mercury	0.96 U	0.58 U	0.09 U	0.38 U	0.24 U	0.18 U	0.18 U	0.48 U
Nickel	42.5	34.4	8.4	24.1	12.9	8.2	12.2	< 9.6
Selenium	21.1 U	11.6 U	0.32	7.9 U	5.0 U	1.6 U	1.6 U	4.2
Silver	6.3 UJ	6.3 J	0.06 UJ	2.4 UJ	2.4 J	4.0 J	1.2U	< 6.0 J
Thallium	42.2 U	23.2 U	0.17 UJ	15.8 U	10.0 U	4.0 U	8.2 UJ	4.4 U
Zinc	< 145	< 163	32.6 J	< 54.8	< 82.8	< 54.6	< 59.9	< 94.3

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
mg/kg = milligrams per kilogram

Table 4.5.3: Sediment Sampling Program - Metals and Physical Properties Results

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	**SD-06**	**SD-07**	**SD-08**	**SD-09**	**SD-09A**	**SD-10**	**SD-10A**	**SD-12**	**SD-13**
SAMPLE ID:	**EP-SD06D**	**EP-SD07**	**EP-SD08**	**EP-SD09**	**EP-SD-09A-2**	**EP-SD10**	**EP-SD-10A-2**	**EP-SD12**	**EP-SD13**
LABORATORY SDG NO.:	**Z0429**	**Z0632**	**Z0632**	**A0632**	**0826A**	**A0632**	**0826A**	**Z0632**	**Z0632**
DATE SAMPLED:	**4/10/1995**	**5/22/1995**	**5/22/1995**	**5/30/1995**	**4/15/1997**	**5/30/1995**	**4/15/1997**	**5/26/1995**	**5/26/1995**
PHASE:	**I**	**I**	**I**	**I**	**II**	**I**	**II**	**I**	**I**
Miscellaneous Analyses *(Units Variable)*									
Percent moisture (%)	84.4	85.7	79.8	63.6	81.4	13.7	81.2	86.2	23.5
pH (pH Units)	6.43 J	6.17 J	6.16 J	6.64 J	5.99 J	6.00 J	--	6.14 J	6.05 J
Total organic carbon (mg/kg)	72700	160000 E	117000	20800 J	160,000 E	160000 E	--	160000 E	3610 J
Cation exchange capacity (meq/100g)	31.6 J	26.8 J	18.1 J	10.4 J	201	31.7 J	--	< 18.7 J	< 5.4 J
Metals									
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Antimony	3.8 U	28.0 U	19.8 U	6.3 U	0.81 U	29.2 U	0.80 U	28.9 U	< 6.2
Arsenic	1.9	14.0 U	2.2	1.0	3.2	1.6	2.6	14.5 U	0.5
Beryllium	1.5	1.4 U	0.99 U	0.36	2.0	1.4 U	1.5	1.4 U	0.26 U
Cadmium	18.2 J	2.8 U	2.0 U	0.95 J	<0.41	2.9 U	<0.51	58.4	8.8
Chromium	18.1	21.6	12.1	6.0	5.6	10.7	9.3	23.0	6.7
Copper	26.6	10.8 J	12.5 J	4.1 J	16.8	4.6 J	5.9	30.6 J	7.2 J
Lead	40.1 J	14.0 U	130 J	42.8 J	25.2 J	< 11.4	14.8 J	100	19.0
Mercury	0.58 U	0.64 U	0.43 U	0.16 U	0.10 U	0.66 U	0.10 U	0.63 U	0.10 U
Nickel	11.7 U	< 10.4	16.6	5.8	5.1	< 15.7	4.4	18.9	6.8
Selenium	3.8 U	14.0 U	9.9 U	1.0 J	2.9	7.3 U	2.6	5.8 U	1.0 U
Silver	<7.4 J	4.2 UJ	3.0 UJ	0.94 U	0.07 UJ	4.4 U	0.07 UJ	11.1 J	0.78 UJ
Thallium	5.1 U	28.0 U	19.8 U	0.6 U	0.20 UJ	2.9 U	0.20 UJ	28.9 UJ	5.2 UJ
Zinc	63.8	< 46.2	< 89.9	< 45.4	15.5 J	< 77.2	11.0 J	< 107	< 31.8

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
mg/kg = milligrams per kilogram

Table 4.5.3: Sediment Sampling Program - Metals and Physical Properties Results

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SAMPLE LOCATION:	SD-14	SD-14	SD-15	SD-16	SD-17	SD-18	SD-19	SD-20	SD-21	SD-22
SAMPLE ID:	EP-SD14	EP-SD-14-2	EP-SD15	EP-SD16	EP-SD17	EP-SD18	EP-SD19	EP-SD20	EP-SD21	EP-SD22
LABORATORY SDG NO.:	A0632	0826A	A0632	A0632	A0632	A0632	A0632	Z0429	Z0429	A0632
DATE SAMPLED:	5/26/1995	4/15/1997	5/26/1995	5/26/1995	5/26/1995	5/30/1995	5/30/1995	4/10/1995	4/10/1995	5/30/1995
PHASE:	I	II	I	I	I	I	I	I	I	I
Miscellaneous Analyses *(Units Variable)*										
Percent moisture (%)	9.32	66.2	16.7	59.4	60.4	55.1	71.4	81.4	52.1	14.1
pH (pH Units)	6.01 J	--	5.34 J	6.42 J	6.51 J	6.39 J	6.25 J	6.44 J	6.97 J	5.69 J
Total organic carbon (mg/kg)	105000	--	160000 E	39900 J	17500 J	78400	72200	80700	67000	160000 E
Cation exchange capacity (meq/100g)	< 16.9 J	--	45.5 J	< 19.1 J	12.7 J	18.7 J	13.7 J	40.9 J	15.7 J	50.2 J
Metals										
UNITS: *For Metals*	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	42.9 U	<0.99	< 27.0	< 11.7	6.6 U	7.2 U	< 7.6	< 3.9	1.2 U	28.4 U
Arsenic	3.2	0.98	1.2 U	0.3 U	0.6	0.4 U	2.5	1.1 U	2.2	14.2 U
Beryllium	2.1 U	0.34	1.2 U	0.34 U	0.33 U	0.36 U	0.28 U	1.1	0.64	1.4 U
Cadmium	28.9 J	12.8 J	2.4 U	12.9 J	56.8 J	1.3 J	20.5 J	15.9 J	53.5 J	2.8 U
Chromium	22.7	8.8	7.8	5.8	18.0	11.8	16.4	15.9	18.6	4.2
Copper	77.4 J	12.4	21.6 J	5.7 J	27.7 J	5.8 J	15.8 J	30.8	85.5	9.7 J
Lead	76.2 J	23.7 J	6.0 U	16.2 J	25.2 J	11.4 J	29.8 J	26.9 J	84.7 J	< 4.0
Mercury	1.00 U	0.10 U	0.54 U	0.17 U	0.15 U	0.18 U	0.11 U	0.43 U	0.27	0.68 U
Nickel	< 20.1	4.0	< 12.3	5.6	11.0	6.1	8.6	< 7.7	12.1	< 20.9
Selenium	4.3 U	1.2	6.0 U	0.7 U	0.7 U	4.0 J	0.5 J	3.9	1.2 U	12.8 J
Silver	< 22.4	3.2 J	3.6 U	< 1.5	6.9	< 1.3	6.2	< 7.6 J	28.6 J	< 4.3
Thallium	42.9 U	0.22 UJ	24.0 U	6.7 U	0.7 U	7.2 U	0.6 U	4.3 U	1.7 U	2.8 U
Zinc	< 303	24.7 J	40.1 U	< 55.2	< 86.5	< 42.4	< 66.8	< 43.6	< 106	< 86.6

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
mg/kg = milligrams per kilogram

Table 4.5.3: Sediment Sampling Program - Metals and Physical Properties Results

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SAMPLE LOCATION:	SD-22	SD-23	SD-24	SD-24	SD-25	SD-25	SD-26	SD-27	SD-28	SD-29
SAMPLE ID:	EP-SD-22-2	EP-SD23	EP-SD24	EP-SD24D	EP-SD25	EP-SD-25-2	EP-SD26	EP-SD27	EP-SD28	EP-SD29
LABORATORY SDG NO.:	0826A	A0632	A0632	A0632	A0632	0826A	A0632	A0632	A0632	Z0632
DATE SAMPLED:	4/15/1997	5/30/1995	5/30/1995	5/30/1995	5/26/1995	4/15/1997	5/30/1995	5/30/1995	5/30/1995	5/22/1995
PHASE:	II	I	I	I	I	II	I	I	I	I
Miscellaneous Analyses *(Units Variable)*										
Percent moisture (%)	88.7	18.5	67.8	74.5	13.2	85.7	65.9	57.2	36.7	43.0
pH (pH Units)	--	5.77 J	7.02 J	7.36 J	4.94 J	--	6.25 J	6.28 J	6.26 J	6.10 J
Total organic carbon (mg/kg)	--	160000 E	54400	44400	160000 E	--	109000	90500	160000 E	29800 J
Cation exchange capacity (meq/100g)	--	52.5 J	16.1 J	13.8 J	46.1 J	--	14.8 J	16.8 J	25.3 J	20.8 J
Metals										
UNITS: *For Metals*	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	1.3 U	21.6 U	5.9 U	11.4 U	30.3 U	1.0 U	6.1 U	7.0 U	< 12.6	7.0 U
Arsenic	1.7	1.1 UJ	2.6 J	2.8 J	1.5 U	1.6	0.3 UJ	0.5 J	5.4 U	1.0
Beryllium	0.38	1.1 U	0.29 U	0.27 U	1.5 U	0.57	0.30 U	0.35 U	0.54 U	0.35 U
Cadmium	6.5 J	9.0 J	34.6 J	20.2 J	3.0 U	4.0 J	0.74 J	10.6 J	260 J	0.70 U
Chromium	5.4	6.4	37.5	22.4	8.6	7.5	6.7	18.6	97.1	13.0
Copper	19.1	16.3 J	93.8 J	38.2 J	18.8 J	21.4	0.77 J	13.1 J	248 J	5.0 J
Lead	18.4 J	< 4.1	32.4 J	18.8 J	< 2.0	15.3 J	6.9 J	14.1 J	208 J	7.7 J
Mercury	0.10 U	0.45 U	0.11 U	0.11 U	0.69 U	0.10	0.13 U	0.13 U	0.26 U	0.15 U
Nickel	4.7	< 7.1	13.9	11.0	< 23.1	4.4	< 3.4	5.4	75.8	12.0
Selenium	3.0	5.4 U	0.5 J	0.6 J	7.6 U	4.2	0.6 J	0.4 U	1.3 J	1.4 U
Silver	2.3 J	< 5.0	12.5	11.3	< 5.2	1.1 J	0.91 U	< 5.7	41.4	1.0 UJ
Thallium	0.33 UJ	21.6 U	5.9 U	5.4 U	3.0 U	0.26 UJ	6.1 U	7.0 U	10.9 U	7.0 U
Zinc	20.3 J	< 50.4	< 64.2	<53.6	< 104	16.1 J	< 15.4	< 31.3	< 237	< 37.7

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
mg/kg = milligrams per kilogram

Table 4.5.3: Sediment Sampling Program - Metals and Physical Properties Results

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SAMPLE LOCATION:	**SD-30**	**SD-31**	**SD-32**	**SD-33**	**SD-34**	**SD-35**	**SD-36**	**SD-37**	**SD-38**	**SD-39**
SAMPLE ID:	**EP-SD30**	**EP-SD31**	**EP-SD32**	**EP-SD33**	**EP-SD34**	**EP-SD35**	**EP-SD36**	**EP-SD37**	**EP-SD-38-2**	**EP-SD-39-2**
LABORATORY SDG NO.:	**Z0632**	**Z0632**	**Z0632**	**Z0632**	**Z0632**	**Z0632**	**Z0632**	**A0632**	**0826A**	**0826A**
DATE SAMPLED:	**5/22/1995**	**5/22/1995**	**5/22/1995**	**5/22/1995**	**5/22/1995**	**5/22/1995**	**5/19/1995**	**5/26/1995**	**4/15/1997**	**4/15/1997**
PHASE:	**I**	**I**	**I**	**I**	**I**	**I**	**I**	**I**	**II**	**II**
Miscellaneous Analyses *(Units Variable)*										
Percent moisture (%)	23.4	78.8	32.8	62.5	48.4	20.2	51.4	45.3	85.8	86.9
pH (pH Units)	6.63 J	5.74 J	6.34 J	6.01 J	6.37 J	5.96 J	5.34 J	6.12 J	5.87 J	5.90 J
Total organic carbon (mg/kg)	18400 J	160000 E	26200 J	104000 J	160000 E	22000 J	56700	92300	160,000 E	160,000 E
Cation exchange capacity (meq/100g)	27.9 J	36.6 J	< 8.8 J	25.4 J	< 22.9 J	< 11.7 J	< 8.2 J	27.8 J	218	326
Metals										
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Antimony	5.2 U	18.9 U	6.0 U	10.7 U	7.8 U	7.4	< 10.8	8.8 U	1.0 U	1.1 U
Arsenic	0.3 U	9.4 U	3.0 U	5.3 U	3.9 U	1.2 U	4.1	4.4 U	1.5	3.6
Beryllium	0.26 U	1.4	0.30 U	0.53 U	0.39 U	0.25 U	0.41 U	0.44 U	0.65	0.91
Cadmium	0.52 U	4.2	0.60 U	1.1 U	0.78 U	0.50 U	2.1	2.9 J	8.8 J	10.1 J
Chromium	6.5	23.2	10.5	17.5	15.6	14.5	72.0	6.5	10.2	7.7
Copper	0.52 UJ	20.1 J	1.9 J	8.4 J	1.7 J	3.1 J	176 J	4.4 J	25.6	10.5
Lead	6.6	< 11.3	8.9	18.4	10.1	8.2 J	250	15.5 J	17.3 J	29.6 J
Mercury	0.11 U	0.45 U	0.14 U	0.24 U	0.17 U	0.12 U	5.0	0.16 U	0.09 U	0.1
Nickel	6.8	15.4	8.1	8.2	11.5	14.9	34.6	6.8	5.0	9.4
Selenium	1.0 U	18.9 U	1.2 U	2.2	1.6 U	1.0 U	4.1 U	2.2 U	3.5	3.9
Silver	0.78 UJ	2.8 UJ	0.89 UJ	1.6 UJ	1.2 UJ	0.75 UJ	25.4 J	< 1.8	2.9 J	0.34 J
Thallium	5.2 U	18.9 UJ	6.0 UJ	10.7 UJ	7.8 UJ	5.0 UJ	5.0 U	0.9 U	0.26 UJ	0.29 UJ
Zinc	< 24.0	< 52.4	< 31.6	< 19.6	< 18.4	< 33.3	< 155	< 25.4	22.6 J	38.5 J

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
mg/kg = milligrams per kilogram

Table 4.5.3: Sediment Sampling Program - Metals and Physical Properties Results

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SAMPLE LOCATION:	**SD-39**	**SD-40**
SAMPLE ID:	**EP-SD-39-2-D**	**EP-SD-40-2**
LABORATORY SDG NO.:	**0826A**	**0826A**
DATE SAMPLED:	**4/15/1997**	**4/15/1997**
PHASE:	**II**	**II**
Miscellaneous Analyses *(Units Variable)*		
Percent moisture (%)	88.4	85.8
pH (pH Units)	5.70 J	5.97 J
Total organic carbon (mg/kg)	160,000 E	160,000 E
Cation exchange capacity (meq/100g)	428	258
Metals		
UNITS: *For Metals*	**mg/kg**	**mg/kg**
Antimony	<2.0	1.0 U
Arsenic	2.6	3.0
Beryllium	0.66	1.3
Cadmium	2.3 J	2.4 J
Chromium	5.7	12.8
Copper	7.2	11.8
Lead	13.6 J	10.8 J
Mercury	0.10 U	0.09 U
Nickel	6.9	10.1
Selenium	3.9	4
Silver	0.11 UJ	0.09 UJ
Thallium	0.32 UJ	0.26 UJ
Zinc	22.0 J	22.2 J

Notes:

(1) "<xx" indicates that the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
mg/kg = milligrams per kilogram

Table 4.5.4: Sediment Sampling Program - Summary of SEM/AVS Analysis

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SAMPLE LOCATION:	**SD-19**	**SD-19**	**SD-24**	**SD-24**	**SD-24**	**SD-24**	**SD-28**	**SD-28**
SAMPLE ID:	**EP-SD19**	**EP-SD19**	**EP-SD24**	**EP-SD24**	**EP-SD24D**	**EP-SD24D**	**EP-SD28**	**EP-SD28**
LABORATORY SDG NO.:	**A0632**	**A0632**	**A0632**	**A0632**	**A0632**	**A0632**	**A0632**	**A0632**
DATE SAMPLED:	**5/30/1995**	**5/30/1995**	**5/30/1995**	**5/30/1995**	**5/30/1995**	**5/30/1995**	**5/30/1995**	**5/30/1995**
UNITS	**µmole/g**	**unitless**	**µmole/g**	**unitless**	**µmole/g**	**unitless**	**µmole/g**	**unitless**
AVS								
Sulfide	0.10	n/a	0.70	n/a	0.640	n/a	2.0	n/a
	SEM	**SEM/AVS (5)**	**SEM**	**SEM/AVS**	**SEM**	**SEM/AVS**	**SEM**	**SEM/AVS**
Antimony	0.00041 U	0.0021	0.00043 U	0.0003	0.00040 U	0.0003	0.00080 U	0.0002
Arsenic	0.016 J	0.1600	0.012 J	0.0171	0.0096	0.0150	0.012 J	0.0060
Beryllium	0.024 J	0.2400	0.030 J	0.0429	0.024 J	0.0375	0.052 J	0.0260
Cadmium	**0.15 J**	1.5000	**0.55 J**	0.7857	**0.19 J**	0.2969	**1.0 J**	0.5000
Chromium	0.17 J	1.7000	0.44 J	0.6286	0.19 J	0.2969	0.30 J	0.1500
Copper	**0.50 J**	5.0000	**1.4 J**	2.0000	**0.50 J**	0.7813	**1.1 J**	0.5500
Lead	**0.28 J**	2.8000	**0.16 J**	0.2286	**0.074 J**	0.1156	**0.51 J**	0.2550
Mercury	0.00014 U	0.0007	0.00015 U	0.0001	13.6 J	21.2500	0.00027 U	0.0001
Nickel	**0.85 J**	8.5000	**< 0.40 J**	0.2857	**<0.19 J**	0.1484	**< 0.54 J**	0.1350
Selenium	0.00092 J	0.0092	0.0010 J	0.0014	0.00081 J	0.0013	0.0012 U	0.0003
Silver	0.0098 J	0.0980	0.44 J	0.6286	0.16 J	0.2500	0.072 J	0.0360
Thallium	0.00033 U	0.0017	0.00034 U	0.0002	0.00031 U	0.0002	0.00064 U	0.0002
Zinc	**4.1 J**	41.0000	**1.6 J**	2.2857	**<0.70 UJ**	0.5469	**2.9 J**	1.4500
Sum SEM/AVS Values		**58.80**		**5.59**		**1.89**		**2.89**

Notes:

(1) "<xx" indicates the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
(4) "D" in sample ID indicates duplicate sample.
(5) Ratio of SEM divided by AVS. For non-detects, the reported detection limit was divided by 2 and the resulting value was used for calculations.
(6) Bold type indicates values used to calculate bioavailability of metals.
(7) "n/a" indicates compound not analyzed for.
µmole/g = micromoles per gram

Table 4.5.4: Sediment Sampling Program - Summary of SEM/AVS Analysis

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SAMPLE LOCATION:	**SD-34**	**SD-34**	**SD-35**	**SD-35**
SAMPLE ID:	**EP-SD34**	**EP-SD34**	**EP-SD35**	**EP-SD35**
LABORATORY SDG NO.:	**Z0632**	**Z0632**	**Z0632**	**Z0632**
DATE SAMPLED:	**5/22/1995**	**5/22/1995**	**5/22/1995**	**5/22/1995**
UNITS	**µmole/g**	**unitless**	**µmole/g**	**unitless**
AVS				
Sulfide	0.060	n/a	<0.030	n/a
	SEM	**SEM/AVS**	**SEM**	**SEM/AVS**
Antimony	0.00057 U	0.0048	0.00037 U	0.0062
Arsenic	0.0023 J	0.0383	0.0034 J	0.1133
Beryllium	0.0026 U	0.0217	0.022 J	0.7333
Cadmium	**< 0.00040 J**	0.0033	**< 0.00029 J**	0.0048
Chromium	< 0.029 J	0.2417	0.069 J	2.3000
Copper	**< 0.088 J**	0.7333	**< 0.035 J**	0.5833
Lead	**< 0.075 J**	0.6250	**< 0.031 J**	0.5167
Mercury	0.00023 U	0.0019	0.00015 U	0.0025
Nickel	**< 0.054 J**	0.4500	**< 0.028 J**	0.4667
Selenium	0.0021 J	0.0350	0.0013 J	0.0433
Silver	0.00022 U	0.0018	0.00041 J	0.0137
Thallium	0.00046 U	0.0038	0.00029 U	0.0048
Zinc	**< 0.29 J**	2.4167	**< 0.21 J**	3.5000
Sum SEM/AVS Values		**4.23**		**5.07**

Notes:

(1) "<xx" indicates the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to

(2) "J" qualifier indicates estimated value.

(3) "U" qualifier indicates not detected above detection limit.

(4) "D" in sample ID indicates duplicate sample.

(5) Ratio of SEM divided by AVS. For non-detects, the reported detection limit was divided by 2 and the resulting value was used for calculations.

(6) Bold type indicates values used to calculate bioavailability of metals.

(7) "n/a" indicates compound not analyzed for.

µmole/g = micromoles per gram

Table 4.5.5: Sediment Sampling Program - Detected Volatile Organic Compounds

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SAMPLE LOCATION:	SD-01	SD-02	SD-03	SD-04	SD-05	SD-05	SD-39	SD-39
SAMPLE ID:	EP-SD01	EP-SD02	EP-SD03	EP-SD04	EP-SD05	EP-SD05D	EP-SD-39-2	EP-SD-39-2-D
LABORATORY SDG NO.:	Z0632	Z0632	Z0632	Z0632	Z0632	Z0632	0826A	0826A
DATE SAMPLED:	5/19/1995	5/19/1995	5/19/1995	5/19/1995	5/26/1995	5/26/1995	4/15/1997	4/15/1997
PHASE:	I	I	I	I	I	I	II	II
Volatile Organic Compounds (VOCs)								
UNITS:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
1,1,1-trichloroethane	--	3100	--	--	--	--	--	--
1,1-dichloroethane	35 J	1700	--	--	--	--	2 J	11 J
Benzene	--	--	--	--	--	--	0.6 J	--
Chloroethane	110 J	--	--	--	--	--	--	--
Cis-1,2-dichloroethene	68 J	1900	--	--	--	--	n/a	n/a
Methylene chloride	--	--	--	--	--	92 J	--	--
Toluene	76 J	--	--	--	--	--	--	2 J
Trans-1,2-dichloroethene	--	85 J	--	--	--	--	--	--
Trichloroethene	--	80 J	--	--	--	--	1 J	--
Vinyl chloride	--	340	--	--	--	--	--	--

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

µg/kg = micrograms per kilogram

Table 4.5.5: Sediment Sampling Program - Detected Volatile Organic Compounds

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BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:	SD-39DRE	SD-40	SD-40RE
SAMPLE ID:	EP-SD-39-2-DRE	EP-SD-40-2	EP-SD-40-2RE
LABORATORY SDG NO.:	0826A	0826A	0826A
DATE SAMPLED:	4/15/1997	4/15/1997	4/15/1997
PHASE:	II	II	II
Volatile Organic Compounds (VOCs)			
UNITS:	µg/kg	µg/kg	µg/kg
1,1,1-trichloroethane	--	--	--
1,1-dichloroethane	14 J	5 J	4 J
Benzene	4 J	--	--
Chloroethane	--	--	--
Cis-1,2-dichloroethene	n/a	n/a	n/a
Methylene chloride	--	2 J	2 J
Toluene	--	--	3 J
Trans-1,2-dichloroethene	--	--	--
Trichloroethene	3 J	--	--
Vinyl chloride	--	--	--

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit

(3) "n/a" indicates compound not analyzed for.

(4) "D" in sample ID indicates duplicate sample.

(5) "RE" in sample ID indicates laboratory reanalysis.

µg/kg = micrograms per kilogram

Table 4.5.6: Sediment Sampling Program - Detected Semi-Volatile Organic Compounds
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SAMPLE LOCATION:	SD-06	SD-06	SD-20	SD-21
SAMPLE ID:	EP-SD06	EP-SD06D	EP-SD20	EP-SD21
LABORATORY SDG NO:	Z0429	Z0429	Z0429	Z0429
DATE SAMPLE COLLECTED:	4/10/1995	4/10/1995	4/10/1995	4/10/1995
UNITS:	µg/kg	µg/kg	µg/kg	µg/kg
Acenaphthylene	--	--	--	21 J
Benzo(a)anthracene	--	--	--	76 J
Benzo(a)pyrene	--	--	--	120 J
Benzo(b)fluoranthene	--	--	--	230 J
Benzo(k)fluoranthene	--	--	--	160 J
Benzoic acid	300 J	400 J	210 J	68 J
bis (2-Ethylhexyl) phthalate	350 J	--	--	120 J
Chrysene	--	62 J	--	140 J
Di-n-octylphthalate	--	--	--	48 J
Fluoranthene	--	110 J	73 J	200 J
Fluorene	--	--	--	16 J
Phenanthrene	--	38 J	--	66 J
Pyrene	--	93 J	78 J	220 J

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit

(3) "D" in sample ID indicates duplicate sample.

(4) "RE" in sample ID indicates laboratory reanalysis.

µg/kg = micrograms per kilogram

Table 4.5.7: Sediment Sampling Program - Detected PCBs **DRAFT**
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SAMPLE LOCATION:	**SD-06**	**SD-06**	**SD-20**	**SD-21**
SAMPLE ID:	**EP-SD06**	**EP-SD06D**	**EP-SD20**	**EP-SD21**
LABORATORY SDG NO.:	**Z0429**	**Z0429**	**Z0429**	**Z0429**
DATE SAMPLED:	**4/10/1995**	**4/10/1995**	**4/10/1995**	**4/10/1995**
UNITS	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	--	--	--	52000 J
Aroclor 1248	150 J	120 J	180 J	--
Aroclor 1254	100 J	76 J	120 J	44000 J

Notes:
(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.

Table 4.5.8: Sediment Sampling Program - Summary of Physical Testing Results **DRAFT**
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Sediment Sample No.	Sampling Event	Soil Type [1]	Atterburg Limits: Liquid Limit	Atterburg Limits: Plasticity Index	Grain Size Distribution: % Gravel	Grain Size Distribution: % Sand	Grain Size Distribution: % Passing No. 200 Sieve [2]	Dry Density (pcf)
West of Facility (AOC 13)								
EP-SD07	Phase I	SM	84.0	18.1	36%	26%	38%	54.4
EP-SD29	Phase I	GM	36.6	8.0	49%	34%	17%	111.0
EP-SD31	Phase I	OH	160.0	35.0	34%	13%	53%	15.1
EP-SD34	Phase I	SM	51.6	8.8	23%	49%	28%	70.9
EP-SD35	Phase I	GM	45.4	5.6	39%	38%	23%	86.2
South Embayment (AOC 13)								
EP-SD14	Phase I	OH	114.5	30.7	0%	17%	83%	16.4
EP-SD16	Phase I	SM	43.5	6.9	16%	56%	28%	72.1
EP-SD17	Phase I	SM	41.5	5.9	23%	47%	30%	76.9
EP-SD18	Phase I	OH	52.7	11.6	8%	41%	51%	59.2
EP-SD23	Phase I	ML	NP [3]	NP	0%	6%	94%	10.4
EP-SD24	Phase I	GM	58.9	11.1	56%	27%	17%	83.9
EP-SD25	Phase I	ML	NP	NP	0%	4%	96%	7.68
EP-SD26	Phase I	OH	87.2	18.4	0%	22%	78%	20.5
EP-SD28	Phase I	SM	89.9	10.7	21%	41%	38%	27.4
EP-SD37	Phase I	SM	104.7	21.0	21%	51%	28%	26.6
EP-SD-38-2	Phase II	SP-SM	NP	NP	0%	91%	9%	9.52
Background in Turnpike Lake								
EP-SD-9A-2	Phase II	OH	258.8	54.3	0%	50%	50%	11.1
Drive-In Area (Farthest Downsream Area of Unnamed Streams)								
EP-SD-39-2	Phase II	SM	NP	NP	0%	86%	14%	6.94
EP-SD-40-2	Phase II	SW	NP	NP	5%	91%	4%	10.27

Notes:
(1) ASTM Group Symbol
(2) Fines passing the No. 200 sieve consist of silt and clay sized particles.
(3) "NP" indicates non-plastic soil

TABLE 4.6.1: FISH SAMPLING PROGRAM - TOTAL NUMBERS OF FISH COLLECTED **DRAFT**
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BASF Corporation, Plainville, Massachusetts

Sampling Location and Type	Total Number of Fish Planned/ Collected	Muscle Samples Planned	Muscle Samples Collected Phase I	Muscle Samples Collected Phase II	Offal Samples Planned	Offal Samples Collected Phase I	Offal Samples Collected Phase II	Whole Body Samples Planned	Whole Body Samples Collected Phase I	Whole Body Samples Collected Phase II
South Embayment, Turnpike Lake										
Bottom feeders	5/5	5	0	5	5	0	5	--	--	--
Game species	5/5	5	1	4	5	1	4	--	--	--
Prey species	5/5	--	--	--	--	--	--	5	0	5
Impoundment										
Bottom feeders	5/2	5	1*	0	5	2	0	--	--	--
Game species	5/1	5	0	1	5	0	1	--	--	--
Prey species	5/5	--	--	--	--	--	--	5	5	--
Old Mill Pond										
Bottom feeders	5/5	5	0	5	5	0	5	--	--	--
Game species	5/5	5	0	5	5	0	5	--	--	--
Prey species	5/5	--	--	--	--	--	--	5	5	0
Total Planned/Collected Fish:	45/38	30/22			30/23			15/15		

Notes:

* Insufficient muscle tissue was available from one bottom feeder fish from the private impoundment for analysis. Only offal tissue was analyzed.
"--" indicates that no samples of this type were planned.
All samples were analyzed for metals, PCBs and lipids.

TABLE 4.6.2: PHASE I FISH TISSUE ANALYTICAL PROGRAM **DRAFT**
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BASF Corporation, Plainville, Massachusetts

Sample Location	Species	Type	Sample ID	Date Sampled	Matrix	Metals(1)	PCBs	Lipids
South Embayment	Game	Muscle	EP-FTM-SE-GS-001	5/16/1995	tissue	X	X	X
South Embayment	Game	Offal	EP-FTO-SE-GS-001	5/16/1995	tissue	X	X	X
Private Impoundment	Prey	Whole	EP-FTW-PI-PS-001	5/16/1995	tissue	X	X	X
Private Impoundment	Prey	Whole	EP-FTW-PI-PS-002	5/16/1995	tissue	X	X	X
Private Impoundment	Prey	Whole	EP-FTW-PI-PS-003	5/16/1995	tissue	X	X	X
Private Impoundment	Prey	Whole	EP-FTW-PI-PS-004	5/16/1995	tissue	X	X	X
Private Impoundment	Prey	Whole	EP-FTW-PI-PS-005	5/16/1995	tissue	X	X	X
Private Impoundment	Bottom Feeder	Muscle	EP-FTM-PI-BF-001a	5/16/1995	tissue	X	X	X
Private Impoundment	Bottom Feeder	Muscle (dup)	EP-FTM-PI-BF-001b	5/16/1995	tissue	X	X	X
Private Impoundment	Bottom Feeder	Offal	EP-FTO-PI-BF-001	5/16/1995	tissue	X	X	X
Private Impoundment	Bottom Feeder	Offal	EP-FTO-PI-BF-002	5/16/1995	tissue	X	X	X
Old Mill Pond	Prey	Whole	EP-FTW-MP-PS-001	5/17/1995	tissue	X	X	X
Old Mill Pond	Prey	Whole	EP-FTW-MP-PS-002	5/17/1995	tissue	X	X	X
Old Mill Pond	Prey	Whole	EP-FTW-MP-PS-003	5/17/1995	tissue	X	X	X
Old Mill Pond	Prey	Whole	EP-FTW-MP-PS-004	5/17/1995	tissue	X	X	X
Old Mill Pond	Prey	Whole	EP-FTW-MP-PS-005	5/17/1995	tissue	X	X	X
South Embayment	--	Equipment Rinsate	EP-FEB-SE-TB-001	5/17/1995	water	X	X	X

Notes:
(1) Metals analytes are shown on Table 4.5.3.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

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Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

LOCATION:	**OLD MILL POND**				
CLASS:	**BOTTOM FEEDER**				
SAMPLE TYPE:	**MUSCLE**				
SAMPLE ID NO.:	**EP-FTM-MP-BF-001**	**EP-FTM-MP-BF-002**	**EP-FTM-MP-BF-003**	**EP-FTM-MP-BF-004**	**EP-FTM-MP-BF-005**
LABORATORY SDG NO.:	**59242**	**59242**	**59230**	**59242**	**59230**
DATE SAMPLED:	**6/18/1996**	**6/18/1996**	**6/18/1996**	**6/18/1996**	**6/19/1996**
PHASE:	**II**	**II**	**II**	**II**	**II**
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Metals					
Aluminum	<1.3J	<1.1J	1.5UJ	<0.94J	1.7UJ
Arsenic	0.14U	0.15U	0.17UJ	0.15U	0.19UJ
Barium	0.36	0.23	0.13J	0.23	0.08J
Cadmium	0.02U	<0.03	<0.04	0.02U	<0.04
Chromium	0.17	0.15	<0.11J	0.15	<0.11J
Cobalt	0.04UJ	0.05UJ	0.04UJ	0.05UJ	0.04UJ
Copper	<0.32	<0.40	<0.31J	<0.33	<0.29J
Lead	<0.15J	<0.15J	<0.10	<0.14J	<0.22
Mercury	0.06J	0.03J	0.07	0.07J	0.14
Nickel	0.16	0.15	0.07UJ	0.14	0.08UJ
Selenium	0.54	0.59	<0.28	0.70	<0.56
Silver	0.05	0.10	0.06U	0.05U	0.06U
Vanadium	0.07	0.07	0.05	0.06U	0.05U
Zinc	4.9	3.9	4.4J	5.9	8.8J
Polychlorinated Biphenyls (PCBs)					
UNITS: *For PCBs*	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	2.7 U	1.8 J	2.7 U	2.7 U	2.7 U
Aroclor 1254	2.7 U	14	5.8	2.9	7.4
Aroclor 1260	2.7 U	18	5.3	2.7 U	8.7
Lipids					
UNITS: *For Lipids*	**percent**	**percent**	**percent**	**percent**	**percent**
Percent Lipids	0.7	0.8	1.8J	0.4	1.0J

Footnotes:

"<xx" indicates the constituent was detected at a level below the noted value. Some or all of the detection may be attributed to blank contamination.

"J" qualifier indicates an estimated value.

"U" qualifier inidcates not detected above detection limit.

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

DRAFT

Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

LOCATION:	**OLD MILL POND**				
CLASS:	**BOTTOM FEEDER**				
SAMPLE TYPE:	**OFFAL**				
SAMPLE ID NO.:	**EP-FTO-MP-BF-001**	**EP-FTO-MP-BF-002**	**EP-FTO-MP-BF-003**	**EP-FTO-MP-BF-004**	**EP-FTO-MP-BF-005**
LABORATORY SDG NO.:	**59242**	**59242**	**59230**	**59242**	**59230**
DATE SAMPLED:	**6/18/1996**	**6/18/1996**	**6/18/1996**	**6/18/1996**	**6/19/1996**
PHASE:	**II**	**II**	**II**	**II**	**II**
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Metals					
Aluminum	<2.9J	<1.9J	<9.0J	20.1J	12.7J
Arsenic	0.18U	0.15U	0.19UJ	0.54	0.19UJ
Barium	2.0	1.9	5.6J	3.3	9.2J
Cadmium	0.02U	0.02U	<0.06	0.02U	<0.05
Chromium	0.29	0.18	0.23J	0.40	0.30J
Cobalt	0.06UJ	0.05UJ	0.04UJ	0.08J	0.04UJ
Copper	1.2	<0.64	1.1J	5.0	1.4J
Lead	<0.26J	0.35J	<0.29	0.62	<0.48
Mercury	0.04J	0.02J	0.04	0.04J	0.07
Nickel	0.22	0.14	0.07UJ	0.29	0.08UJ
Selenium	0.66	0.66	<0.75	0.84	<0.56
Silver	0.06U	0.05U	0.06U	0.05U	0.06U
Vanadium	0.14	0.12	0.11	0.23	0.20
Zinc	12.7	10.0	17.0J	16.1	24.1J
Polychlorinated Biphenyls (PCBs)					
UNITS: *For PCBs*	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	2.8 UJ	4.2	2.7 J	2.5 UJ	2.7 UJ
Aroclor 1254	4.2 J	29	19	7.4 J	12
Aroclor 1260	2.7 J	28	8.8	6.3 J	22
Lipids					
UNITS: *For Lipids*	**percent**	**percent**	**percent**	**percent**	**percent**
Percent Lipids	1.7	1.4	5.1J	1.2	3.0J

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

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BASF Corporation, Plainville Massachusetts

LOCATION:	**OLD MILL POND**				
CLASS:	**GAME**				
SAMPLE TYPE:	**MUSCLE**				
SAMPLE ID NO.:	**EP-FTM-MP-GS-001**	**EP-FTM-MP-GS-002**	**EP-FTM-MP-GS-003**	**EP-FTM-MP-GS-004**	**EP-FTM-MP-GS-005**
LABORATORY SDG NO.:	**59230**	**59230**	**59242**	**59242**	**59242**
DATE SAMPLED:	**6/18/1996**	**6/19/1996**	**6/20/1996**	**6/20/1996**	**6/21/1996**
PHASE:	**II**	**II**	**II**	**II**	**II**
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Metals					
Aluminum	1.7UJ	1.4UJ	0.87UJ	<1.9J	0.77UJ
Arsenic	0.19UJ	0.16UJ	0.16U	0.15U	0.14U
Barium	0.06J	0.07J	0.12U	0.13	0.16
Cadmium	<0.03	<0.03	0.02U	0.02U	0.02U
Chromium	<0.10J	<0.11J	0.13	0.16	0.16
Cobalt	0.04UJ	0.04UJ	0.05UJ	0.05UJ	0.04UJ
Copper	<0.18J	<0.19J	<0.27	<0.29	<0.30
Lead	<0.16	<0.17	0.13UJ	<0.13J	<0.14J
Mercury	0.21	0.26	0.12J	0.31J	0.29J
Nickel	0.08UJ	0.06UJ	0.08U	0.13	0.09
Selenium	<0.56	<0.54	0.90	0.72	0.72
Silver	0.06U	0.05U	0.05U	0.05U	0.05U
Vanadium	0.05U	0.04U	0.06U	0.06U	0.05U
Zinc	4.8J	8.5J	5.4	4.8	6.4
Polychlorinated Biphenyls (PCBs)					
UNITS: *For PCBs*	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U
Aroclor 1254	2.7 U	2.7 U	3.2	2.7 U	2.7 UJ
Aroclor 1260	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U
Lipids					
UNITS: *For Lipids*	**percent**	**percent**	**percent**	**percent**	**percent**
Percent Lipids	0.4J	0.4J	0.4	0.3	0.3

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

DRAFT

Revised Draft RFI Report

BASF Corporation, Plainville Massachusetts

LOCATION:	**OLD MILL POND**					
CLASS:	**GAME**					
SAMPLE TYPE:	**OFFAL**					
SAMPLE ID NO.:	**EP-FTO-MP-GS-001**	**EP-FTO-MP-GS-002a**	**EP-FTO-MP-GS-002b**	**EP-FTO-MP-GS-003**	**EP-FTO-MP-GS-004**	**EP-FTO-MP-GS-005**
LABORATORY SDG NO.:	**59230**	**59230**	**59230**	**59242**	**59242**	**59242**
DATE SAMPLED:	**6/18/1996**	**6/19/1996**	**6/19/1996**	**6/20/1996**	**6/20/1996**	**6/21/1996**
PHASE:	**II**	**II**	**II**	**II**	**II**	**II**
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Metals						
Aluminum	<2.4J	1.7UJ	1.6UJ	<1.3J	<2.6J	<0.94J
Arsenic	0.19UJ	0.20UJ	0.18UJ	0.18U	0.14U	0.17U
Barium	1.6J	1.2J	1.0J	1.7	3.8	3.6
Cadmium	<0.05	<0.03	<0.03	0.02U	<0.02	0.02U
Chromium	0.24J	<0.24J	<0.17J	0.44	0.51	0.37
Cobalt	0.04UJ	0.04UJ	0.04UJ	0.05UJ	0.04UJ	0.05UJ
Copper	0.88J	0.59J	0.57J	0.93	1.8	<0.63
Lead	<0.12	<0.13	<0.09	<0.14J	<0.23J	<0.21J
Mercury	0.09	0.14	0.17	0.08J	0.15J	0.17J
Nickel	0.08UJ	0.08UJ	0.07UJ	0.09U	0.13	0.14
Selenium	<0.61	<0.59	<0.60	0.98	0.85	1.0
Silver	0.06U	0.06U	0.06U	0.06U	0.05U	0.06U
Vanadium	0.05U	0.22	0.21	0.06U	0.07	0.06U
Zinc	23.0J	68.3J	64.3J	27.8	20.2	53.3
Polychlorinated Biphenyls (PCBs)						
UNITS: *For PCBs*	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	2.7 U	2.7 U	2.7 U	11	3.2	2.9 J
Aroclor 1254	19	15	20	60	16	15 J
Aroclor 1260	27	21	28	42	14	14 J
Lipids						
UNITS: *For Lipids*	**percent**	**percent**	**percent**	**percent**	**percent**	**percent**
Percent Lipids	2.3J	1.5J	2.1J	2.6	1.8	1.6

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

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Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

LOCATION:	**OLD MILL POND**				
CLASS:	**PREY SPECIES**				
SAMPLE TYPE:	**WHOLE**				
SAMPLE ID NO.:	**EP-FTW-MP-PS-001**	**EP-FTW-MP-PS-002**	**EP-FTW-MP-PS-003**	**EP-FTW-MP-PS-004**	**EP-FTW-MP-PS-005**
LABORATORY SDG NO.:	**51301**	**51301**	**51301**	**51301**	**51301**
DATE SAMPLED:	**5/18/1995**	**5/18/1995**	**5/18/1995**	**5/18/1995**	**5/18/1995**
PHASE:	**I**	**I**	**I**	**I**	**I**
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Metals					
Aluminum	< 1.1 J	< 1.7 J	7.6 J	< 2.0 J	4.3 J
Arsenic	0.11 UJ	0.11 UJ	0.12 UJ	0.11 UJ	0.11 UJ
Barium	2.8 J	2.6 J	1.5 J	2.1 J	2.2 J
Cadmium	0.01 UJ	0.01 J	0.01 UJ	0.01 J	0.01 J
Chromium	0.20 J	0.29 J	0.34 J	0.24 J	0.3 J
Cobalt	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Copper	0.38	0.53	0.36	0.52	0.77
Lead	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U
Mercury	0.07 J	0.08 J	0.12 J	0.04 J	0.08 J
Nickel	0.07 U	0.07 U	0.28	0.07 U	0.94
Selenium	0.48 J	0.57 J	0.54 J	0.55 J	0.68 J
Silver	0.05 UJ	0.05 UJ	0.06 UJ	0.05 UJ	0.05 UJ
Vanadium	0.06 J	0.12 J	0.13 J	0.11 J	0.09 J
Zinc	18.4 J	23.0 J	21.9 J	20.8 J	32.1 J
Polychlorinated Biphenyls (PCBs)					
UNITS: *For PCBs*	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	20 UJ	20 UJ	9.8 UJ	20 UJ	9.8 UJ
Aroclor 1254	12 J	26 J	7.4 J	17 J	9.8 UJ
Aroclor 1260	6.9 J	8.7 J	10 J	10 J	9.8 UJ
Lipids					
UNITS: *For Lipids*	**percent**	**percent**	**percent**	**percent**	**percent**
Percent Lipids	0.67	1.69	0.45	2.83	1.47

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

DRAFT

Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

LOCATION:	SOUTH EMBAYMENT					
CLASS:	BOTTOM FEEDER					
SAMPLE TYPE:	MUSCLE					
SAMPLE ID NO.:	EP-FTM-SE-BF-001a	EP-FTM-SE-BF-001b	EP-FTM-SE-BF-002	EP-FTM-SE-BF-003	EP-FTM-SE-BF-004	EP-FTM-SE-BF-005
LABORATORY SDG NO.:	59230	59230	59460	59460	59460	59460
DATE SAMPLED:	6/19/1996	6/19/1996	6/25/1996	6/26/1996	6/26/1996	7/3/1996
PHASE:	II	II	II	II	II	II
UNITS: *For Metals*	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Metals						
Aluminum	1.5UJ	<1.8J	<0.84J	0.50UJ	**14.9J**	<1.5J
Arsenic	0.17UJ	0.20UJ	<0.16	<0.16	0.15U	<0.19
Barium	0.05U	0.08J	0.14U	0.15U	0.14U	0.17U
Cadmium	<0.05	<0.06	<0.02	0.02U	0.02U	0.02U
Chromium	<0.14J	<0.10J	<0.13J	<0.11J	<0.23	<0.10J
Cobalt	0.04UJ	0.04UJ	0.04U	0.05U	0.04U	0.05U
Copper	0.39J	0.36J	0.28	0.21	0.39	0.26
Lead	<0.15	<0.13	<0.12J	<0.07J	<0.08J	<0.08J
Mercury	0.10	0.10	0.06	0.05	0.04	0.07
Nickel	0.07UJ	0.08UJ	<0.09	<0.08	<0.15	<0.13
Selenium	<0.40	<0.39	0.34	0.28	0.34	0.29
Silver	0.06U	0.06U	0.05U	0.05U	0.05U	0.06U
Vanadium	0.05U	0.05U	0.03U	0.04U	0.03U	0.04U
Zinc	6.7J	5.6J	5.4J	4.7J	4.4J	3.7J
Polychlorinated Biphenyls (PCBs)						
UNITS: *For PCBs*	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Aroclor 1242	55 U	55 U	**42**	2.7 U	**99**	2.7 U
Aroclor 1254	**530**	**370**	**39**	2.8	**250**	5.6
Aroclor 1260	**70**	**54**	16	4.7	**83**	5.7
Lipids						
UNITS: *For Lipids*	percent	percent	percent	percent	percent	percent
Percent Lipids	0.4J	0.4J	0.4	1.3	0.6	0.2

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

DRAFT

Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

LOCATION:	**SOUTH EMBAYMENT**					
CLASS:	**BOTTOM FEEDER**					
SAMPLE TYPE:	**OFFAL**					
SAMPLE ID NO.:	**EP-FTO-SE-BF-001**	**EP-FTO-SE-BF-002**	**EP-FTO-SE-BF-003a**	**EP-FTO-SE-BF-003b**	**EP-FTO-SE-BF-004**	**EP-FTO-SE-BF-005**
LABORATORY SDG NO.:	**59242**	**59460**	**59460**	**59460**	**59460**	**59460**
DATE SAMPLED:	**6/19/1996**	**6/25/1996**	**6/26/1996**	**6/26/1996**	**6/26/1996**	**7/3/1996**
PHASE:	**II**	**II**	**II**	**II**	**II**	**II**
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Metals						
Aluminum	<1.9J	<3.5J	<2.3J	<2.6J	<1.2J	<3.1J
Arsenic	0.13U	**0.72**	<0.21	<0.19	<0.15	<0.20
Barium	2.5	2.0	4.1	4.2	1.8	0.58
Cadmium	**0.64**	<0.15	<0.07	<0.08	**0.40**	<0.11
Chromium	0.30	<0.36	**0.61**	**0.53**	<0.26	<0.18
Cobalt	0.04UJ	**0.10**	0.06U	0.06U	0.04U	0.06U
Copper	1.2	**6.5**	0.59	0.56	0.94	0.53
Lead	0.38J	0.44J	<0.32J	<0.24J	<0.24J	<0.23J
Mercury	0.06J	0.04	0.04	0.03	0.03	0.04
Nickel	0.19	<0.19	<0.16	<0.13	<0.09	<0.14
Selenium	0.66	0.47	0.45	0.56	0.34	0.45
Silver	**0.10**	**0.08**	**0.42**	0.06U	**0.10**	**0.63**
Vanadium	0.11	0.18	0.18	0.19	0.14	0.04U
Zinc	14.5	16.5J	17.5J	16.4J	13.0J	8.5J
Polychlorinated Biphenyls (PCBs)						
UNITS: *For PCBs*	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	**240**	**240**	2.8 U	5.5 U	**210**	**8.2 U**
Aroclor 1254	**1200**	**200**	11	12	**500**	**95**
Aroclor 1260	**140**	**70**	19	21	**160**	**74**
Lipids						
UNITS: *For Lipids*	**percent**	**percent**	**percent**	**percent**	**percent**	**percent**
Percent Lipids	1.3	1.9	5.2	5.2	1.4	2.7

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

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LOCATION:	**SOUTH EMBAYMENT**					
CLASS:	**GAME SPECIES**					
SAMPLE TYPE:	**MUSCLE**					
SAMPLE ID NO.:	**EP-FTM-SE-GS-001**	**EP-FTM-SE-GS-002**	**EP-FTM-SE-GS-003**	**EP-FTM-SE-GS-004**	**EP-FTM-SE-GS-005a**	**EP-FTM-SE-GS-005b**
LABORATORY SDG NO.:	**51301**	**59230**	**59242**	**59242**	**59242**	**59242**
DATE SAMPLED:	**5/18/1995**	**6/18/1996**	**6/20/1996**	**6/18/1996**	**6/18/1996**	**6/18/1996**
PHASE:	**I**	**II**	**II**	**II**	**II**	**II**
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Metals						
Aluminum	0.39 UJ	1.7UJ	<1.9J	0.97UJ	0.86UJ	0.95UJ
Arsenic	0.11 UJ	0.20UJ	0.14U	0.18U	0.16U	0.18U
Barium	0.09 U	0.06U	0.10U	0.13U	0.12U	0.13U
Cadmium	0.01 UJ	<0.03	0.02U	0.02U	0.02U	0.02U
Chromium	0.06 J	<0.10J	0.15	0.17	0.15	0.08
Cobalt	0.05 UJ	0.04UJ	0.04UJ	0.06UJ	0.05UJ	0.05UJ
Copper	< 0.13	<0.24J	<0.25	<0.28	<0.16	<0.10
Lead	0.07 U	<0.22	<0.14J	<0.18J	<0.17J	<0.08J
Mercury	0.23 J	**0.45**	0.15J	0.09J	**0.67J**	**0.74J**
Nickel	0.07 U	0.08UJ	0.12	**0.15**	0.13	0.09U
Selenium	0.43 J	<0.59	0.77	**0.97**	0.77	0.77
Silver	0.05 UJ	0.06U	0.05U	**0.08**	0.05U	0.06U
Vanadium	0.05 UJ	0.05U	0.05U	0.06U	0.06U	0.06U
Zinc	< 4.5 J	4.5J	5.8	5.4	3.8	4.0
Polychlorinated Biphenyls (PCBs)						
UNITS: *For PCBs*	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	9.9 UJ	2.7 U	2.7 U	**46**	2.0 J	**3.9 J**
Aroclor 1254	**32 J**	**12**	**8.6**	**36**	**13 J**	**22 J**
Aroclor 1260	**6.8 J**	**3.7**	**3.1**	5.5 U	**6.6 J**	**13 J**
Lipids						
UNITS: *For Lipids*	**percent**	**percent**	**percent**	**percent**	**percent**	**percent**
Percent Lipids	0.21	0.4J	0.6	1.1	0.3	0.4

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

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LOCATION:	**SOUTH EMBAYMENT**					
CLASS:	**GAME SPECIES**					
SAMPLE TYPE:	**OFFAL**					
SAMPLE ID NO.:	**EP-FTO-SE-GS-001**	**EP-FTO-SE-GS-002**	**EP-FTO-SE-GS-003**	**EP-FTO-SE-GS-004**	**EP-FTO-SE-GS-005a**	**EP-FTO-SE-GS-005b**
LABORATORY SDG NO.:	**51301**	**59230**	**59242**	**59242**	**59230**	**59230**
DATE SAMPLED:	**5/18/1995**	**6/18/1996**	**6/20/1996**	**6/18/1996**	**6/18/1996**	**6/18/1996**
PHASE:	**I**	**II**	**II**	**II**	**II**	**II**
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Metals						
Aluminum	< 0.93 J	<2.1J	<1.9J	<2.5J	<2.3J	1.6UJ
Arsenic	0.12 UJ	0.17UJ	0.15U	0.15U	0.17UJ	0.19UJ
Barium	0.53 J	2.4J	0.56	0.94	0.89J	0.28J
Cadmium	**0.22**	**0.20**	0.02U	**0.14**	**0.18**	<0.14
Chromium	0.21 J	0.39J	0.42	0.44	0.49J	<0.19J
Cobalt	0.05 UJ	0.04UJ	0.05UJ	0.04UJ	0.04UJ	0.04UJ
Copper	0.48	1.6J	<0.52	0.81	**2.2J**	0.35J
Lead	0.07 U	0.08U	<0.16J	<0.22J	<0.10	0.09U
Mercury	0.15 J	**0.28**	0.06J	0.03J	**0.48**	**0.57**
Nickel	0.08 U	0.07UJ	0.09	0.10	0.07UJ	0.08UJ
Selenium	0.37 J	<0.67	0.77	1.0	<0.64	<0.76
Silver	0.06 UJ	0.06U	0.05U	0.06	0.06U	0.06U
Vanadium	0.11 J	0.11	0.07	0.22	0.05	0.05U
Zinc	45.2 J	24.2J	26.0	20.1	21.6J	12.2J
Polychlorinated Biphenyls (PCBs)						
UNITS: *For PCBs*	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	49 UJ	**21**	9.5	**240**	27 U	27 U
Aroclor 1254	**92 J**	**100**	40	**190**	**180**	**160**
Aroclor 1260	22 J	40	24	27 U	**170**	**170**
Lipids						
UNITS: *For Lipids*	**percent**	**percent**	**percent**	**percent**	**percent**	**percent**
Percent Lipids	0.4	2.3J	2.6	6.1	2.7J	2.5J

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

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LOCATION:	**SOUTH EMBAYMENT**				
CLASS:	**PREY**				
SAMPLE TYPE:	**WHOLE**				
SAMPLE ID NO.:	**EP-FTW-SE-PS-001**	**EP-FTW-SE-PS-002**	**EP-FTW-SE-PS-003**	**EP-FTW-SE-PS-004**	**EP-FTW-SE-PS-005**
LABORATORY SDG NO.:	**59230**	**59230**	**59230**	**59230**	**59230**
DATE SAMPLED:	**6/18/1996**	**6/18/1996**	**6/18/1996**	**6/18/1996**	**6/18/1996**
PHASE:	**II**	**II**	**II**	**II**	**II**
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Metals					
Aluminum	<2.5J	<6.8J	1.6UJ	1.5UJ	<2.2J
Arsenic	0.18UJ	0.19UJ	0.19UJ	0.18UJ	0.18UJ
Barium	2.0J	**2.9J**	1.6J	0.98J	2.3J
Cadmium	**0.26**	**0.65**	<0.06	<0.14	**1.0**
Chromium	**0.43J**	**0.48J**	**0.45J**	0.34J	**0.37J**
Cobalt	0.04UJ	0.04UJ	0.04UJ	0.04UJ	0.04UJ
Copper	0.47J	0.74J	0.39J	0.42J	0.60J
Lead	<0.19	<0.24	<0.12	0.08U	0.09U
Mercury	0.12	**0.14**	0.07	0.12	0.08
Nickel	0.07UJ	0.07UJ	0.08UJ	0.07UJ	0.07UJ
Selenium	<0.61	<0.53	<0.62	<0.59	<0.68
Silver	0.06U	**0.09**	0.06U	0.06U	0.06U
Vanadium	**0.14**	**0.17**	**0.21**	**0.16**	0.10
Zinc	24.0J	23.9J	27.9J	21.3J	24.8J
Polychlorinated Biphenyls (PCBs)					
UNITS: *For PCBs*	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	27 U	**70**	2.7 UJ	5.0	14 U
Aroclor 1254	**180**	**260**	12	32	**52**
Aroclor 1260	**49**	**64**	**15**	**29**	14 U
Lipids					
UNITS: *For Lipids*	**percent**	**percent**	**percent**	**percent**	**percent**
Percent Lipids	4.2J	2.1J	1.8J	2.3J	1.1J

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

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LOCATION:	PRIVATE IMPOUNDMENT					
CLASS:	BOTTOM FEEDER				GAME	
SAMPLE TYPE:	MUSCLE		OFFAL		MUSCLE	OFFAL
SAMPLE ID NO.:	EP-FTM-PI-BF-001A	EP-FTM-PI-BF-001B	EP-FTO-PI-BF-001	EP-FTO-PI-BF-002	EP-FTM-PI-GS-001	EP-FTO-PI-GS-001
LABORATORY SDG NO.:	51301	51301	51301	51301	59242	59230
DATE SAMPLED:	5/18/1995	5/18/1995	5/18/1995	5/18/1995	6/19/1996	6/19/1996
PHASE:	I	I	I	I	II	II
UNITS: *For Metals*	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Metals						
Aluminum	< 1.9 J	< 3.0 J	19.6 J	12.0 J	<0.89J	<3.9J
Arsenic	0.12 UJ	0.12 UJ	0.11 UJ	0.12 UJ	0.15U	0.19UJ
Barium	0.1 U	0.10 U	2.5 J	1.5 J	0.11U	0.84J
Cadmium	0.02 J	0.02 J	**0.58**	**0.56**	0.02U	**0.41**
Chromium	0.05 J	0.08 J	0.34 J	0.23 J	0.14	0.25J
Cobalt	0.05 UJ	0.05 UJ	0.05 UJ	0.06 J	0.05UJ	0.04UJ
Copper	< 0.21	< 0.24	1.6	1.8	<0.40	1.2J
Lead	0.07 U	0.07 U	**1.1 J**	0.26 J	<0.13J	<0.18
Mercury	0.03 J	0.03 J	0.02 J	0.02 J	0.20J	0.16
Nickel	0.08 U	0.13	**2.8**	**0.51**	0.11	0.08UJ
Selenium	0.38 J	0.40 J	0.77 J	0.53 J	0.73	<0.66
Silver	0.06 UJ	0.06 UJ	**0.07 J**	**0.08 J**	0.05U	0.06U
Vanadium	**0.11 J**	0.10 J	**0.71**	**0.31**	0.05U	0.17
Zinc	< 4.1 J	< 4.6 J	**27.2 J**	12.6 J	7.4	64.4J
Polychlorinated Biphenyls (PCBs)						
UNITS: *For PCBs*	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Aroclor 1242	9.8 UJ	20 UJ	98 UJ	49 UJ	**4.4 J**	**18**
Aroclor 1254	**110 J**	**160 J**	**370 J**	**120 J**	**8.2 J**	**74**
Aroclor 1260	36 J	**54 J**	**110 J**	17 J	4.5 U	23
Lipids						
UNITS: *For Lipids*	percent	percent	percent	percent	percent	percent
Percent Lipids	0.81	1.12	2.54	3.34	0.4	2.9J

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

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LOCATION:	**PRIVATE IMPOUNDMENT**				
CLASS:	**PREY SPECIES**				
SAMPLE TYPE:	**WHOLE**				
SAMPLE ID NO.:	**EP-FTW-PI-PS-001**	**EP-FTW-PI-PS-002**	**EP-FTW-PI-PS-003**	**EP-FTW-PI-PS-004**	**EP-FTW-PI-PS-005**
LABORATORY SDG NO.:	**51301**	**51301**	**51301**	**51301**	**51301**
DATE SAMPLED:	**5/18/1995**	**5/18/1995**	**5/18/1995**	**5/18/1995**	**5/18/1995**
PHASE:	**I**	**I**	**I**	**I**	**I**
UNITS: *For Metals*	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Metals					
Aluminum	**8.2 J**	< 3.3 J	4.5 J	6.3 J	6.5 J
Arsenic	0.12 UJ	0.11 UJ	0.12 UJ	0.12 UJ	0.12 UJ
Barium	1.6 J	1.5 J	1.5 J	1.6 J	2.4 J
Cadmium	**0.47**	**0.14**	**0.27**	**0.35**	**0.16**
Chromium	0.32 J	0.26 J	0.26 J	0.29 J	0.28 J
Cobalt	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
Copper	0.61	0.63	**1.0**	**1.1**	0.70
Lead	**0.11 J**	0.07 U	**0.09 J**	**0.13 J**	**0.15 J**
Mercury	0.07 J	0.08 J	0.08 J	0.06 J	0.12 J
Nickel	0.07 U	0.07 U	0.44	0.08 U	0.08 U
Selenium	0.62 J	**0.69 J**	0.60 J	0.63 J	**0.69 J**
Silver	0.06 UJ	0.50 UJ	0.06 UJ	0.07 J	0.06 UJ
Vanadium	**0.17 J**	0.12 J	0.12 J	**0.18 J**	**0.18 J**
Zinc	19.6 J	18.7 J	20.3 J	18.8 J	20.3 J
Polychlorinated Biphenyls (PCBs)					
UNITS: *For PCBs*	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Aroclor 1242	49 UJ	49 UJ	20 UJ	29 UJ	30 UJ
Aroclor 1254	**50 J**	39 J	37 J	**110 J**	35 J
Aroclor 1260	**26 J**	**30 J**	**19 J**	**320 J**	**25 J**
Lipids					
UNITS: *For Lipids*	**percent**	**percent**	**percent**	**percent**	**percent**
Percent Lipids	2.02	1.55	1.94	2.3	2.97

Notes:

Bold values indicated the detected concentration was above the background concentration.

Beryllium was not detected in any sample.

Table 4.6.3: Fish Sampling Program (Phases I and II) Detected Metals, PCBs, and Lipids

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LOCATION:	BACKGROUND CONCENTRATIONS				
CLASS:	BOTTOM FEEDER		GAME		PREY SPECIES
SAMPLE TYPE:	MUSCLE	OFFAL	MUSCLE	OFFAL	WHOLE
SAMPLE ID NO.:	--	--	--	--	--
LABORATORY SDG NO.:	--	--	--	--	--
DATE SAMPLED:	--	--	--	--	--
PHASE:	--	--	--	--	--
UNITS: *For Metals*	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Metals					
Aluminum	1.7UJ	20.1J	<1.9J	<2.6J	7.6J
Arsenic	0.19UJ	0.54	0.19UJ	0.2UJ	0.12UJ
Barium	0.36[a]	15.47[c]	0.19[b]	4.98[b]	2.8J[a]
Cadmium	<0.04	<0.06	<0.03	<0.05	0.01[b]
Chromium	0.27[c]	0.4[a]	0.23[b]	0.85[c]	0.34J[a]
Cobalt	0.05UJ	0.08J	0.05UJ	0.05UJ	0.05UJ
Copper	<0.40	5[a]	<0.30	1.8[a]	0.77[a]
Lead	<0.22	0.62	<0.17	<0.23J	0.07U
Mercury	0.14[a]	0.07[a]	0.31J[a]	0.21[b]	0.12J[a]
Nickel	0.24[b]	0.38[b]	0.13	0.14	0.94
Selenium	0.94[b]	1.05[b]	0.90	1.45[b]	0.68J[a]
Silver	0.10	0.06U	0.06U	0.06U	0.06UJ
Vanadium	0.09[b]	0.27[a]	0.06U	0.22	0.13J[a]
Zinc	8.8J[a]	24.1J	8.5J[a]	83.71[b]	32.15[a]
Polychlorinated Biphenyls (PCBs)					
UNITS: *For PCBs*	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Aroclor 1242	2.7U	4.20	2.7U	11[a]	20UJ
Aroclor 1254	14[a]	29[a]	3.20	60[a]	40.4[c]
Aroclor 1260	39.59[c]	36.75[b]	2.7U	58.42[c]	11.87[b]
Lipids					
UNITS: *For Lipids*					
Percent Lipids					

Footnotes for Background Concentrations:

[a] The sample set was not normally or log normally distributed. The referenced concentration is based on the maximum detected value.

[b] The sample set was normally distributed. The reference concentration is based on the 95th percentile.

[c] The sample set was log-normally distributed. The reference concentration is based on the 95th percentile.

TABLE 4.6.4: PHASE I FISH SAMPLING PROGRAM - SUMMARY OF FIELD MEASUREM **DRAFT**

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Sample Location	Fish Class	Species	Sample ID Number	Date Sampled	Fish Length (mm)	Fish Weight (g)	Total Fillet Weight (g)	Total Offal Weight (g)	Observations
South Embayment	Game	Pickerel	EP-FTM-SE-GS-001 EP-FTO-SE-GS-001	5/16/1995	291	128	35	93	No abnormalities or parasites observed.
Private Impoundment	Prey	Bluegill Sunfish	EP-FTW-PI-PS-001	5/16/1995	201	163	--	--	
Private Impoundment	Prey	Bluegill Sunfish	EP-FTW-PI-PS-002	5/16/1995	194	156	--	--	
Private Impoundment	Prey	Bluegill Sunfish	EP-FTW-PI-PS-003	5/16/1995	194	154	--	--	
Private Impoundment	Prey	Bluegill Sunfish	EP-FTW-PI-PS-004	5/16/1995	190	133	--	--	
Private Impoundment	Prey	Bluegill Sunfish	EP-FTW-PI-PS-005	5/16/1995	201	163	--	--	
Private Impoundment	Bottom Feeder	Black	EP-FTM-PI-BF-001a	5/16/1995	294	497 (est.)	97	--	No abnormalities or parasites observed; weight of fish and
		Bullhead	EP-FTM-PI-BF-001b	"	"	497 (est.)	97	--	offal in sample jar exceeded triple beam balance capacity;
		Catfish	EP-FTO-PI-BF-001	"	"	497 (est.)	--	400 (est)	exact weight not measured; estimated weight reported.
Private Impoundment	Bottom Feeder	Black Bullhead Catfish	EP-FTO-PI-BF-002	5/16/1995	110	200	20	180	Insufficient fillet weight for analysis; offal only submitted for analysis
Old Mill Pond	Prey	Bluegill Sunfish	EP-FTW-MP-PS-001	5/17/1995	166	85	--	--	No abnormalities or parasites observed.
Old Mill Pond	Prey	Bluegill Sunfish	EP-FTW-MP-PS-002	5/17/1995	149	65	--	--	No abnormalities or parasites observed.
Old Mill Pond	Prey	Bluegill Sunfish	EP-FTW-MP-PS-003	5/17/1995	176	81	--	--	Right eye was white.
Old Mill Pond	Prey	Bluegill Sunfish	EP-FTW-MP-PS-004	5/17/1995	135	46	--	--	No abnormalities or parasites observed.
Old Mill Pond	Prey	Red Ear Sunfish	EP-FTW-MP-PS-005	5/17/1995	148	65	--	--	Female; no abnormalities observed.
South Embayment	equipment rinsate	--	EP-FEB-SE-TB-001	5/17/1995	--	--	--	--	

Table 4.7.1a: Uranium Concentrations Detected in Soils Near AOC 16 **DRAFT**
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	Uranium 238			Uranium 235			Uranium 234			
SAMPLE	Th234 (93 keV)			U235 (186 keV)			U235 x 22			
IDENTIFICATION	Conc	+/-	MDA	Conc	+/-	MDA	Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	U total
EP-SBRD019	2.50	0.72	1.11	0.36	0.08	0.09	8.0	1.7	2.1	10.9
EP-SBRD019-1-.5-2	0.35	0.69	1.06	0.08	0.05	0.08	1.8	1.2	1.7	2.3
EP-SBRD019-1-15-17	2.42	0.54	0.83	0.10	0.05	0.06	2.2	1.0	1.3	4.7
EP-SBRD019-2-17-19	0.82	0.62	0.95	0.07	0.04	0.06	1.6	0.9	1.3	2.5
EP-SBRD019-2-2-4	0.86	0.63	0.97	0.04	0.05	0.08	0.9	1.2	1.8	1.8
EP-SBRD019-3-4-6	1.19	0.73	1.12	0.12	0.06	0.08	2.6	1.3	1.9	3.9
EP-SBRD019-4-6-8	3.51	0.92	1.23	0.69	0.09	0.09	15.2	2.0	2.0	19.4
EP-SBRD019-5-8-10	2.99	0.68	1.04	0.61	0.07	0.07	13.5	1.6	1.6	17.1
EP-SBRD019-6-10-12	7.05	0.79	1.05	0.67	0.07	0.07	14.7	1.6	1.5	22.4
EP-SBRD019-7-12-14	18.4	1.52	1.27	0.65	0.08	0.08	14.3	1.7	1.8	33.3
EP-SBRD019-8-14-15	24.0	1.56	1.30	0.81	0.08	0.08	17.8	1.8	1.7	42.6
EP-SBRD020	2.36	0.96	1.48	0.39	0.12	0.11	8.6	2.7	2.3	11.3
EP-SBRD020/21/28-1-.5-2	0.14	0.70	1.07	0.03	0.05	0.08	0.7	1.1	1.8	0.8
EP-SBRD020/21/28-2-2-4	0.54	0.62	0.95	0.02	0.05	0.08	0.4	1.1	1.8	0.9
EP-SBRD020/21/28-3-4-6	0.31	0.65	1.00	0.05	0.05	0.07	1.1	1.0	1.6	1.4
EP-SBRD020/21/28-4-6-8	0.82	0.54	0.84	0.09	0.04	0.06	1.9	1.0	1.4	2.8
EP-SBRD021	4.84	0.85	1.13	0.53	0.13	0.07	11.6	2.8	1.6	16.9
EP-SBRD022	0.92	0.67	1.03	0.05	0.05	0.08	1.2	1.1	1.9	2.1
EP-SBRD022-1-8-10	0.59	0.58	0.89	0.03	0.04	0.06	0.8	0.8	1.4	1.4
EP-SBRD022-2-10-12	0.51	0.60	0.92	0.04	0.04	0.04	1.0	0.9	0.9	1.5
EP-SBRD022-3-12-14	0.90	0.52	0.80	0.01	0.03	0.07	0.2	0.7	1.4	1.1
EP-SBRD022-4-14-16	0.98	0.56	0.87	0.05	0.04	0.06	1.0	0.9	1.4	2.0
EP-SBRD022-5-16-18	0.87	0.58	0.89	0.05	0.04	0.07	1.1	0.9	1.5	2.0
EP-SBRD022A-.5-8	1.09	0.64	0.98	-0.01	0.05	0.09	-0.1	1.2	2.0	0.9
EP-SBRD022B-.5-8	0.40	0.67	1.03	0.11	0.05	0.07	2.4	1.2	1.6	2.9
EP-SBRD023	1.08	0.65	1.00	0.02	0.04	0.07	0.4	0.8	1.6	1.5
EP-SBRD023A-.5-15	1.06	0.68	1.04	0.15	0.05	0.07	3.3	1.2	1.6	4.5
EP-SBRD023B-.5-15	1.09	0.66	1.02	0.19	0.05	0.07	4.2	1.2	1.5	5.5
EP-SBRD024-01-.5-2	3.86	1.11	1.48	0.78	0.22	0.18	17.2	4.7	3.9	21.8
EP-SBRD024-02-2-4	5.03	0.94	1.26	0.76	0.22	0.21	16.7	4.9	4.6	22.5
EP-SBRD024-03-4-6	5.13	1.09	1.46	0.84	0.23	0.18	18.4	5.2	4.0	24.4
EP-SBRD024-04-6-8	9.97	1.31	1.46	0.97	0.26	0.19	21.3	5.8	4.2	32.2
EP-SBRD024-05-8-10	23.01	2.33	1.94	0.59	0.19	0.22	13.0	4.2	4.9	36.6
EP-SBRD024-06-10-12	16.26	2.31	2.10	0.88	0.25	0.20	19.3	5.4	4.4	36.4
EP-SBRD024-07-12-14	19.47	2.42	2.02	0.60	0.19	0.22	13.3	4.3	4.8	33.4
EP-SBRD024-08-14-15	0.99	0.81	1.25	0.02	0.05	0.17	0.4	1.1	3.7	1.4
EP-SBRD024-1-15-17	1.13	0.64	0.98	0.13	0.05	0.06	2.8	1.2	1.4	4.0
EP-SBRD024-2-17-19	0.66	0.69	1.06	0.02	0.04	0.07	0.5	0.9	1.6	1.2
EP-SBRD024A-.5-10	14.50	1.53	1.53	0.82	0.11	0.11	18.0	2.4	2.4	33.4
EP-SBRD024B-10-15	16.74	1.48	1.35	0.50	0.08	0.09	11.0	1.9	2.1	28.2
EP-SBRD025-01-.5-2	-0.23	1.20	1.84	-0.02	0.05	0.22	-0.5	1.1	4.7	-0.7
EP-SBRD025-02-2-4	1.23	0.92	1.42	0.06	0.05	0.15	1.3	1.1	3.3	2.6
EP-SBRD025-03-4-6	2.50	1.02	1.56	0.28	0.12	0.19	6.2	2.7	4.1	8.9
EP-SBRD025-1-15-17	1.48	0.61	0.94	0.06	0.04	0.06	1.2	0.9	1.4	2.8
EP-SBRD025-2-17-19	1.35	0.57	0.87	0.05	0.04	0.07	1.1	0.9	1.5	2.5
EP-SBRD025-4-6-8	0.84	1.07	1.64	0.31	0.11	0.17	6.8	2.5	3.8	7.9
EP-SBRD025-5-8-10	1.61	0.74	1.13	0.02	0.05	0.17	0.3	1.1	3.8	2.0
EP-SBRD025-6-10-12	17.01	1.58	1.32	0.54	0.16	0.14	11.8	3.5	3.2	29.4
EP-SBRD025-7-12-15	10.82	1.13	1.13	0.36	0.12	0.14	7.9	2.6	3.1	19.1
EP-SBRD025A-.5-10	1.33	0.77	1.19	0.16	0.06	0.08	3.6	1.4	1.8	5.1
EP-SBRD025B-.5-10	1.43	0.76	1.17	0.25	0.07	0.07	5.5	1.4	1.6	7.2
EP-SBRD025C-10-15	15.29	1.21	1.10	0.53	0.07	0.07	11.7	1.5	1.5	27.5
EP-SBRD025D-10-15	14.72	1.34	1.22	0.58	0.07	0.07	12.9	1.6	1.5	28.2
EP-SBRD026	8.88	1.38	1.53	1.48	0.31	0.09	32.7	6.9	2.0	43.0

Table 4.7.1a: Uranium Concentrations Detected in Soils Near AOC 16 **DRAFT**
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	Uranium 238			Uranium 235			Uranium 234			
SAMPLE	Th234 (93 keV)			U235 (186 keV)			U235 x 22			
IDENTIFICATION	Conc	+/-	MDA	Conc	+/-	MDA	Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	U total
EP-SBRD026-1-.5-2	0.12	0.68	1.05	0.09	0.05	0.07	2.0	1.1	1.5	2.2
EP-SBRD026-2-2-4	1.09	0.64	0.99	0.01	0.05	0.08	0.3	1.1	1.8	1.4
EP-SBRD026-3-4-6	0.01	0.66	1.02	0.05	0.05	0.07	1.1	1.0	1.5	1.1
EP-SBRD026-4-6-8	0.80	0.60	0.92	0.09	0.05	0.07	1.9	1.1	1.5	2.8
EP-SBRD026-5-8-10	59.8	2.91	2.08	2.36	0.16	0.10	52.0	3.4	2.2	114.2
EP-SBRD026-6-10-12	36.9	2.23	1.59	1.59	0.12	0.09	34.9	2.6	1.9	73.4
EP-SBRD026-7-12-14	10.37	1.00	1.11	0.39	0.07	0.08	8.6	1.6	1.8	19.4
EP-SBRD026-8-14-15	7.10	0.85	1.13	0.32	0.07	0.08	7.0	1.5	1.8	14.4
EP-SBRD027-1-.5-2	0.81	0.62	0.95	0.07	0.05	0.08	1.5	1.1	1.7	2.4
EP-SBRD027-1-15-17	1.97	0.45	0.69	0.07	0.04	0.06	1.5	0.9	1.3	3.6
EP-SBRD027-2-2-4	0.39	0.67	1.03	0.04	0.05	0.08	0.9	1.1	1.7	1.3
EP-SBRD027-3-4-6	0.51	0.68	1.05	0.03	0.05	0.07	0.7	1.1	1.6	1.3
EP-SBRD027-4-6-8	0.45	0.60	0.93	0.03	0.05	0.08	0.6	1.1	1.7	1.1
EP-SBRD027-5-8-10	26.3	1.88	1.57	1.27	0.11	0.09	28.0	2.5	1.9	55.6
EP-SBRD027-6-10-12	10.35	0.97	1.08	0.45	0.06	0.07	10.0	1.4	1.5	20.8
EP-SBRD027-7-12-14	9.56	0.93	1.03	0.36	0.07	0.08	7.9	1.6	1.9	17.8
EP-SBRD027-8-14-15	5.50	0.60	0.80	0.24	0.05	0.06	5.3	1.1	1.4	11.0
EP-SBRD029-1-.5-2	0.48	0.71	1.09	0.10	0.05	0.07	2.2	1.1	1.6	2.8
EP-SBRD029-1-8-10	1.90	0.43	0.66	0.11	0.05	0.06	2.4	1.0	1.3	4.4
EP-SBRD029-2-10-12	7.09	0.55	0.73	0.27	0.07	0.06	5.9	1.6	1.4	13.2
EP-SBRD029-2-2-4	0.80	0.62	0.95	0.09	0.05	0.07	1.9	1.1	1.6	2.8
EP-SBRD029-3-12-14	9.11	0.68	0.76	0.34	0.09	0.06	7.5	1.9	1.4	16.9
EP-SBRD029-3-4-6	0.54	0.61	0.93	0.04	0.05	0.08	0.9	1.1	1.7	1.4
EP-SBRD029-4-14-15	2.61	0.43	0.66	0.12	0.05	0.05	2.6	1.1	1.2	5.4
EP-SBRD029-4-6-8	-0.33	0.69	1.06	0.04	0.05	0.07	0.8	1.0	1.6	0.5
EP-SBRD030-1-.5-2	0.78	0.55	0.85	0.01	0.03	0.08	0.2	0.8	1.7	1.0
EP-SBRD030-2-2-4	1.31	0.54	0.83	0.03	0.04	0.08	0.6	0.9	1.8	1.9
EP-SBRD030-3-4-6	0.39	0.61	0.94	0.01	0.03	0.07	0.3	0.7	1.6	0.7
EP-SBRD030-4-6-8	0.81	0.52	0.80	0.02	0.03	0.07	0.5	0.7	1.4	1.4
EP-SBRD030-5-8-10	56.1	2.46	1.76	2.33	0.46	0.09	51.3	10.2	2.1	109.7
EP-SBRD030-6-10-12	103.7	2.97	2.12	3.66	0.71	0.11	80.6	15.7	2.3	187.9
EP-SBRD030-7-12-14	243.5	4.50	3.21	8.73	1.67	0.14	192.0	36.7	3.2	444.2
EP-SBRD030-8-14-15	4.39	0.72	0.96	0.22	0.07	0.07	4.7	1.5	1.5	9.3
EP-SBRD031-1-.5-2	0.79	0.62	0.95	0.03	0.05	0.08	0.6	1.1	1.7	1.4
EP-SBRD031-2-2-4	0.84	0.59	0.90	0.05	0.05	0.07	1.1	1.1	1.6	2.0
EP-SBRD031-3-4-6	1.05	0.57	0.88	0.05	0.05	0.07	1.1	1.0	1.6	2.2
EP-SBRD031-4-6-8	0.42	0.61	0.94	0.03	0.05	0.07	0.6	1.0	1.6	1.0
EP-SBRD031-5-8-10	0.78	0.59	0.90	0.07	0.05	0.07	1.4	1.0	1.5	2.3
EP-SBRD031-6-10-12	3.22	0.75	1.00	0.35	0.06	0.06	7.7	1.2	1.4	11.2
EP-SBRD031-7-12-14	1.57	0.56	0.86	-0.01	0.40	0.70	-0.1	8.9	15.4	1.4
EP-SBRD031-8-14-15	0.60	0.68	1.04	0.04	0.05	0.08	0.9	1.1	1.8	1.5
EP-SBRD032-1-.5-2	0.67	0.57	0.88	0.02	0.05	0.08	0.5	1.1	1.8	1.2
EP-SBRD032-1-8-10	0.73	0.45	0.69	0.00	0.03	0.07	0.0	0.7	1.6	0.8
EP-SBRD032-2-10-12	14.43	0.93	0.93	0.89	0.18	0.06	19.6	4.1	1.4	35.0
EP-SBRD032-2-2-4	0.74	0.65	0.99	0.09	0.06	0.09	1.9	1.3	2.0	2.7
EP-SBRD032-3-12-14	6.65	0.52	0.70	0.36	0.09	0.06	7.9	1.9	1.3	14.9
EP-SBRD032-3-4-6	1.00	0.54	0.83	0.07	0.04	0.06	1.6	1.0	1.4	2.7
EP-SBRD032-4-14-16	3.05	0.41	0.63	0.23	0.07	0.06	5.0	1.4	1.2	8.3
EP-SBRD032-4-6-8	0.69	0.61	0.94	0.04	0.05	0.07	1.0	1.0	1.5	1.7
EP-SBRD032-5-16-18	1.63	0.40	0.62	0.17	0.05	0.05	3.7	1.2	1.1	5.5
EP-SBRD033-0-.5	34.1	2.33	1.94	13.70	0.32	0.11	301.5	7.0	2.3	349.3
EP-SBRD033-6-12	22.4	1.28	1.07	2.36	0.10	0.06	51.9	2.1	1.3	76.7
EP-SBRD033A-0-.5	1.68	0.81	1.25	0.17	0.08	0.11	3.6	1.7	2.3	5.5
EP-SBRD033A-1-8-10	16.7	1.61	1.47	2.30	0.46	0.09	50.6	10.1	1.9	69.7

Table 4.7.1a: Uranium Concentrations Detected in Soils Near AOC 16 **DRAFT**
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BASF Corporation, Plainville Massachusetts

	Uranium 238			Uranium 235			Uranium 234			
SAMPLE	Th234 (93 keV)			U235 (186 keV)			U235 x 22			
IDENTIFICATION	Conc	+/-	MDA	Conc	+/-	MDA	Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	U total
EP-SBRD033A-2-10-12	78.2	2.97	2.12	3.70	0.72	0.10	81.5	15.8	2.2	163.3
EP-SBRD033A-3-12-14	62.2	2.58	1.85	2.56	0.50	0.09	56.3	11.1	1.9	121.1
EP-SBRD033A-4-14-16	19.69	1.58	1.32	0.83	0.18	0.08	18.2	4.1	1.8	38.8
EP-SBRD033A-5-16-18	10.33	1.07	1.19	0.46	0.12	0.07	10.2	2.6	1.6	21.0
EP-SBRD115-0-.5	3.08	0.80	1.23	0.61	0.15	0.08	13.3	3.2	1.7	17.0
EP-SBRD115-1-.5-2	3.16	0.85	1.14	0.39	0.10	0.07	8.6	2.3	1.6	12.2
EP-SBRD115-2-2-4	1.48	0.76	1.17	0.25	0.08	0.07	5.4	1.7	1.6	7.1
EP-SBRD115-3-4-6	1.58	0.68	1.04	0.31	0.09	0.07	6.8	1.9	1.4	8.7
EP-SBRD115-4-6-8	15.3	1.63	1.48	1.38	0.29	0.10	30.3	6.4	2.3	47.0
EP-SBRD115-5-8-10	9.56	1.75	1.94	1.49	0.32	0.13	32.7	7.1	2.8	43.7
EP-SBRD115-6-10-12	3.21	0.77	1.02	0.31	0.10	0.09	6.9	2.1	1.9	10.5
EP-SBRD115A-0-.5	0.95	0.47	0.72	0.11	0.05	0.07	2.3	1.1	1.5	3.4
EP-SBRD115A-1-.5-2	1.14	0.46	0.71	0.12	0.05	0.06	2.7	1.0	1.4	3.9
EP-SBRD115A-2-2-4	0.51	0.39	0.61	0.04	0.04	0.06	0.9	0.9	1.3	1.4
EP-SBRD115A-3-4-6	0.89	0.39	0.60	0.06	0.04	0.06	1.3	0.9	1.4	2.3
EP-SBRD115A-4-6-8	1.38	0.40	0.62	0.10	0.05	0.07	2.2	1.0	1.5	3.7
EP-SBRD115A-5-8-10	60.2	1.91	1.36	2.72	0.17	0.07	59.9	3.8	1.6	122.8
EP-SBRD115A-6-10-12	36.4	1.40	1.17	1.96	0.13	0.07	43.1	3.0	1.6	81.4
EP-SBRD115A-7-12-14	8.63	0.67	0.74	0.52	0.06	0.05	11.4	1.4	1.2	20.6
EP-SBRD115A-8-14-16	2.61	0.39	0.61	0.17	0.04	0.06	3.7	1.0	1.2	6.5
EP-SBRD116-0-.5	0.46	0.70	1.07	0.03	0.04	0.08	0.6	0.9	1.8	1.1
EP-SBRD116-1-.5-2	0.50	0.64	0.98	0.01	0.04	0.09	0.3	0.9	1.9	0.8
EP-SBRD116-2-2-4	0.30	0.67	1.03	0.06	0.05	0.07	1.4	1.0	1.6	1.8
EP-SBRD116-3-4-6	-0.12	0.66	1.01	0.06	0.05	0.07	1.4	1.0	1.6	1.4
EP-SBRD116-4-6-8	0.70	0.56	0.86	0.00	0.03	0.07	0.1	0.7	1.6	0.8
EP-SBRD116-5-8-10	0.62	0.66	1.01	0.06	0.04	0.06	1.4	0.9	1.4	2.1
EP-SBRD116-6-10-12	0.30	0.64	0.98	0.04	0.05	0.09	0.9	1.0	1.9	1.3
EP-SBRD116-7-12-14	0.63	0.56	0.86	0.05	0.04	0.06	1.1	0.9	1.4	1.8
EP-SBRD116-8-14-16	0.53	0.55	0.85	0.00	0.04	0.07	0.0	0.8	1.6	0.6
EP-SBRD116-9-16-18	0.69	0.61	0.93	0.03	0.04	0.08	0.7	0.9	1.7	1.4
EP-SBRD117-0-.5	0.74	0.60	0.92	0.09	0.05	0.06	2.1	1.1	1.3	2.9
EP-SBRD117-1-.5-2	1.06	0.67	1.04	0.00	0.04	0.08	0.1	0.8	1.8	1.2
EP-SBRD117-2-2-4	0.17	0.66	1.02	0.04	0.04	0.08	0.9	0.9	1.7	1.1
EP-SBRD117-3-4-6	0.16	0.64	0.98	0.03	0.04	0.07	0.7	0.8	1.4	0.9
EP-SBRD117-4-6-8	0.52	0.53	0.82	-0.01	0.02	0.07	-0.2	0.4	1.5	0.3
EP-SBRD117-5-8-10	1.43	0.56	0.85	0.02	0.04	0.08	0.5	0.8	1.8	1.9
EP-SBRD117-6-10-12	36.5	2.31	1.65	1.78	0.36	0.08	39.2	7.9	1.7	77.5
EP-SBRD117-7-12-14	2.57	0.66	1.02	0.14	0.06	0.07	3.1	1.3	1.5	5.8
EP-SBRD117-8-14-16	1.12	0.55	0.85	0.08	0.05	0.07	1.7	1.0	1.4	2.9
EP-SBRD117-9-16-18	1.42	0.57	0.88	0.01	0.04	0.08	0.2	0.9	1.7	1.7
EP-SBRD118-0-.5	0.96	0.58	0.89	0.07	0.05	0.08	1.4	1.2	1.9	2.5
EP-SBRD118-1-.5-2	-0.12	0.07	0.11	0.07	0.05	0.08	1.4	1.1	1.7	1.4
EP-SBRD118-10-18-20	0.96	0.61	0.94	0.07	0.04	0.06	1.6	0.9	1.2	2.6
EP-SBRD118-2-2-4	0.38	0.41	0.64	0.00	0.02	0.06	0.1	0.5	1.3	0.5
EP-SBRD118-3-4-6	0.41	0.45	0.70	0.00	0.02	0.07	0.1	0.5	1.5	0.5
EP-SBRD118-4-6-8	0.37	0.40	0.62	0.00	0.02	0.06	0.1	0.5	1.3	0.5
EP-SBRD118-5-8-10	0.40	0.44	0.67	0.00	0.02	0.06	0.1	0.5	1.4	0.5
EP-SBRD118-6-10-12	0.28	0.30	0.46	0.00	0.02	0.04	0.1	0.4	1.0	0.3
EP-SBRD118-7-12-14	0.60	0.48	0.73	0.02	0.03	0.06	0.5	0.7	1.4	1.1
EP-SBRD118-8-14-16	0.52	0.58	0.89	0.04	0.04	0.06	0.9	0.8	1.4	1.5
EP-SBRD118-9-16-18	-0.30	0.61	0.94	0.05	0.04	0.06	1.1	0.8	1.3	0.8
EP-SBRD120-0-.5	0.51	0.47	0.72	0.12	0.05	0.07	2.6	1.1	1.5	3.2
EP-SBRD120-01-.5-2	0.58	0.42	0.65	0.12	0.04	0.05	2.7	0.9	1.1	3.4
EP-SBRD120-02-2-4	0.00	0.48	0.74	0.02	0.05	0.08	0.4	1.0	1.7	0.4

Table 4.7.1a: Uranium Concentrations Detected in Soils Near AOC 16 **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

	Uranium 238				Uranium 235				Uranium 234			
SAMPLE	Th234 (93 keV)				U235 (186 keV)				U235 x 22			
IDENTIFICATION	Conc	+/-	MDA		Conc	+/-	MDA		Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g		pCi/g	pCi/g	pCi/g		pCi/g	pCi/g	pCi/g	U total
EP-SBRD120-03-4-6	0.33	0.46	0.71		0.05	0.05	0.07		1.1	1.0	1.5	1.5
EP-SBRD120-04-6-8	0.35	0.46	0.71		0.09	0.04	0.05		2.1	0.9	1.2	2.5
EP-SBRD120-05-8-10	0.40	0.46	0.71		0.09	0.04	0.05		1.9	0.9	1.2	2.4
EP-SBRD120-06-10-12	46.8	1.86	1.33		1.72	0.14	0.08		37.9	3.0	1.8	86.4
EP-SBRD120-07-12-14	13.45	0.80	0.80		0.82	0.08	0.06		18.1	1.7	1.3	32.4
EP-SBRD120-08-14-16	1.25	0.36	0.55		0.01	0.04	0.06		0.2	0.8	1.3	1.5
EP-SBRD120-09-16-18	1.51	0.49	0.75		0.09	0.05	0.07		2.0	1.1	1.6	3.6
EP-SBRD120-10-18-20	1.53	0.43	0.66		0.07	0.04	0.06		1.5	0.9	1.3	3.1
EP-SBRD120-11-20-22	0.59	0.43	0.66		0.03	0.04	0.05		0.7	0.8	1.2	1.4
EP-SBRD120-12-22-24	0.45	0.41	0.63		0.02	0.04	0.06		0.4	0.8	1.3	0.9
EP-SBRD121-0-.5	0.63	0.43	0.67		0.02	0.04	0.07		0.4	1.0	1.5	1.1
EP-SBRD121-01-.5-2	0.45	0.45	0.68		0.05	0.04	0.07		1.1	1.0	1.4	1.7
EP-SBRD121-02-2-4	0.41	0.47	0.72		0.07	0.04	0.06		1.5	0.9	1.3	2.0
EP-SBRD121-03-4-6	0.62	0.46	0.71		0.01	0.04	0.07		0.2	1.0	1.6	0.8
EP-SBRD121-04-6-8	1.01	0.39	0.60		0.10	0.04	0.06		2.2	0.9	1.3	3.3
EP-SBRD121-05-8-10	0.29	0.36	0.56		0.04	0.04	0.05		1.0	0.8	1.2	1.3
EP-SBRD121-06-10-12	0.05	0.41	0.63		0.05	0.03	0.05		1.0	0.7	1.1	1.1
EP-SBRD121-07-12-14	0.36	0.36	0.56		0.04	0.04	0.05		0.9	0.8	1.2	1.3
EP-SBRD121-08-14-16	0.09	0.44	0.67		0.03	0.04	0.06		0.8	0.8	1.2	0.9
EP-SBRD121-09-16-18	0.55	0.38	0.58		0.04	0.03	0.05		1.0	0.8	1.1	1.6
EP-SBRD121-10-18-20	0.51	0.40	0.62		0.05	0.04	0.05		1.0	0.8	1.2	1.6
EP-SBRD121-11-20-22	0.51	0.40	0.61		0.07	0.04	0.05		1.5	0.8	1.1	2.1
EP-SBRD128-0-.5	0.85	0.41	0.63		0.02	0.04	0.07		0.5	0.8	1.5	1.4
EP-SBRD128-06-10-12	0.54	0.46	0.70		0.06	0.04	0.07		1.2	0.9	1.4	1.8
EP-SBRD128-07-12-14	20.55	1.24	1.04		0.93	0.20	0.07		20.5	4.3	1.5	42.0
EP-SBRD128-08-14-16	1.12	0.39	0.59		0.11	0.04	0.05		2.4	1.0	1.1	3.6
EP-SBRD128-09-16-18	0.48	0.35	0.54		0.02	0.03	0.06		0.4	0.7	1.3	0.9
EP-SBRD128-1-.5-2	0.37	0.41	0.64		0.07	0.04	0.05		1.5	0.9	1.2	2.0
EP-SBRD128-10-18-20	0.90	0.35	0.54		0.03	0.04	0.06		0.7	0.8	1.3	1.6
EP-SBRD128-11-20-22	0.67	0.38	0.59		0.00	0.03	0.06		-0.1	0.7	1.3	0.6
EP-SBRD128-12-22-24	0.76	0.36	0.55		0.03	0.03	0.06		0.7	0.8	1.3	1.5
EP-SBRD128-13-24-26	0.34	0.45	0.69		0.03	0.04	0.07		0.6	0.9	1.5	1.0
EP-SBRD128-2-2-4	0.36	0.47	0.72		0.09	0.04	0.05		2.0	1.0	1.1	2.5
EP-SBRD128-3-4-6	0.63	0.40	0.62		0.06	0.04	0.05		1.3	0.8	1.1	2.0
EP-SBRD128-4-6-8	0.40	0.41	0.64		0.04	0.04	0.06		0.9	0.8	1.3	1.4
EP-SBRD128-5-8-10	0.38	0.36	0.56		0.04	0.04	0.06		0.8	0.8	1.3	1.2
EP-SBRD020/21/28	0.65	0.65	1.01		0.14	0.05	0.06		3.2	1.1	1.3	3.9
EP-SSRD022	0.56	0.68	1.05		0.01	0.05	0.09		0.2	1.2	2.0	0.7
EP-SSRD023	1.29	0.43	0.67		0.08	0.04	0.05		1.7	0.8	1.1	3.0
EP-SSRD024	5.99	0.78	1.04		0.79	0.09	0.08		17.3	2.0	1.7	24.1
EP-SSRD025	1.17	0.73	1.12		0.08	0.06	0.10		1.8	1.4	2.2	3.0
EP-SSRD026	0.15	0.63	0.97		0.07	0.05	0.07		1.6	1.1	1.6	1.8
EP-SSRD027	1.18	0.71	1.09		0.03	0.06	0.10		0.6	1.4	2.2	1.8
EP-SSRD029	1.45	0.63	0.97		0.05	0.06	0.09		1.1	1.2	1.9	2.5
EP-SSRD030	1.29	0.56	0.86		0.08	0.05	0.08		1.8	1.1	1.7	3.2
EP-SSRD031	1.41	0.63	0.96		0.12	0.06	0.08		2.6	1.3	1.8	4.2
EP-SSRD032	0.72	0.65	1.00		0.12	0.05	0.07		2.7	1.1	1.5	3.5
EP-SSRD046	0.50	0.50	0.76		0.06	0.04	0.05		1.2	0.8	1.2	1.8
EP-SSRD051	4.47	0.81	1.08		0.39	0.07	0.08		8.7	1.6	1.8	13.5
EP-SSRD052	0.59	0.58	0.89		0.08	0.04	0.06		1.8	1.0	1.4	2.5

Table 4.7.1b: Uranium Concentrations Detected in Lower Courtyard Area Soils **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

	Uranium 238			Uranium 235			Uranium 234			
SAMPLE	Th234 (93 keV)			U235 (186 keV)			U235 x 22			
IDENTIFICATION	Conc	+/-	MDA	Conc	+/-	MDA	Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	U total
EP-SBRD001	1.22	0.46	0.71	0.06	0.04	0.06	1.2	0.9	1.4	2.5
EP-SBRD001-1-.5-2	0.58	0.61	0.94	0.04	0.04	0.07	0.9	1.0	1.6	1.5
EP-SBRD001-2-2-4	1.05	0.53	0.81	0.07	0.04	0.06	1.5	0.9	1.3	2.6
EP-SBRD001-3-4-6	0.78	0.58	0.89	0.06	0.05	0.08	1.3	1.0	1.7	2.2
EP-SBRD001-4-6-8	0.76	0.58	0.89	0.05	0.04	0.06	1.2	0.9	1.4	2.0
EP-SBRD001-5-8-10	-0.12	0.61	0.93	-0.01	0.02	0.07	-0.1	0.5	1.6	-0.3
EP-SBRD001-6-10-12	1.02	0.52	0.80	-0.02	0.02	0.07	-0.5	0.4	1.6	0.5
EP-SBRD002	2.18	0.73	1.13	0.43	0.12	0.09	9.5	2.6	1.9	12.1
EP-SBRD002-1-.5-2	9.33	1.16	1.28	1.70	0.35	0.09	37.4	7.7	2.0	48.4
EP-SBRD002-2-2-4	0.93	0.66	1.02	0.14	0.06	0.08	3.1	1.4	1.8	4.2
EP-SBRD002-3-4-6	0.80	0.58	0.89	0.05	0.04	0.07	1.1	0.9	1.5	2.0
EP-SBRD002-4-6-8	0.03	0.59	0.91	0.02	0.04	0.07	0.3	0.8	1.5	0.4
EP-SBRD004	1.81	0.68	1.04	0.10	0.06	0.08	2.2	1.3	1.8	4.1
EP-SBRD004-1-.5-2	1.64	0.80	1.24	0.22	0.07	0.06	4.8	1.6	1.4	6.7
EP-SBRD004-2-2-4	0.86	0.62	0.95	0.01	0.04	0.07	0.3	0.8	1.6	1.2
EP-SBRD004-3-4-6	0.14	0.62	0.95	0.06	0.04	0.07	1.2	1.0	1.5	1.4
EP-SBRD004-4-6-8	0.58	0.52	0.81	0.04	0.04	0.06	0.9	0.8	1.4	1.5
EP-SBRD007	0.43	0.55	0.85	0.07	0.04	0.06	1.4	0.9	1.3	1.9
EP-SBRD007-1-.5-2	4.26	0.84	1.12	0.68	0.08	0.08	15.0	1.8	1.7	19.9
EP-SBRD007-2-2-4	1.76	0.71	1.09	0.31	0.06	0.07	6.8	1.4	1.6	8.9
EP-SBRD007-3-4-6	3.53	0.81	1.08	0.48	0.07	0.07	10.5	1.6	1.6	14.5
EP-SBRD007-4-6-8	2.27	0.69	1.06	0.39	0.06	0.07	8.5	1.4	1.6	11.1
EP-SBRD009	15.56	2.26	2.05	4.24	0.22	0.13	93.3	4.9	2.9	113.1
EP-SBRD009-1-.5-2	0.25	1.14	1.75	-0.05	0.10	0.23	-1.1	2.2	5.0	-0.9
EP-SBRD009-2-2-4	0.78	1.15	1.76	0.17	0.08	0.17	3.7	1.8	3.8	4.7
EP-SBRD009-3-4-6	6.38	1.42	1.89	1.40	0.36	0.22	30.7	7.8	4.7	38.5
EP-SBRD009-4-6-8	1.92	1.06	1.63	0.50	0.16	0.14	11.0	3.4	3.1	13.4
EP-SBRD009A-.5-8	5.75	1.27	1.69	1.64	0.15	0.10	36.0	3.2	2.2	43.4
EP-SBRD010	18.76	2.30	1.91	5.80	0.22	0.11	127.7	4.8	2.4	152.3
EP-SBRD010-1-.5-2	7.66	1.01	1.35	1.56	0.12	0.09	34.4	2.6	2.0	43.6
EP-SBRD010-2-2-4	2.77	0.64	0.98	0.29	0.06	0.07	6.3	1.3	1.5	9.4
EP-SBRD010-3-4-6	1.27	0.61	0.95	0.15	0.05	0.06	3.3	1.1	1.4	4.7
EP-SBRD010-4-6-8	0.26	0.57	0.88	0.02	0.04	0.07	0.4	0.9	1.5	0.7
EP-SBRD011	3.70	0.86	1.15	0.48	0.12	0.08	10.6	2.6	1.9	14.8
EP-SBRD011-2-2-4	1.95	0.60	0.92	0.16	0.07	0.08	3.6	1.5	1.8	5.7
EP-SBRD011-3-4-6	2.30	0.63	0.97	0.36	0.09	0.06	7.9	2.1	1.4	10.5
EP-SBRD011-6-6-8	0.73	0.57	0.88	0.10	0.05	0.06	2.2	1.1	1.4	3.1
EP-SBRD014	1.68	0.62	0.96	0.05	0.05	0.08	1.1	1.2	1.8	2.8
EP-SBRD014-1-.5-2	1.21	0.60	0.92	0.05	0.05	0.08	1.1	1.2	1.8	2.4
EP-SBRD014-2-2-4	0.56	0.59	0.91	0.04	0.05	0.07	0.9	1.0	1.6	1.5
EP-SBRD014-3-4-6	1.02	0.67	1.02	0.05	0.05	0.08	1.0	1.2	1.8	2.1
EP-SBRD014-4-6-8	1.08	0.51	0.79	0.08	0.05	0.07	1.8	1.1	1.6	3.0
EP-SBRD015	1.11	0.67	1.04	0.08	0.06	0.08	1.8	1.2	1.8	3.0
EP-SBRD015-1-.5-2	1.34	0.66	1.02	0.11	0.05	0.07	2.4	1.1	1.5	3.8
EP-SBRD015-2-2-4	1.26	0.67	1.04	0.19	0.06	0.08	4.1	1.3	1.7	5.6
EP-SBRD015-3-4-6	0.98	0.81	1.25	0.09	0.07	0.09	2.1	1.4	2.1	3.1
EP-SBRD015-4-6-8	0.63	0.49	0.76	0.09	0.04	0.06	2.0	0.9	1.2	2.7
EP-SBRD016	0.65	0.77	1.19	0.13	0.06	0.08	2.8	1.2	1.7	3.6
EP-SBRD016-1-.5-2	0.53	0.78	1.19	0.03	0.06	0.10	0.6	1.4	2.2	1.1
EP-SBRD016-2-2-4	0.30	0.65	1.00	0.11	0.05	0.07	2.4	1.2	1.6	2.8

Table 4.7.1b: Uranium Concentrations Detected in Lower Courtyard Area Soils **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

	Uranium 238			Uranium 235			Uranium 234			
SAMPLE	Th234 (93 keV)			U235 (186 keV)			U235 x 22			
IDENTIFICATION	Conc	+/-	MDA	Conc	+/-	MDA	Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	U total
EP-SBRD016-3-4-6	0.29	0.60	0.93	0.05	0.04	0.06	1.2	0.9	1.4	1.5
EP-SBRD016-4-6-8	0.53	0.54	0.83	0.08	0.04	0.06	1.7	0.9	1.3	2.3
EP-SBRD017	2.89	0.56	0.87	0.32	0.07	0.08	7.1	1.5	1.7	10.3
EP-SBRD017-1-.5-2	0.91	0.57	0.87	0.05	0.04	0.07	1.1	1.0	1.5	2.1
EP-SBRD017-2-2-4	0.54	0.61	0.93	0.03	0.05	0.07	0.6	1.0	1.6	1.2
EP-SBRD017-3-4-6	0.71	0.60	0.93	0.05	0.05	0.08	1.0	1.1	1.7	1.8
EP-SBRD017-4-6-8	0.87	0.51	0.78	0.04	0.04	0.07	0.8	0.9	1.5	1.7
EP-SBRD018	0.72	0.62	0.96	0.10	0.05	0.06	2.2	1.0	1.3	3.0
EP-SBRD018-1-.5-2	0.55	0.58	0.89	0.06	0.04	0.06	1.4	1.0	1.4	2.0
EP-SBRD018-2-2-4	0.89	0.49	0.76	0.05	0.05	0.07	1.0	1.0	1.6	1.9
EP-SBRD018-3-4-6	1.24	0.55	0.85	0.06	0.04	0.06	1.3	0.9	1.3	2.6
EP-SBRD018-4-6-8	0.17	0.56	0.85	0.06	0.04	0.06	1.4	0.9	1.3	1.6
EP-SBRD019	2.50	0.72	1.11	0.36	0.08	0.09	8.0	1.7	2.1	10.9
EP-SBRD019-1-.5-2	0.35	0.69	1.06	0.08	0.05	0.08	1.8	1.2	1.7	2.3
EP-SBRD019-1-15-17	2.42	0.54	0.83	0.10	0.05	0.06	2.2	1.0	1.3	4.7
EP-SBRD019-2-17-19	0.82	0.62	0.95	0.07	0.04	0.06	1.6	0.9	1.3	2.5
EP-SBRD019-2-2-4	0.86	0.63	0.97	0.04	0.05	0.08	0.9	1.2	1.8	1.8
EP-SBRD019-3-4-6	1.19	0.73	1.12	0.12	0.06	0.08	2.6	1.3	1.9	3.9
EP-SBRD019-4-6-8	3.51	0.92	1.23	0.69	0.09	0.09	15.2	2.0	2.0	19.4
EP-SBRD019-5-8-10	2.99	0.68	1.04	0.61	0.07	0.07	13.5	1.6	1.6	17.1
EP-SBRD019-6-10-12	7.05	0.79	1.05	0.67	0.07	0.07	14.7	1.6	1.5	22.4
EP-SBRD019-7-12-14	18.39	1.52	1.27	0.65	0.08	0.08	14.3	1.7	1.8	33.3
EP-SBRD019-8-14-15	23.98	1.56	1.30	0.81	0.08	0.08	17.8	1.8	1.7	42.6
EP-SBRD039	29.97	2.56	2.13	3.58	0.22	0.14	78.7	4.7	3.0	112.3
EP-SBRD039-1-.5-2	20.74	1.72	1.43	3.50	0.23	0.09	77.1	5.0	1.9	101.4
EP-SBRD039-2-2-4	4.80	0.73	0.97	0.97	0.09	0.06	21.4	2.1	1.3	27.2
EP-SBRD039-3-4-6	3.00	0.48	0.74	0.35	0.06	0.06	7.8	1.3	1.4	11.2
EP-SBRD039-4-6-8	1.84	0.51	0.78	0.28	0.06	0.06	6.1	1.2	1.4	8.3
EP-SBRD104	2.25	0.73	1.13	0.08	0.05	0.08	1.7	1.1	1.7	4.0
EP-SBRD104-1-.5-2	1.23	0.66	1.01	0.14	0.06	0.07	3.1	1.3	1.5	4.5
EP-SBRD104-2-2-4	1.67	0.56	0.86	0.07	0.05	0.07	1.5	1.1	1.6	3.3
EP-SBRD104-3-4-6	1.11	0.54	0.83	0.10	0.05	0.07	2.2	1.1	1.5	3.4
EP-SBRD104-4-6-8	0.50	0.54	0.83	0.06	0.04	0.06	1.2	0.9	1.4	1.8
EP-SBRD105	5.98	0.79	1.05	0.45	0.12	0.09	10.0	2.6	1.9	16.4
EP-SBRD105-1-.5-2	2.67	0.74	1.13	0.32	0.10	0.08	7.0	2.1	1.8	10.0
EP-SBRD105-2-2-4	1.36	0.58	0.90	0.03	0.04	0.07	0.7	0.8	1.6	2.0
EP-SBRD105-3-4-6	0.46	0.58	0.89	0.00	0.03	0.07	0.0	0.6	1.5	0.4
EP-SBRD105-4-6-8	0.33	0.52	0.80	0.00	0.03	0.07	0.0	0.7	1.6	0.4
EP-SBRD107	6.15	0.76	1.02	1.11	0.12	0.08	24.3	2.7	1.8	31.6
EP-SBRD107-1-.5-2	16.84	1.76	1.46	2.89	0.22	0.09	63.5	4.8	1.9	83.2
EP-SBRD107-2-2-4	7.17	0.67	0.89	1.15	0.11	0.08	25.3	2.3	1.7	33.7
EP-SBRD107-3-4-6	1.34	0.45	0.70	0.20	0.05	0.06	4.3	1.1	1.3	5.9
EP-SBRD107-4-6-8	1.13	0.43	0.67	0.15	0.04	0.06	3.2	1.0	1.2	4.5
EP-SBRD109	1.85	0.52	0.79	0.30	0.06	0.07	6.7	1.4	1.5	8.8
EP-SBRD109-1-.5-2	6.96	0.68	0.91	0.93	0.10	0.07	20.6	2.2	1.6	28.5
EP-SBRD109-2-2-4	6.20	0.65	0.87	0.78	0.09	0.07	17.2	2.0	1.5	24.1
EP-SBRD109-3-4-6	9.57	0.82	0.91	1.42	0.12	0.07	31.2	2.7	1.6	42.2
EP-SBRD109-4-6-8	2.19	0.43	0.66	0.45	0.06	0.06	9.8	1.3	1.3	12.4
EP-SBRD110	3.68	0.72	0.96	0.66	0.10	0.08	14.5	2.1	1.8	18.9
EP-SBRD110-1-.5-2	1.49	0.57	0.88	0.27	0.06	0.06	6.0	1.3	1.3	7.7

Table 4.7.1b: Uranium Concentrations Detected in Lower Courtyard Area Soils **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

	Uranium 238			Uranium 235			Uranium 234			
SAMPLE	Th234 (93 keV)			U235 (186 keV)			U235 x 22			
IDENTIFICATION	Conc	+/-	MDA	Conc	+/-	MDA	Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	U total
EP-SBRD110-2-2-4	0.83	0.52	0.80	0.14	0.06	0.08	3.2	1.2	1.7	4.1
EP-SBRD110-3-4-6	0.98	0.39	0.60	0.11	0.04	0.06	2.5	0.9	1.2	3.6
EP-SBRD110-4-6-8	0.25	0.49	0.76	0.03	0.04	0.07	0.7	1.0	1.5	1.0
EP-SBRD112	2.45	0.55	0.85	0.70	0.08	0.06	15.3	1.8	1.2	18.4
EP-SBRD112-1-.5-2	1.47	0.47	0.72	0.32	0.06	0.06	7.1	1.3	1.4	8.9
EP-SBRD112-2-2-4	-0.21	0.50	0.77	0.05	0.04	0.05	1.1	0.8	1.2	0.9
EP-SBRD112-3-4-6	0.42	0.51	0.79	0.16	0.05	0.06	3.4	1.1	1.4	4.0
EP-SBRD112-4-6-8	0.32	0.47	0.72	0.10	0.04	0.06	2.3	1.0	1.3	2.7
EP-SBRD113	1.56	0.48	0.74	0.17	0.06	0.08	3.7	1.3	1.7	5.4
EP-SBRD113-1-.5-2	0.63	0.39	0.60	0.07	0.04	0.06	1.6	0.9	1.4	2.3
EP-SBRD113-2-2-4	1.18	0.36	0.56	0.03	0.04	0.06	0.6	0.9	1.4	1.8
EP-SBRD113-3-4-6	0.76	0.47	0.73	0.11	0.05	0.06	2.4	1.0	1.3	3.3
EP-SBRD113-4-6-8	0.45	0.40	0.62	0.03	0.04	0.06	0.8	0.8	1.3	1.2
EP-SBRD114	0.77	0.42	0.65	0.20	0.05	0.05	4.3	1.0	1.1	5.3
EP-SBRD114-1-.5-2	1.28	0.41	0.63	0.16	0.05	0.06	3.6	1.1	1.4	5.0
EP-SBRD114-2-2-4	0.14	0.49	0.76	0.12	0.04	0.06	2.7	1.0	1.2	3.0
EP-SBRD114-3-4-6	0.63	0.40	0.61	0.07	0.04	0.06	1.6	1.0	1.4	2.3
EP-SBRD114-4-6-8	0.17	0.43	0.66	0.08	0.04	0.06	1.8	0.9	1.3	2.0
EP-SBRD114-5-8-10	-0.16	0.42	0.65	0.05	0.04	0.06	1.0	0.8	1.3	0.9
EP-SBRD114-6-10-12	0.35	0.38	0.58	0.05	0.04	0.05	1.1	0.8	1.2	1.5
EP-SBRD114-7-12-14	-0.03	0.41	0.63	0.04	0.04	0.05	0.8	0.8	1.2	0.8
EP-SBRD114-8-14-16	0.65	0.36	0.55	0.02	0.04	0.06	0.4	0.8	1.3	1.0
EP-SBRD114-9-16-18	0.12	0.41	0.63	0.07	0.04	0.05	1.6	0.8	1.1	1.8
EP-SBRD122	1.72	0.45	0.69	0.28	0.08	0.06	6.2	1.7	1.3	8.2
EP-SBRD122-1-.5-2	4.65	0.60	0.80	0.44	0.11	0.07	9.6	2.5	1.5	14.7
EP-SBRD122-3-4-6	-0.08	0.47	0.72	0.07	0.04	0.06	1.5	0.9	1.2	1.5
EP-SBRD122-4-6-8	-0.02	0.38	0.59	0.00	0.03	0.06	0.0	0.6	1.2	-0.1
EP-SBRD123	0.94	0.38	0.59	0.08	0.04	0.05	1.8	0.9	1.2	2.8
EP-SBRD123-1-.5-2	1.36	0.47	0.73	0.19	0.07	0.07	4.1	1.5	1.5	5.6
EP-SBRD123-3-4-6	1.69	0.41	0.63	0.10	0.04	0.06	2.2	1.0	1.2	3.9
EP-SBRD123-4-6-8	1.42	0.38	0.59	0.11	0.04	0.05	2.4	0.9	1.1	3.9
EP-SBRD124	4.15	0.66	0.88	0.73	0.16	0.07	16.0	3.6	1.6	20.9
EP-SBRD124-1-.5-2	1.19	0.54	0.83	0.15	0.06	0.07	3.2	1.3	1.5	4.6
EP-SBRD124-2-2-4	2.64	0.40	0.61	0.26	0.07	0.05	5.7	1.5	1.1	8.6
EP-SBRD124-3-4-6	3.35	0.53	0.71	0.20	0.06	0.06	4.4	1.4	1.2	8.0
EP-SBRD124-4-6-8	1.47	0.41	0.62	0.13	0.05	0.05	3.0	1.1	1.2	4.6
EP-SBRD125	1.45	0.60	0.92	0.36	0.10	0.07	8.0	2.1	1.6	9.8
EP-SBRD125-1-.5-2	8.89	0.95	1.06	2.00	0.39	0.07	43.9	8.6	1.6	54.8
EP-SBRD125-2-2-4	1.21	0.47	0.72	0.24	0.07	0.07	5.2	1.6	1.4	6.6
EP-SBRD125-3-4-6	0.49	0.41	0.63	0.05	0.04	0.05	1.0	0.8	1.2	1.6
EP-SBRD125-4-6-8	0.49	0.40	0.62	0.02	0.04	0.06	0.4	0.8	1.4	0.9
EP-SBRD126-1-.5-2	7.27	0.65	0.87	1.46	0.29	0.07	32.1	6.4	1.4	40.8
EP-SBRD126-2-2-4	13.38	0.94	0.94	2.13	0.41	0.07	46.8	9.0	1.4	62.3
EP-SBRD126-3-4-6	2.52	0.38	0.58	0.30	0.08	0.05	6.7	1.8	1.2	9.5
EP-SBRD126-4-6-8	1.50	0.41	0.63	0.20	0.06	0.06	4.4	1.4	1.2	6.1
EP-SBRD127	0.51	0.36	0.56	0.06	0.04	0.06	1.3	0.8	1.2	1.8
EP-SBRD127-1-.5-2	1.10	0.39	0.60	0.10	0.05	0.06	2.2	1.0	1.3	3.4
EP-SBRD127-2-2-4	0.95	0.39	0.60	0.13	0.05	0.05	2.8	1.1	1.2	3.9
EP-SBRD127-3-4-6	0.27	0.42	0.64	0.06	0.04	0.06	1.3	0.9	1.3	1.7
EP-SBRD127-4-6-8	0.15	0.49	0.75	0.05	0.04	0.07	1.0	0.9	1.6	1.2

Table 4.7.1b: Uranium Concentrations Detected in Lower Courtyard Area Soils **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

	Uranium 238				Uranium 235				Uranium 234			
SAMPLE	Th234 (93 keV)				U235 (186 keV)				U235 x 22			
IDENTIFICATION	Conc	+/-	MDA		Conc	+/-	MDA		Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g		pCi/g	pCi/g	pCi/g		pCi/g	pCi/g	pCi/g	U total
EP-SBRD129	1.49	0.37	0.57		0.16	0.06	0.06		3.5	1.2	1.4	5.1
EP-SBRD129-1-.5-2	1.37	0.39	0.60		0.11	0.05	0.07		2.4	1.1	1.5	3.9
EP-SBRD129-2-2-4	0.91	0.40	0.62		0.13	0.05	0.05		2.8	1.1	1.1	3.8
EP-SBRD129-3-4-6	0.62	0.40	0.61		0.03	0.04	0.06		0.6	0.8	1.3	1.3
EP-SBRD129-4-6-8	0.36	0.43	0.66		0.03	0.04	0.06		0.7	0.8	1.3	1.1
EP-SBRD130	6.52	0.66	0.89		1.12	0.22	0.07		24.6	4.7	1.6	32.3
EP-SBRD130-1-.5-2	8.23	0.85	0.94		1.31	0.25	0.09		28.8	5.5	2.0	38.4
EP-SBRD130-2-2-4	6.53	0.63	0.84		0.95	0.18	0.07		20.8	4.1	1.4	28.3
EP-SBRD130-3-4-6	5.62	0.55	0.73		0.74	0.15	0.07		16.4	3.2	1.5	22.7
EP-SBRD130-4-6-8	1.80	0.51	0.78		0.34	0.09	0.06		7.4	1.9	1.4	9.6
EP-SBRD131-1-2-4	0.07	0.27	0.41		0.03	0.03	0.04		0.7	0.6	0.9	0.8
EP-SBRD132-1-2-4	0.65	0.25	0.39		0.05	0.03	0.04		1.0	0.6	0.8	1.7
EP-SSRD034	10.26	1.26	1.40		1.48	0.31	0.08		32.6	6.8	1.8	44.4
EP-SSRD038	1.67	0.67	1.03		0.14	0.07	0.09		3.0	1.4	1.9	4.9
EP-SSRD042	1.40	0.56	0.86		0.15	0.06	0.07		3.3	1.3	1.5	4.8
EP-SSRD045	0.41	0.66	1.02		0.04	0.05	0.08		1.0	1.0	1.8	1.4
EP-SSRD047	1.18	0.62	0.96		0.06	0.05	0.08		1.3	1.1	1.8	2.5
EP-SSRD048	0.72	0.70	1.07		-0.02	0.02	0.10		-0.3	0.5	2.1	0.4
EP-SSRD049	1.94	0.66	1.02		0.31	0.09	0.07		6.8	1.9	1.6	9.0
EP-SSRD050	1.03	0.58	0.90		0.03	0.05	0.09		0.6	1.2	1.9	1.6
EP-SSRD082	0.34	0.56	0.86		0.07	0.05	0.07		1.5	1.0	1.6	1.9

Table 4.7.1c: Uranium Concentrations Detected in Upper Courtyard Area Soils **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

	Uranium 238			Uranium 235			Uranium 234			
SAMPLE	Th234 (93 keV)			U235 (186 keV)			U235 x 22			
IDENTIFICATION	Conc	+/-	MDA	Conc	+/-	MDA	Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	U total
EP-SBRD003	0.30	0.70	1.08	0.04	0.05	0.08	0.8	1.1	1.8	1.1
EP-SBRD003-1-.5-2	0.48	0.50	0.77	0.04	0.05	0.08	1.0	1.1	1.7	1.5
EP-SBRD003-2-2-4	0.37	0.60	0.92	0.07	0.05	0.07	1.6	1.0	1.5	2.1
EP-SBRD003-3-4-6	-0.19	0.61	0.95	0.06	0.05	0.07	1.4	1.0	1.6	1.3
EP-SBRD003-4-6-8	0.27	0.55	0.85	0.01	0.04	0.07	0.2	0.9	1.5	0.5
EP-SBRD005	4.44	0.95	1.26	0.56	0.08	0.09	12.3	1.8	1.9	17.3
EP-SBRD005-1-.5-2	4.03	0.84	1.13	0.41	0.08	0.08	8.9	1.7	1.8	13.4
EP-SBRD005-2-2-4	1.00	0.64	0.98	0.21	0.06	0.06	4.6	1.2	1.4	5.8
EP-SBRD005-3-4-6	0.13	0.66	1.01	0.08	0.05	0.07	1.8	1.1	1.6	2.0
EP-SBRD005-4-6-8	1.85	0.59	0.91	0.05	0.05	0.08	1.2	1.2	1.8	3.1
EP-SBRD006	2.86	0.83	1.27	0.68	0.09	0.08	14.9	1.9	1.8	18.4
EP-SBRD006-1-.5-2	3.27	0.73	0.97	0.35	0.07	0.08	7.7	1.5	1.7	11.3
EP-SBRD006-2-2-4	1.58	0.75	1.15	0.14	0.06	0.08	3.1	1.3	1.8	4.9
EP-SBRD006-3-4-6	1.10	0.70	1.08	0.18	0.06	0.07	3.9	1.2	1.6	5.2
EP-SBRD006-4-6-8	0.50	0.57	0.88	0.08	0.04	0.05	1.8	0.8	1.1	2.3
EP-SBRD008	3.18	0.77	1.02	0.35	0.06	0.06	7.7	1.3	1.4	11.2
EP-SBRD008-1-.5-2	5.40	0.90	1.20	0.36	0.07	0.08	8.0	1.5	1.7	13.8
EP-SBRD008-2-2-4	1.72	0.78	1.20	0.65	0.08	0.07	14.2	1.7	1.5	16.6
EP-SBRD008-3-4-6	1.50	0.69	1.06	0.14	0.05	0.08	3.0	1.2	1.7	4.7
EP-SBRD008-4-6-8	3.56	0.72	0.96	0.17	0.05	0.06	3.8	1.1	1.4	7.6
EP-SBRD012	0.55	0.51	0.78	0.02	0.04	0.07	0.5	0.9	1.5	1.0
EP-SBRD012-1-.5-2	2.43	0.66	1.02	0.37	0.06	0.07	8.2	1.4	1.4	11.0
EP-SBRD012-2-2-4	4.01	0.94	1.25	0.68	0.09	0.08	15.0	2.0	1.8	19.7
EP-SBRD012-3-4-6	2.56	0.67	1.03	0.54	0.08	0.08	11.9	1.7	1.8	15.0
EP-SBRD012-4-6-8	1.63	0.59	0.91	0.20	0.06	0.08	4.3	1.3	1.7	6.1
EP-SBRD013	2.63	0.68	1.05	0.86	0.08	0.07	18.9	1.8	1.6	22.4
EP-SBRD013-1-.5-2	15.16	1.99	1.81	4.52	0.19	0.09	99.4	4.3	2.0	119.0
EP-SBRD013-2-2-4	2.08	0.63	0.96	0.32	0.07	0.08	6.9	1.5	1.7	9.3
EP-SBRD013-3-4-6	0.73	1.22	1.87	0.39	0.14	0.20	8.6	3.1	4.3	9.7
EP-SBRD013-4-6-8	1.16	6.38	9.82	0.25	0.06	0.07	5.4	1.2	1.5	6.9
EP-SBRD040	1.51	0.50	0.78	0.18	0.05	0.06	3.9	1.1	1.3	5.6
EP-SBRD040-1-.5-2	2.52	0.38	0.58	0.16	0.05	0.06	3.6	1.1	1.3	6.3
EP-SBRD040-2-2-4	0.39	0.45	0.69	0.04	0.04	0.07	0.8	1.0	1.5	1.2
EP-SBRD040-3-4-6	0.76	0.36	0.55	0.05	0.04	0.06	1.2	0.8	1.2	2.0
EP-SBRD040-4-6-8	0.68	0.40	0.62	0.05	0.04	0.05	1.1	0.8	1.2	1.8
EP-SBRD041	4.24	0.73	0.97	0.25	0.08	0.07	5.6	1.7	1.5	10.1
EP-SBRD041-1-.5-2	21.63	1.53	1.28	4.27	0.26	0.09	94.0	5.8	1.9	119.9
EP-SBRD041-2-2-4	1.17	0.54	0.82	0.34	0.07	0.08	7.4	1.6	1.7	8.9
EP-SBRD041-3-4-6	1.38	0.50	0.77	0.31	0.06	0.06	6.9	1.3	1.4	8.6
EP-SBRD041-4-6-8	0.58	0.52	0.80	0.27	0.06	0.07	5.9	1.3	1.5	6.7
EP-SBRD101	0.05	0.52	0.79	0.02	0.04	0.07	0.5	1.0	1.5	0.6
EP-SBRD101-1-.5-2	0.59	0.50	0.77	0.04	0.05	0.07	1.0	1.0	1.6	1.6
EP-SBRD101-2-2-4	0.89	0.46	0.70	0.09	0.05	0.07	2.1	1.0	1.5	3.0
EP-SBRD101-3-4-6	0.75	0.43	0.66	0.08	0.04	0.06	1.7	0.9	1.4	2.5
EP-SBRD101-4-6-8	0.66	0.41	0.64	0.02	0.04	0.06	0.5	0.8	1.3	1.2
EP-SBRD102	0.87	0.42	0.65	0.07	0.04	0.06	1.6	0.9	1.3	2.6
EP-SBRD102-1-.5-2	0.32	0.45	0.70	0.06	0.04	0.06	1.3	0.9	1.3	1.7
EP-SBRD102-2-2-4	0.48	0.43	0.66	0.08	0.04	0.06	1.7	0.9	1.2	2.2
EP-SBRD102-3-4-6	0.19	0.39	0.61	0.04	0.04	0.06	0.9	0.8	1.2	1.1
EP-SBRD102-4-6-8	0.29	0.44	0.68	0.05	0.04	0.05	1.0	0.8	1.1	1.3

Table 4.7.1c: Uranium Concentrations Detected in Upper Courtyard Area Soils **DRAFT**
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	Uranium 238			Uranium 235			Uranium 234			
SAMPLE	Th234 (93 keV)			U235 (186 keV)			U235 x 22			
IDENTIFICATION	Conc	+/-	MDA	Conc	+/-	MDA	Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	U total
EP-SBRD103	1.06	0.45	0.70	0.07	0.05	0.07	1.5	1.0	1.5	2.7
EP-SBRD103-1-.5-2	0.56	0.44	0.67	0.10	0.04	0.05	2.3	0.9	1.2	3.0
EP-SBRD103-2-2-4	0.48	0.45	0.70	0.08	0.04	0.06	1.7	1.0	1.4	2.3
EP-SBRD103-3-4-6	0.27	0.40	0.62	0.00	0.03	0.06	0.1	0.8	1.2	0.4
EP-SBRD103-4-6-8	0.18	0.42	0.65	0.05	0.04	0.05	1.2	0.8	1.2	1.4
EP-SBRD106	0.02	0.51	0.79	0.05	0.04	0.07	1.0	1.0	1.5	1.1
EP-SBRD106-1-.5-2	0.89	0.43	0.67	0.06	0.04	0.07	1.4	1.0	1.4	2.3
EP-SBRD106-2-2-4	3.22	0.55	0.73	0.50	0.07	0.08	11.0	1.6	1.7	14.7
EP-SBRD106-3-4-6	1.93	0.48	0.73	0.18	0.05	0.06	3.9	1.1	1.3	6.0
EP-SBRD106-4-6-8	0.93	0.49	0.75	0.12	0.05	0.07	2.6	1.1	1.6	3.7
EP-SBRD108	6.94	0.70	0.93	1.61	0.13	0.08	35.4	2.9	1.7	43.9
EP-SBRD108-1-.5-2	2.05	0.63	0.97	0.62	0.09	0.08	13.7	1.9	1.7	16.4
EP-SBRD108-2-2-4	3.56	0.61	0.82	0.65	0.08	0.07	14.3	1.8	1.6	18.5
EP-SBRD108-3-4-6	1.87	0.52	0.79	0.39	0.07	0.08	8.5	1.5	1.7	10.7
EP-SBRD108-4-6-8	0.88	0.44	0.68	0.14	0.05	0.07	3.1	1.1	1.5	4.1
EP-SBRD111	0.12	0.42	0.65	0.06	0.04	0.05	1.2	0.8	1.1	1.4
EP-SBRD111-1-.5-2	0.24	0.39	0.60	0.07	0.04	0.05	1.5	0.8	1.1	1.8
EP-SBRD111-2-2-4	1.05	0.49	0.75	0.11	0.05	0.07	2.5	1.1	1.5	3.6
EP-SBRD111-3-4-6	0.47	0.52	0.80	0.21	0.05	0.06	4.7	1.1	1.2	5.4
EP-SBRD111-4-6-8	0.61	0.43	0.67	0.02	0.04	0.07	0.3	0.9	1.5	1.0
EP-SSRD035	0.68	0.47	0.72	0.07	0.04	0.06	1.4	1.0	1.4	2.2
EP-SSRD036	0.53	0.61	0.94	0.07	0.05	0.07	1.6	1.1	1.6	2.2
EP-SSRD037	1.23	0.70	1.07	0.05	0.06	0.09	1.1	1.3	2.1	2.4
EP-SSRD043	0.71	0.57	0.88	0.12	0.05	0.06	2.6	1.0	1.4	3.5
RAD01(SDI_AS 3/04)	881	30.4		37.4	6.3		432	21.3		1350
RAD02 (SDI_AS 3/4/04)	195	6.1		7.4	1.2		63.3	3.5		266

Table 4.7.1d: Uranium Concentrations Detected in South Embayment Sediments **DRAFT**
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	Uranium 238			Uranium 235			Uranium 234			
SAMPLE	Th234 (93 keV)			U235 (186 keV)			U235 x 22			
IDENTIFICATION	Conc	+/-	MDA	Conc	+/-	MDA	Conc	+/-	MDA	
	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	U total
EP-SDRD01	-0.24	0.38	0.58	0.07	0.03	0.04	1.6	0.7	0.9	1.4
EP-SDRD02	0.65	0.36	0.56	0.06	0.04	0.06	1.4	0.9	1.2	2.1
EP-SDRD03	0.18	0.47	0.72	0.04	0.04	0.05	0.8	0.8	1.2	1.0
EP-SDRD04	-0.30	0.55	0.85	0.12	0.05	0.06	2.7	1.1	1.3	2.6
EP-SDRD05	34.7	1.69	1.41	5.26	0.29	0.09	116	6.3	2.0	155.6
EP-SDRD05A-.5-1	9.04	0.95	1.06	2.75	0.53	0.07	60.6	11.7	1.5	72.4
EP-SDRD05A-0-.5	5.19	0.66	0.88	0.84	0.18	0.06	18.4	4.0	1.4	24.4
EP-SDRD05B-.5-1	1.65	0.30	0.47	0.17	0.06	0.06	3.7	1.3	1.4	5.5
EP-SDRD05B-0-.5	3.61	0.52	0.69	0.45	0.11	0.06	9.9	2.4	1.3	14.0
EP-SDRD05C-.5-1	3.12	0.54	0.72	0.50	0.12	0.06	11.1	2.7	1.4	14.7
EP-SDRD05C-0-.5	5.07	0.52	0.70	0.72	0.16	0.07	15.8	3.5	1.5	21.6
EP-SDRD05D-1-0-1	0.95	0.38	0.58	0.14	0.05	0.05	3.0	1.1	1.1	4.1
EP-SDRD05D-2-1-2	1.61	0.35	0.53	0.15	0.05	0.06	3.2	1.2	1.3	5.0
EP-SDRD05D-3-2-3	1.41	0.46	0.71	0.13	0.06	0.07	2.8	1.3	1.6	4.4
EP-SDRD05E-1-0-1	2.21	0.47	0.73	0.28	0.08	0.07	6.2	1.8	1.4	8.7
EP-SDRD05E-2-1-2	1.10	0.36	0.56	0.10	0.05	0.07	2.3	1.1	1.4	3.5
EP-SDRD05E-3-2-3	0.94	0.29	0.45	0.08	0.04	0.06	1.7	0.9	1.3	2.7
EP-SDRD06	0.70	0.36	0.56	0.06	0.04	0.06	1.4	0.9	1.3	2.2
EP-SDRD07	1.33	0.34	0.53	0.14	0.05	0.06	3.1	1.0	1.3	4.6
EP-SDRD08	0.68	0.36	0.55	0.04	0.04	0.06	0.8	0.8	1.2	1.5
EP-SDRD09	1.61	0.46	0.71	0.27	0.06	0.07	6.0	1.3	1.4	7.8
EP-SDRD09D	1.03	0.43	0.67	0.23	0.05	0.06	5.0	1.2	1.3	6.2
EP-SDRD10	0.00	0.49	0.75	0.04	0.04	0.06	0.9	0.9	1.3	1.0

Table 4.7.1e: Uranium Concentrations Detected in Surface Soils from Unaffected Areas **DRAFT**
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SAMPLE IDENTIFICATION	Uranium 238 Th234 (93 keV)			Uranium 235 U235 (186 keV)			Uranium 234 U235 x 22			U Total	
	Conc pCi/g	+/- pCi/g	MDA pCi/g	Conc pCi/g	+/- pCi/g	MDA pCi/g	Conc pCi/g	+/- pCi/g	MDA pCi/g	Conc pCi/g	+/- pCi/g
EP-SSRD53	0.37	0.55	0.84	0.07	0.04	0.06	1.6	0.8	1.2	2.05	1.0
EP-SSRD54	0.96	0.53	0.81	0.09	0.04	0.06	1.9	0.8	1.2	2.94	1.0
EP-SSRD55	0.14	0.62	0.95	0.05	0.04	0.07	1.0	0.8	1.3	1.19	1.0
EP-SSRD56	1.00	0.51	0.79	0.02	0.05	0.07	0.3	0.9	1.4	1.36	1.0
EP-SSRD57	-0.42	0.69	1.06	0.08	0.05	0.07	1.7	0.9	1.3	1.39	1.1
EP-SSRD58	1.11	0.75	1.15	0.15	0.05	0.07	3.3	1.0	1.4	4.58	1.3
EP-SSRD59	0.38	0.67	1.03	0.04	0.05	0.07	0.8	0.9	1.4	1.21	1.1
EP-SSRD60	0.49	0.58	0.89	0.03	0.04	0.06	0.8	0.8	1.2	1.28	1.0
EP-SSRD60A	0.86	0.37	0.58	0.02	0.04	0.06	0.4	0.7	1.2	1.32	0.8
EP-SSRD61	-0.26	0.67	1.03	0.05	0.05	0.07	1.1	0.9	1.4	0.90	1.1
EP-SSRD62	1.10	0.56	0.85	0.04	0.04	0.06	1.0	0.8	1.2	2.11	1.0
EP-SSRD63	0.65	0.49	0.75	0.02	0.04	0.07	0.5	0.8	1.3	1.14	1.0
EP-SSRD64	0.89	0.42	0.65	0.08	0.04	0.06	1.8	0.8	1.1	2.79	0.9
EP-SSRD65	0.96	0.42	0.65	0.04	0.04	0.06	1.0	0.7	1.2	1.97	0.9
EP-SSRD66	0.61	0.36	0.56	0.05	0.04	0.07	1.1	0.8	1.3	1.73	0.9
EP-SSRD67	1.01	0.40	0.62	0.07	0.04	0.06	1.6	0.8	1.1	2.64	0.9
EP-SSRD68	0.83	0.40	0.62	0.03	0.04	0.06	0.7	0.7	1.2	1.60	0.8
EP-SSRD69	0.29	0.36	0.56	0.05	0.03	0.04	1.1	0.6	0.9	1.40	0.7
EP-SSRD70	0.42	0.52	0.80	0.04	0.04	0.08	0.9	0.8	1.4	1.37	1.0
EP-SSRD71	0.17	0.44	0.68	0.02	0.03	0.06	0.4	0.7	1.2	0.60	0.8
EP-SSRD72	0.47	0.43	0.66	0.03	0.04	0.08	0.6	0.8	1.5	1.08	0.9
EP-SSRD73	0.66	0.40	0.62	0.10	0.05	0.06	2.3	0.9	1.1	3.07	1.0
EP-SSRD74	0.80	0.37	0.57	0.01	0.03	0.06	0.2	0.6	1.2	1.02	0.7
EP-SSRD75	0.68	0.60	0.92	0.03	0.04	0.08	0.7	0.8	1.4	1.45	1.0
EP-SSRD76	0.12	0.69	1.07	0.01	0.03	0.07	0.2	0.6	1.4	0.30	0.9
EP-SSRD77	0.33	0.66	1.02	0.08	0.05	0.07	1.8	1.0	1.4	2.21	1.2
EP-SSRD78	0.80	0.54	0.83	0.01	0.03	0.08	0.2	0.6	1.5	1.01	0.8
EP-SSRD79	0.62	0.65	1.00	0.06	0.05	0.07	1.3	0.9	1.3	1.95	1.1
EP-SSRD80	0.14	0.64	0.99	0.07	0.05	0.07	1.5	0.9	1.3	1.70	1.1
EP-SSRD81	0.74	0.58	0.89	0.04	0.04	0.07	0.9	0.8	1.4	1.71	1.0

Table 4.9.1: Percent Completeness Achieved for RFI Phase I Chemical Analytical Data **DRAFT**
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Medium and Chemical Category	Percent Completeness Achieved
Soil	
Volatile Organic Compounds	100%
Semi-Volatile Organic Compounds	89%
Metals	100%
Polychlorinated Biphenyls	100%
Moisture Content	100%
SPLP for Metals	97%
Total Petroleum Hydrocarbons	100%
Migration/Dispersal Characteristics	100%
Ground Water - Appendix IX	
Volatile Organic Compounds	100%
Semi-Volatile Organic Compounds	100%
Metals	100%
Polychlorinated Biphenyls	100%
Pesticides	100%
Dioxins and Furans	100%
Herbicides	100%
Water Quality Parameters	100%
Major Cations/Anions	100%
Ground Water - Round I	
Volatile Organic Compounds	100%
Semi-Volatile Organic Compounds	93%
Metals (total)	93%
Metals (dissolved)	95%
Polychlorinated Biphenyls	100%
Ground Water - Round I	
Volatile Organic Compounds	100%
Semi-Volatile Organic Compounds	100%
Metals (total)	100%
Metals (dissolved)	100%
Polychlorinated Biphenyls	100%
Surface Water - Round I	
Volatile Organic Compounds	100%
Metals	100%
Major Cations/Anions	100%
Water Quality Parameters	100%
Surface Water - Round II	
Volatile Organic Compounds	100%
Metals	100%
Major Cations/Anions	100%
Water Quality Parameters	100%

Table 4.9.1: Percent Completeness Achieved for RFI Phase I Chemical Analytical Data
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Medium and Chemical Category	Percent Completeness Achieved
Sediments	
Volatile Organic Compounds	100%
Semi-Volatile Organic Compounds	100%
Metals	100%
Polychlorinated Biphenyls	100%
Water Quality Parameters	100%
Acid Volatile Sulfides - Simultaneously Extracted Metals	100%
Fish	
Metals	100%
Polychlorinated Biphenyls	100%

Table 5.1.1: RFI Phase II Surface Soil Analytical Program **DRAFT**
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Sample Location	Sample ID Number	Sample Collection Date	Matrix	Laboratory Report	VOCs (1)	PCBs (2)	Metals (3)
Surface Soil Samples - Ecological Risk Analysis							
SS-E-01	EP-SS-E-01	4/16/1997	soil	0828A	√	√	√
SS-E-02	EP-SS-E-02	4/17/1997	soil	0828A	√	√	√
Surface Soil Samples - Human Health Risk Analysis							
SS-H-01	EP-SS-H-01	4/17/1997	soil	0828A	√[4]	√[4]	√[4]
SS-H-01 (duplicate)	EP-SS-H-01D	4/17/1997	soil	0828A	√	√	√
SS-H-02	EP-SS-H-02	4/17/1997	soil	0828B	√	√	√
SS-H-03	EP-SS-H-03	4/17/1997	soil	0828B	√	√	√
SS-H-04	EP-SS-H-04	4/17/1997	soil	0828B	√	√	√
SS-H-05	EP-SS-H-05	4/17/1997	soil	0828B	√	√	√
SS-H-06	EP-SS-H-06	4/17/1997	soil	0828B	√	√	√
SS-H-07	EP-SS-H-07	4/17/1997	soil	0828A	√	√	√
Surface Soil Samples - Ecological and Human Health Risk Analysis							
SS-EH-01	EP-SS-EH-01	4/16/1997	soil	0828A	√	√	√
SS-EH-02	EP-SS-EH-02	4/17/1997	soil	0828A	√	√	√
SS-EH-03	EP-SS-EH-03	4/17/1997	soil	0828A	√	√	√
SS-EH-04	EP-SS-EH-04	4/17/1997	soil	0828B	√	√	√
Background Surface Soil Samples							
SS-B-01	EP-SS-B-01	4/16/1997	soil	0828A			√
SS-B-02	EP-SS-B-02	4/16/1997	soil	0828A			√
SS-B-03	EP-SS-B-03	4/16/1997	soil	0828A			√[4]
SS-B-03 (duplicate)	EP-SS-B-03D	4/16/1997	soil	0828A			√
SS-B-04	EP-SS-B-04	4/16/1997	soil	0828A			√
SS-B-05	EP-SS-B-05	4/16/1997	soil	0828A			√
SS-B-06	EP-SS-B-06	4/16/1997	soil	0828A			√
SS-B-07	EP-SS-B-07	4/16/1997	soil	0828A			√
SS-B-08	EP-SS-B-08	4/16/1997	soil	0828A			√
SS-B-09	EP-SS-B-09	4/16/1997	soil	0828A			√
SS-B-10	EP-SS-B-10	4/16/1997	soil	0828A			√
QA/QC Samples Collected							
Equipment Blank	EP-SS-E-01-EB	4/16/1997	water	0828A			√
Equipment Blank	EP-SS-H-04-EB	4/17/1997	water	0828B	√	√	√
Trip Blank	Trip Blank	4/17/1997	water	0828B	√		

Notes:
(1) VOCs - Volatile organic compounds by EPA Method 8260. Table 4.1.2 presents the list of analytes.
(2) PCBs - Polychlorinated biphenyls by EPA Method 8080. Table 4.1.5 presents the list of analytes.
(3) Metals - Priority pollutant metals. Table 4.1.4 presents the list of analytes.
(4) Sample selected for matrix spike/matrix spike duplicate analysis.

Table 5.1.2: RFI Phase II Surface Soil Sampling Program - Detected Metals

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SAMPLE LOCATION:	SS-B-01	SS-B-02	SS-B-03	SS-B-03 (dup)	SS-B-04	SS-B-05	SS-B-06
SAMPLE ID:	EP-SS-B-01	EP-SS-B-02	EP-SS-B-03	EP-SS-B-03-D	EP-SS-B-04	EP-SS-B-05	EP-SS-B-06
LABORATORY SDG NO.:	0828A	0828A	0828A	0828A	0828A	0828A	0828A
DATE SAMPLED:	4/16/1997	4/16/1997	4/16/1997	4/16/1997	4/16/1997	4/16/1997	4/16/1997
UNITS:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	--	--
Arsenic	3.4	3.1	3.4	3.0	3.6	2.7	2.9
Beryllium	0.31	0.46	0.40	0.42	0.39	0.34	0.23
Cadmium	0.84 J	0.83 J	1.9 J	1.5 J	0.61 J	2.7 J	0.12 J
Chromium (Total)	12.8	11.6	12.1	11.4	10.2	10.4	8.1
Copper	3.9	5.9	7.8	6.6	5.1	8.1	3.6
Lead	16.1 J	18.7 J	18.4 J	17.4 J	21.5 J	27.4 J	40.4 J
Mercury	--	0.21	0.56	0.43	0.21	1.2	0.11
Nickel	5.9	6.2	9.0	9.5	5.8	7.4	3.5
Selenium	1.4 J	2.0 J	1.8 J	1.6 J	1.7 J	1.5 J	1.5 J
Silver	--	1.5 J	1.9 J	2.1 J	0.70 J	11.4 J	0.24 J
Zinc	21.0	22.9	25.0	27.3	24.1	27.2	12.1

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID or "dup" in sample location indicates duplicate sample.
(4) Thallium was not detected in any samples.
mg/kg = milligrams per kilogram

Table 5.1.2: RFI Phase II Surface Soil Sampling Program - Detected Metals

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SAMPLE LOCATION:	**SS-B-07**	**SS-B-08**	**SS-B-09**	**SS-B-10**	**SS-E-01**	**SS-E-02**	**SS-H-01**
SAMPLE ID:	**EP-SS-B-07**	**EP-SS-B-08**	**EP-SS-B-09**	**EP-SS-B-10**	**EP-SS-E-01**	**EP-SS-E-02**	**EP-SS-H-01**
LABORATORY SDG NO.:	**0828A**	**0828A**	**0828A**	**0828A**	**0828A**	**0828A**	**0828A**
DATE SAMPLED:	**4/16/1997**	**4/16/1997**	**4/16/1997**	**4/16/1997**	**4/16/1997**	**4/17/1997**	**4/17/1997**
UNITS:	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Antimony	--	--	--	--	--	--	--
Arsenic	3.0	7.5	4.2	3.5	3.6	1.4	1.8
Beryllium	0.40	0.18	0.54	0.44	0.40	0.32	0.31
Cadmium	0.38 J	4.4 J	2.7 J	0.36 J	2.0 J	2.6 J	2.2 J
Chromium (Total)	14.0	11.5	10.7	15.3	9.8	9.8	12.4
Copper	3.5	14.7	7.3	7.6	6.7	11.4	10.6
Lead	15.9 J	78.4 J	34.0 J	8.8 J	32.6 J	7.4 J	14.7 J
Mercury	--	0.41	0.09	--	0.13	0.11	0.28
Nickel	6.8	7.0	5.3	11.2	6.3	12.1	6.5
Selenium	1.7 J	2.4 J	1.8 J	1.2 J	1.5 J	0.74 J	0.99 J
Silver	0.08 J	4.1 J	0.35 J	--	2.5 J	3.9 J	6.4 J
Zinc	23.2	23.6	22.0	40.3	27.3	29.8	30.0

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "D" in sample ID or "dup" in sample location indicates duplicate sample.

(4) Thallium was not detected in any samples.

mg/kg = milligrams per kilogram

Table 5.1.2: RFI Phase II Surface Soil Sampling Program - Detected Metals

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BASF Corporation, Plainville, Massachusetts

SAMPLE LOCATION:	SS-H-01 (dup)	SS-H-02	SS-H-03	SS-H-04	SS-H-05	SS-H-06	SS-H-07
SAMPLE ID:	EP-SS-H-01-D	EP-SS-H-02	EP-SS-H-03	EP-SS-H-04	EP-SS-H-05	EP-SS-H-06	EP-SS-H-07
LABORATORY SDG NO.:	0828A	0828B	0828B	0828B	0828B	0828B	0828A
DATE SAMPLED:	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997
UNITS:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	0.84	--
Arsenic	2.0	1.5	3.3	4.6	3.1	5.4	1.9
Beryllium	0.31	0.37	0.38	0.39	0.35	0.46	0.31
Cadmium	2.3 J	1.2 J	3.8	1.1 J	3.2	24.3	0.35 J
Chromium (Total)	14.0	8.3	11.3	9.4	10.6	17.7	10.3
Copper	10.8	12.4	19.0	9.9	10.4	18.5	12.3
Lead	15.6 J	10.9	33.4	13.6	47.4	74.3	13.3 J
Mercury	0.24	--	0.11	0.08	--	0.18	0.09
Nickel	6.9	11.6	10.4	8.0	7.4	10.9	10.2
Selenium	1.1 J	0.63	0.85	1.1	0.90	1.3	0.93 J
Silver	6.7 J	5.1	3.4	0.99	1.7	6.9	3.2 J
Zinc	32.6	30.1	57.2	29.2	29.9	46.3	51.3

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "D" in sample ID or "dup" in sample location indicates duplicate sample.

(4) Thallium was not detected in any samples.

mg/kg = milligrams per kilogram

Table 5.1.2: RFI Phase II Surface Soil Sampling Program - Detected Metals

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BASF Corporation, Plainville, Massachusetts

SAMPLE LOCATION:	SS-EH-01	SS-EH-02	SS-EH-03	SS-EH-04
SAMPLE ID:	EP-SS-EH-01	EP-SS-EH-02	EP-SS-EH-03	EP-SS-EH-04
LABORATORY SDG NO.:	0828A	0828A	0828A	0828B
DATE SAMPLED:	4/16/1997	4/17/1997	4/17/1997	4/17/1997
UNITS:	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--
Arsenic	4.0	3.9	4.2	4.0
Beryllium	0.30	0.39	0.19	0.37
Cadmium	0.35 J	3.0 J	26.9 J	6.4
Chromium (Total)	11.1	11.9	10.5	10.8
Copper	7.2	7.2	44.3	10.7
Lead	30.7 J	21.8 J	77.7 J	40.6
Mercury	--	0.15	0.27	--
Nickel	4.9	8.0	11.2	7.0
Selenium	1.5 J	1.5 J	2.0 J	1.4
Silver	0.14 J	0.40 J	18.3 J	3.3
Zinc	20.1	29.0	48.9	28.8

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID or "dup" in sample location indicates duplicate sample.
(4) Thallium was not detected in any samples.
mg/kg = milligrams per kilogram

Table 5.1.3: RFI Phase II Surface Soil Sampling Program - Detected Volatile Organic Compounds

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BASF Corporation, Plainville, Massachusetts

SAMPLE LOCATION:	SS-E-01	SS-E-02	SS-H-01	SS-H-01 (dup)	SS-H-02	SS-H-03	SS-H-04	SS-H-05
SAMPLE ID:	EP-SS-E-01	EP-SS-E-02	EP-SS-H-01	EP-SS-H-01-D	EP-SS-H-02	EP-SS-H-03	EP-SS-H-04	EP-SS-H-05
LABORATORY SDG NO.:	0828A	0828A	0828A	0828A	0828B	0828B	0828B	0828B
DATE SAMPLED:	4/16/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997
UNITS:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
1,1,1-Trichloroethane	4 J	--	--	--	--	--	1 J	--
Benzene	88	5	4 J	2 J	6	20	20	2 J
Ethylbenzene	2 J	--	--	--	--	--	--	--
Methylene Chloride	1 J	1 J	--	--	--	--	--	--
Tetrachloroethene	27	4 J	2 J	2 J	1 J	7 J	10 J	2 J
Toluene	3 J	--	--	--	--	2 J	2 J	--
Vinyl chloride	--	--	--	--	--	--	--	--
Xylenes (total)	0.9 J	--	--	--	--	--	--	--

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "D" in sample ID indicates duplicate sample.

(4) "RE" in sample ID indicates laboratory reanalysis.

µg/kg = micrograms per kilogram

Table 5.1.3: RFI Phase II Surface Soil Sampling Program - Detected Volatile Organic Compounds

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BASF Corporation, Plainville, Massachusetts

SAMPLE LOCATION:	SS-H-06	SS-H-07	SS-EH-01	SS-EH-02	SS-EH-03	SS-EH-03	SS-EH-04
SAMPLE ID:	EP-SS-H-06	EP-SS-H-07	EP-SS-EH-01	EP-SS-EH-02	EP-SS-EH-03	EP-SS-EH-03RE	EP-SS-EH-04
LABORATORY SDG NO.:	0828B	0828A	0828A	0828A	0828A	0828A	0828B
DATE SAMPLED:	4/17/1997	4/17/1997	4/16/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997
UNITS:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
1,1,1-Trichloroethane	2 J	--	--	--	2 J	6 J	--
Benzene	8	7	1 J	3 J	20 J	74 J	26
Ethylbenzene	--	--	--	--	--	1 J	--
Methylene Chloride	--	--	--	1 J	--	2 J	--
Tetrachloroethene	50 J	2 J	--	2 J	8 J	18 J	8 J
Toluene	2 J	--	--	--	3 J	6 J	2 J
Vinyl chloride	--	--	--	--	--	2 J	--
Xylenes (total)	--	--	--	--	--	--	--

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "D" in sample ID indicates duplicate sample.

(4) "RE" in sample ID indicates laboratory reanalysis.

µg/kg = micrograms per kilogram

Table 5.1.4: RFI Phase II Surface Soil Sampling Program - Detected Polychlorinated Biphenyls

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BASF Corporation, Plainville, Massachusetts

SAMPLE LOCATION:	SS-E-02	SS-E-02 (diln)	SS-H-01	SS-H-01 (dup)	SS-H-02	SS-H-03	SS-H-04
SAMPLE ID:	EP-SS-E-02	EP-SS-E-02DL	EP-SS-H-01	EP-SS-H-01-D	EP-SS-H-02	EP-SS-H-03	EP-SS-H-04
LABORATORY SDG NO.:	0828A	0828A	0828A	0828A	0828B	0828B	0828B
DATE SAMPLED:	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997
UNITS:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Aroclor-1254	280	260	10 J	14 J	72	100	800
Aroclor-1260	--	--	--	--	30 J	41	--

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "DL" in sample ID or "diln" in sample location indicates sample run at a higher dilution.

(4) "D" in sample ID or "dup" in sample location indicates duplicate sample.

(5) µg/kg = micrograms per kilogram

(6) No PCBs were detected in samples; SS-E-01, SS-EH-01, SS-EH-02

Table 5.1.4: RFI Phase II Surface Soil Sampling Program - Detected Polychlorinated Biphenyls

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BASF Corporation, Plainville, Massachusetts

SAMPLE LOCATION:	SS-H-04 (diln)	SS-H-05	SS-H-06	SS-H-07	SS-EH-03	SS-EH-04
SAMPLE ID:	EP-SS-H-04DL	EP-SS-H-05	EP-SS-H-06	EP-SS-H-07	EP-SS-EH-03	EP-SS-EH-04
LABORATORY SDG NO.:	0828B	0828B	0828B	0828A	0828A	0828B
DATE SAMPLED:	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997
UNITS:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Aroclor-1254	840	5 J	13 J	11 J	47	5 J
Aroclor-1260	--	6 J	20 J	--	130	10 J

Notes:

(1) "J" qualifier indicates estimated value.

(2) "--" indicates compound not detected above detection limit.

(3) "DL" in sample ID or "diln" in sample location indicates sample run at a higher dilution.

(4) "D" in sample ID or "dup" in sample location indicates duplicate sample.

(5) µg/kg = micrograms per kilogram

(6) No PCBs were detected in samples; SS-E-01, SS-EH-01, SS-EH-02

Table 5.2.1: RFI Phase II Ground Water and Surface Water Sampling Programs - VOC Analytes

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BASF Corporation, Plainville, Massachusetts

Analyte [1]	Water Reporting Limits (µg/L) [2]
1,1,1-Trichloroethane	5
1,1,2,2-Tetrachloroethane	5
1,1,2-Trichloroethane	5
1,1-Dichloroethane	5
1,1-Dichloroethene	5
1,2-Dichloroethane	5
1,2-Dichloropropane	5
4-Methyl-2-pentanone (methyl-iso-butyl-ketone)	50
2-Chloroethyl vinyl ether	10
Benzene	5
Bromodichloromethane (dichlorobromomethane)	5
Bromoform	5
Bromomethane (methyl bromide)	10
Carbon tetrachloride	5
Chlorobenzene	5
Chloroethane	10
Chloroform	5
Chloromethane (methyl chloride)	10
cis-1,3-Dichloropropene	5
Dibromochloromethane (chlorodibromomethane)	5
Ethylbenzene	5
Freon 11 (trichlorofluoromethane)	10
Methylene chloride	5
Styrene	5
Tetrachloroethene	5
Toluene	5
trans-1,2-Dichloroethene	5
trans-1,3-Dichloropropene	5
Trichloroethene	5
Vinyl acetate	50
Vinyl chloride	10
1,2-Dichlorobenzene	5
1,4-Dichlorobenzene	5
1,3-Dichlorobenzene (m-dichlorobenzene)	5
Xylenes, total	5

Notes:

(1) Analyses were run by EPA Method 8260A.

(2) The final reporting limit achieved by the laboratory may have been affected by matrix interfe
field blank/method blank contamination, etc.

Table 5.2.2: RFI Phase II Ground Water and Surface Water Sampling Programs - PCB Analytes **DRAFT**
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Parameter	EPA Test Method Specified for Aqueous Samples	Water Reporting Limits [1] (ug/L)
PCBs:		
Aroclor 1016	8081	1.0
Aroclor 1221	8081	2.0
Aroclor 1232	8081	1.0
Aroclor 1242	8081	1.0
Aroclor 1248	8081	1.0
Aroclor 1254	8081	1.0
Aroclor 1260	8081	1.0

Notes:
[1] The final reporting limit achieved by the laboratory may have been affected by matrix intereferences, field blank/method blank contaminations, etc.

Table 5.2.3: RFI Phase II Ground Water and Surface Water Sampling Programs - Metal Analytes

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BASF Corporation, Plainville, Massachusetts

Metals	EPA Test Method	Water Reporting Limits [1] (µg/L)
Antimony	3010A/6010A	9
Arsenic	3020A/7060	8
Beryllium	3010A/6010A	1
Cadmium	3010A/6010A	4
Chromium (Total)	3010A/6010A	10
Copper	3010A/6010A	10
Lead	3020A/7421	5
Mercury	7470A/7471	0.2
Nickel	3010A/6010A	20
Selenium	3020A/7740	5
Silver	3010A/6010A	10
Thallium	3020A/7841	10
Zinc	3010A/6010A	20

Note:

(1) The final reporting limit achieved by the laboratory may have been affected by matrix interferences, field blank/method blank contamination, etc.

Table 5.2.4: Deep Bedrock Well Ground Water Analytical Program **DRAFT**
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BASF Corporation, Plainville, Massachusetts

Well Number	Zone	Sample ID	Date Sampled	Lab Report No.	VOCs (1)	Metals (2)	Cyanide (3)
MW22C	DBR	EP-MW22C	10-17-96	7096-2113A	√	√	√
MW24C	DBR	EP-MW24C	10-16-96	7096-2113A	√		
MW24C	DBR	EP-MW24C	10-17-96	7096-2113A		√	√
MW33C	DBR	EP-MW33C	10-18-96	7096-2113A	√[1]	√[1]	√[1]
MW38	DBR	EP-MW38	10-16-96	7096-2113A	√	√	√
MW38 (Dup.)	DBR	EP-MW38-D	10-16-96	7096-2113A	√	√	√
MW39	DBR	EP-MW39	10-15-96	7096-2113A	√	√	√
Trip Blank	na	EP - TB01	10-15-96	7096-2113A	√		
Trip Blank	na	EP - TB02	10-16-96	7096-2113A	√		
Trip Blank	na	EP - TB03	10-17-96	7096-2113A	√		
Field Blank	na	EP - FB01	10-18-96	7096-2113A	√	√	√

Notes:
(1) A list of VOCs analyzed by Method 8260A is presented in Table 2.1.2.
(2) Metals include unfiltered metals only. Specific analytes are listed in Table 2.1.4.
(3) Cyanide analysis was performed by EPA Method 335.4.
(4) "Dup." indicates duplicate sample.
(5) √[1] = sample also used for matrix spike/matrix spike duplicate sample

Table 5.2.5: Round 3 Ground Water Analytical Program **DRAFT**
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Well Number	Zone	Sample ID	Date Sampled	Lab Report No.	VOCs (1)	Metals (2)	PCBs (3)
MW01	OB	EP-MW-01-3	05/06/97	7097-0934B	√	√	
MW02	OB	EP-MW-02-3	05/12/97	7097-0934C	√	√	
MW03	OB	EP-MW-03-3	05/15/97	7097-0934D	√ [1]	√ [1]	
MW04	OB	EP-MW-04-3	05/16/97	7097-0934D	√	√	
MW05	OB	EP-MW-05-3	05/08/97	7097-0934C	√	√	√
MW06	OB	EP-MW-06-3	05/06/97	7097-0934B	√	√	√
MW07	OB	EP-MW-07-3	04/22/97	7097-0934A	√	√	
MW08	OB	EP-MW-08-3	05/02/97	7097-0934B	√	√	
MW09	OB	EP-MW-09-3	04/29/97	7097-0934A	√	√	
MW12	OB	EP-MW-12-3	05/15/97	7097-0934D	√	√	
MW13	BR	EP-MW-13-3	05/06/97	7097-0934C	√	√	
MW14	BR	EP-MW-14-3	05/12/97	7097-0934C	√	√	
MW15	BR	EP-MW-15-3	05/15/97	7097-0934D	√	√	
MW15 dup	BR	EP-MW-15-D-3	05/15/97	7097-0934D	√	√	
MW16	BR	EP-MW-16-3	05/12/97	7097-0934C	√	√	
MW17	BR	EP-MW-17-3	05/14/97	7097-0934D	√	√	
MW18	BR	EP-MW-18-3	05/09/97	7097-0934C	√	√	√
MW19	BR	EP-MW-19-3	05/08/97	7097-0934C	√	√	
MW20A	OB	EP-MW20A-3	04/29/97	7097-0934A	√	√	
MW20B	BR	EP-MW-20B-3	05/07/97	7097-0934C	√	√	
MW21A	OB	EP-MW-21A-3	05/13/97	7097-0934C	√ [1]	√ [1]	
MW21B	BR	EP-MW-21B-3	05/13/97	7097-0934C	√	√	
MW21B dup	BR	EP-MW-21B-D-3	05/13/97	7097-0934C	√	√	
MW22A	OB	EP-MW-22A-3	05/01/97	7097-0934B	√ [1]	√ [1]	
MW22B	BR	EP-MW-22B-3	05/07/97	7097-0934C	√	√	
MW22C	DBR	EP-MW22C-3	04/25/97	7097-0934A	√	√	
MW23A	OB	EP-MW23A-3	04/23/97	7097-0934A	√	√	
MW23B	BR	EP-MW23B-3	04/23/97	7097-0934A	√	√	
MW24A	OB	EP-MW24A-3	04/30/97	7097-0934B	√	√	
MW24B	BR	EP-MW-24B-3	05/05/97	7097-0934B	√	√	
MW24C	DBR	EP-MW24C-3	04/24/97	7097-0934A	√	√	
MW25A	OB	EP-MW-25A-3	05/14/97	7097-0934D	√	√	√ [1]
MW25A dup	OB	EP-MW25AD-3	05/14/97	7097-0934D			√
MW25B	BR	EP-MW-25B-3	05/09/97	7097-0934C	√	√	√
MW26	OB	EP-MW26-3	04/24/97	7097-0934A	√	√	
MW27	BR	EP-MW-27-3	05/07/97	7097-0934C	√	√	√
MW28	OB	EP-MW-28-3	05/13/97	7097-0934D	√	√	√
MW29	BR	EP-MW-29-3	05/14/97	7097-0934D	√	√	
MW30A	OB	EP-MW30A-3	05/02/97	7097-0934B	√	√	
MW30B	BR	EP-MW-30B-3	05/09/97	7097-0934C	√	√	

Table 5.2.5: Round 3 Ground Water Analytical Program **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Well Number	Zone	Sample ID	Date Sampled	Lab Report No.	VOCs (1)	Metals (2)	PCBs (3)
MW31A	OB	EP-MW31A-3	04/28/97	7097-0934A	√	√	
MW31B	BR	EP-MW31B-3	04/30/97	7097-0934B	√	√	
MW32A	OB	EP-MW-32A-3	05/05/97	7097-0934B	√	√	
MW32B	BR	EP-MW-32B-3	05/01/97	7097-0934B	√	√	
MW32B dup	BR	EP-MW-32B-3-D	05/01/97	7097-0934B	√	√	
MW33A	OB	EP-MW33A-3	04/30/97	7097-0934B	√	√	
MW33B	BR	EP-MW-33B-3	05/05/97	7097-0934B	√	√	
MW33C	DBR	EP-MW33C-3	04/24/97	7097-0934A	√	√	
MW34	OB	EP-MW-34-3	05/02/97	7097-0934B	√	√	
MW35	OB	EP-MW35-3	04/25/97	7097-0934A	√	√	
MW36	OB	EP-MW36-3	04/25/97	7097-0934A	√	√	
MW37	BR	EP-MW37-3	04/22/97	7097-0934A	√	√	
MW38	DBR	EP-MW38-3	04/28/97	7097-0934A	√	√	
MW39	DBR	EP-MW39-3	04/23/97	7097-0934A	√	√	
QA/QC Samples							
Trip Blank	na	Trip Blank	04/22/97	7097-0934A	√		
Trip Blank	na	Trip Blank	04/23/97	7097-0934A	√		
Trip Blank	na	Trip Blank	04/24/97	7097-0934A	√		
Trip Blank	na	Trip Blank	04/25/97	7097-0934A	√		
Trip Blank	na	Trip Blank	04/28/97	7097-0934A	√		
Trip Blank	na	Trip Blank	04/29/97	7097-0934B	√		
Trip Blank	na	Trip Blank	04/30/97	7097-0934B	√		
Trip Blank	na	Trip Blank	05/01/97	7097-0934B	√		
Trip Blank	na	Trip Blank	05/02/97	7097-0934B	√		
Trip Blank	na	Trip Blank	05/05/97	7097-0934B	√		
Trip Blank	na	Trip Blank	05/06/97	7097-0934C	√		
Trip Blank	na	Trip Blank	05/07/97	7097-0934C	√		
Trip Blank	na	Trip Blank	05/08/97	7097-0934C	√		
Trip Blank	na	Trip Blank	05/09/97	7097-0934C	√		
Trip Blank	na	Trip Blank	05/12/97	7097-0934C	√		
Trip Blank	na	Trip Blank	05/13/97	7097-0934C	√		
Trip Blank	na	Trip Blank	05/14/97	7097-0934C	√		
Trip Blank	na	Trip Blank	05/15/97	7097-0934C	√		
Trip Blank	na	Trip Blank	05/16/97	7097-0934C	√		
Equip. Blank	na	EP-MW32B-EB-3	05/02/97	7097-0934B	√	√	
Equip. Blank	na	EP-MW16B-EB-3	05/12/97	7097-0934C	√	√	√
Equip. Blank	na	EP-MW15B-EB-3	05/16/97	7097-0934D	√	√	√

Table 5.2.5: Round 3 Ground Water Analytical Program **DRAFT**
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Well Number	Zone	Sample ID	Date Sampled	Lab Report No.	VOCs (1)	Metals (2)	PCBs (3)

Notes:

OB = Overburden Zone
BR = Bedrock Zone
DBR = Deep Bedroock Zone
VOCs = Volatile Organic Compounds
PCBs = Polychlorinated Biphenyls
(1) A list of VOCs analyzed by EPA Method 8260A is presented in Table 4.1.2.
(2) Metals include unfiltered metals only. Specific analytes are listed in Table 4.1.4.
(3) PCB analytes are presented in Table 4.1.5.
√ [1] =MS/MSD Sample

Table 5.2.6: Round 4 Ground Water Analytical Program **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Well Number	Sample ID	Date Sampled	Lab Report No.	VOCs (1)	Metals (2)	PCBs (3)
MW01	EP-MW01-4	08/19/97	7097-1863A	√	√	
MW02	EP-MW02-4	08/21/97	7097-1863B	√	√	
MW03	EP-MW03-4	09/02/97	7097-1863C	√	√	
MW04	EP-MW04-4	09/09/97	7097-1863D	√	√	
MW05	EP-MW05-4	08/28/97	7097-1863C	√	√	√
MW06	EP-MW06-4	08/19/97	7097-1863A	√	√	√
MW07	EP-MW07-4	08/12/97	7097-1863A	√	√	
MW08	EP-MW08-4	08/26/97	7097-1863B	√	√	
MW09	EP-MW09-4	08/15/97	7097-1863A	√	√	
MW12	EP-MW12-4	09/03/97	7097-1863C	√	√	
MW13	EP-MW13-4	08/27/97	7097-1863B	√	√	
MW14	EP-MW14-4	09/09/97	7097-1863D	√	√	
MW15	EP-MW15-4	09/08/97	7097-1863D	√	√	
MW16	EP-MW16-4	09/09/97	7097-1863D	√	√	
MW17	EP-MW17-4	09/08/97	7097-1863D	√	√	
MW17 dup	EP-MW17-D-4	09/08/97	7097-1863D	√	√	
MW18	EP-MW18-4	08/28/97	7097-1863B	√	√	√
MW19	EP-MW19-4	09/04/97	7097-1863C	√	√	
MW20A	EP-MW20A-4	08/27/97	7097-1863B	√	√	
MW20B	EP-MW20B-4	08/26/97	7097-1863B	√	√	
MW21A	EP-MW21A-4	09/04/97	7097-1863C	√	√	
MW21B	EP-MW21B-4	09/05/97	7097-1863D	√	√	
MW22A	EP-MW22A-4	08/29/97	7097-1863C	√	√	
MW22B	EP-MW22B-4	08/28/97	7097-1863C	√	√	
MW22C	EP-MW22C-4	08/18/97	7097-1863A	√	√	
MW23A	EP-MW23A-4	08/13/97		√	√	
MW23B	EP-MW23B-4	08/13/97	7097-1863A	√	√	
MW24A	EP-MW24A-4	08/29/97	7097-1863C	√	√	
MW24B	EP-MW24B-4	08/22/97	7097-1863B	√	√	
MW24B dup	EP-MW24B-D-4	08/22/97	7097-1863B	√	√	
MW24C	EP-MW24C-4	08/21/97	7097-1863B	√	√	
MW25A	EP-MW25A-4	09/04/97	7097-1863C	√	√	√
MW25B	EP-MW25B-4	09/02/97	7097-1863C	√	√	√
MW26	EP-MW26-4	08/25/97	7097-1863B	√	√	
MW27	EP-MW27-4	09/03/97	7097-1863C	√	√	√
MW27 dup	EP-MW27D-4	09/03/97	7097-1863C	√	√	√
MW28	EP-MW28-4	09/08/97	7097-1863D	√	√	√
MW29	EP-MW29-4	09/05/97	7097-1863D	√	√	
MW30A	EP-MW30A-4	08/21/97	7097-1863A	√	√	
MW30B	EP-MW30B-4	09/02/97	7097-1863C	√	√	
MW31A	EP-MW31A-4	08/14/97	7097-1863A	√	√	
MW31B	EP-MW31B-4	08/18/97	7097-1863A	√	√	
MW32A	EP-MW32A-4	08/21/97	7097-1863B	√	√	

Table 5.2.6: Round 4 Ground Water Analytical Program **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Well Number	Sample ID	Date Sampled	Lab Report No.	VOCs (1)	Metals (2)	PCBs (3)
MW32B	EP-MW32B-4	08/25/97	7097-1863B	√	√	
MW33A	EP-MW33A-4	08/20/97	7097-1863A	√	√	
MW33B	EP-MW33B-4	08/27/97	7097-1863B	√	√	
MW33C	EP-MW33C-4	08/15/97	7097-1863A	√	√	
MW34	EP-MW34-4	09/02/97	7097-1863C	√	√	
MW35	EP-MW35-4	08/29/97	7097-1863C	√	√	
MW36	EP-MW36-4	08/13/97	7097-1863A	√	√	
MW37	EP-MW37-4	08/12/97	7097-1863A	√	√	
MW38	EP-MW38-4	08/22/97	7097-1863B	√	√	
MW39	EP-MW39-4	08/14/97	7097-1863A	√	√	
QA/QC SAMPLES						
Trip Blank	TB-01	08/13/97	7097-1863A	√		
Trip Blank	TB-02	08/14/97	7097-1863A	√		
Trip Blank	Trip Blank	08/15/97	7097-1863A	√		
Trip Blank	Trip Blank	08/18/97	7097-1863A	√		
Trip Blank	Trip Blank	08/20/97	7097-1863A	√		
Trip Blank	Trip Blank	08/21/97	7097-1863B	√		
Trip Blank	EP-TB082297-4	08/22/97	7097-1863B	√		
Trip Blank	Trip Blank	08/25/97	7097-1863B	√		
Trip Blank	Trip Blank	08/26/97	7097-1863B	√		
Trip Blank	Trip Blank	08/27/97	7097-1863B	√		
Trip Blank	Trip Blank	08/28/97	7097-1863C	√		
Trip Blank	Trip Blank	08/29/97	7097-1863C	√		
Trip Blank	Trip Blank	09/02/97	7097-1863C	√		
Trip Blank	Trip Blank	09/03/97	7097-1863C	√		
Trip Blank	Trip Blank	09/04/97	7097-1863D	√		
Trip Blank	Trip Blank	09/05/97	7097-1863D	√		
Trip Blank	Trip Blank	09/08/97	7097-1863D	√		
Trip Blank	Trip Blank	09/09/97	7097-1863D	√		
Equip. Blank	EP-MW26-EB-4	08/25/97	7097-1863B	√	√	
Equip. Blank	EP-MW25A-EB-	09/05/97	7097-1863D	√	√	
Equip. Blank	EP-MW14-EB-4	09/09/97	7097-1863D	√	√	√

Notes:

OB = Overburden Zone
BR = Bedrock Zone
DBR = Deep Bedroock Zone
VOCs = Volatile Organic Compounds
PCBs = Polychlorinated Biphenyls
(1) A list of VOCs analyzed by EPA Method 8260A is presented in Table 4.1.2.
(2) Metals include unfiltered metals only. Specific analytes are listed in Table 4.1.4.
(3) PCB analytes are presented in Table 4.1.5.
√ [1] =MS/MSD Sample

Table 5.3.1: RFI Phase II Soil Gas Sampling Results **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

SAMPLE LOCATION:	**SG94**	**SG94RE**	**SG95**	**SG96**	**SG97**	**SG98**	**SG99**	**SG100**	**SG101**
TOP OF SCREEN (feet bgs)	**2.0**	**2.0**	**1.5**	**1.7**	**1.8**	**2.0**	**1.5**	**1.3**	**1.5**
BOTTOM OF SCREEN (feet bgs)	**2.5**	**2.5**	**2.0**	**2.2**	**2.1**	**2.5**	**2.0**	**1.8**	**2.0**
DATE SAMPLED:	**11/5/1997**	**11/5/1997**	**11/5/1997**	**11/5/1997**	**11/5/1995**	**11/5/1997**	**11/5/1997**	**11/5/1997**	**11/5/1997**
UNITS:	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**
OVM	8.1	8.1	26.0	10.0	1.6	20.1	9.0	10.1	4.0
1,1,1-Trichloroethane	140	130	350	71	19	610	150	130	4.5
Trichloroethene	20	18	41	9.3	9.0	610	160	79	1.0 U
Tetrachloroethene	2,100	1,800	5,300	420	440	6,500	1,400	3,600	810

Notes:

"NA" = Information not available to ENVIRON
"bgs" = Below ground surface
"OVM" = Organic Vapor Meter Reading
"EQPT/BLK" = Indicates an equipment blank taken from the steam cleaned pipe
"RE" = Indicates a replicate analysis of a sample vile for precision information
"DUP" = Indicates duplicate sample
"DUP*P" = Indicates a reinstalled soil gas point
"PRES" = Tentative Identification
"--" indicates compound not detected above detection limit

Table 5.3.1: RFI Phase II Soil Gas Sampling Results
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

SAMPLE LOCATION:	**SG102**	**SG103DUP**	**SG103RE**	**SG104**	**SG105**	**SG106**	**SG106DUP*P**	**SG106DUP*P**
TOP OF SCREEN (feet bgs)	**1.8**	**1.7**	**1.7**	**1.9**	**1.6**	**1.6**	**1.6**	**1.6**
BOTTOM OF SCREEN (feet bgs)	**2.3**	**2.2**	**2.2**	**2.4**	**2.1**	**2.1**	**2.1**	**2.1**
DATE SAMPLED:	**11/5/1997**	**11/6/1997**	**11/6/1997**	**11/6/1997**	**11/6/1997**	**11/6/1997**	**11/6/1997**	**11/6/1997**
UNITS:	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**
OVM	8.2	242	214	89	55	54	102	102
1,1,1-Trichloroethane	160	1,100	1,100	240	760	530	1,100	1,700
Trichloroethene	230	1,200	1,300	120	340	1,100	1,700	1,400
Tetrachloroethene	1,700	340,000	460,000	7,800	7,500	160,000	430,000	380,000

Notes:

"NA" = Information not available to ENVIRON
"bgs" = Below ground surface
"OVM" = Organic Vapor Meter Reading
"EQPT/BLK" = Indicates an equipment blank taken from the steam cleaned pipe
"RE" = Indicates a replicate analysis of a sample vile for precision information
"DUP" = Indicates duplicate sample
"DUP*P" = Indicates a reinstalled soil gas point
"PRES" = Tentative Identification
"--" indicates compound not detected above detection limit

Table 5.3.1: RFI Phase II Soil Gas Sampling Results
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

SAMPLE LOCATION:	**SG107**	**SG108**	**SG108RE**	**SG109**	**SG110**	**SG111**	**SG112**	**EQPT/BLK**
TOP OF SCREEN (feet bgs)	**1.5**	**1.7**	**1.7**	**2.0**	**1.5**	**1.6**	**1.5**	**--**
BOTTOM OF SCREEN (feet bgs)	**2.0**	**2.2**	**2.2**	**2.5**	**2.0**	**2.1**	**2.0**	**--**
DATE SAMPLED:	**11/6/1997**	**11/6/1997**	**11/6/1997**	**11/6/1997**	**11/6/1997**	**11/6/1997**	**11/6/1997**	**11/6/1997**
UNITS:	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**	**ppbv**
OVM	48	43	43	37	43	84	37	N/A
1,1,1-Trichloroethane	240	160	160	260	530	1,100	40	--
Trichloroethene	250	240	200	380	200	1,800	8.0	1.1
Tetrachloroethene	2,700	2,000	1,900	3,300	7,000	230,000	542	40

Notes:

"NA" = Information not available to ENVIRON
"bgs" = Below ground surface
"OVM" = Organic Vapor Meter Reading
"EQPT/BLK" = Indicates an equipment blank taken from the steam cleaned pipe
"RE" = Indicates a replicate analysis of a sample vile for precision information
"DUP" = Indicates duplicate sample
"DUP*P" = Indicates a reinstalled soil gas point
"PRES" = Tentative Identification
"--" indicates compound not detected above detection limit

Table 5.4.1: Round 3 Surface Water Analytical Program **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Sample Location	Sample ID	Date Sampled	Laboratory SDG No.	VOCs (1)	Metals (2)	PCBs (3)	Major Anions/ Cations (4)	Water Quality (5)
Surface Water Samples from Unnamed Streams								
SW-01	EP-SW-01-3	5/18/1997	1130A	√ 1	√ 1	√ 1	√ 1	√ 1
SW-02	EP-SW-02-03	5/20/1997	1130A	√	√	√	√	√
SW-03	EP-SW-03-03	5/20/1997	1130A	√	√	√	√	√
SW-04	EP-SW-04-03	5/20/1997	1130A	√	√	√	√	√
Surface Water Sample from Below Spillway								
SW-05	EP-SW-05-03	5/20/1997	1130A	√2	√	√	√	√
SW-05	EP-SW-05-R-03	6/5/1997	1324	√				
Lake Surface Water Samples								
SW-06	EP-SW-06-03	5/20/1997	1130A		√	√	√	√
SW-07	EP-SW-07-3	5/19/1997	1130A		√	√	√	√
Lake Surface Water Sample - Northwest Outlet								
SW-08	EP-SW-08-3	5/18/1997	1130A		√	√	√	√
Background Surface Water Samples - Turnpike Lake								
SW-09A	EP-SW-9A-3	5/19/1997	1130A		√	√	√	√
SW-10A	EP-SW-10A-3	5/19/1997	1130A		√	√	√	√
SW-12	EP-SW-12-3	5/19/1997	1130A		√	√	√	√
SW-13	EP-SW-13-3	5/19/1997	1130A		√	√	√	√
Inlet Lake Mirimichi								
SW-11	EP-SW-11-3	5/19/1997	1130A	√	√	√	√	√
SW-11 Dup.	EP-SW-11-D-3	5/19/1997	1130A	√	√	√	√	√
QA/QC Samples								
Equip. Blank	EP-SW-06-EB-03	5/20/1997	1130A	√	√	√	√	√
Trip Blank	TB 051997	5/19/1997	1130A	√				
Trip Blank	TB 052097	5/20/1997	1130A	√				
Trip Blank	TB 060597	6/5/1997	1324A	√				

Notes:

(1) VOCs - Volatile organic compounds by EPA Method 8260A. Table 4.1.2 presents the list of analytes.
(2) Metals - Priority Pollutant Metals. Table 4.1.4 presents the list of analytes.
(3) PCBs - Polychlorinated biphenyls. Table 4.1.5 presents the list of analytes.
(4) Major Cations and Anions.
(5) Water Quality Parameters.

X^1 - Matrix spike and matrix spike duplicate conducted on this sample.

X^2 - Laboratory broke sample containers for VOC analysis; resampled on June 5, 1997.

Table 5.4.2: Round 4 Surface Water Analytical Program **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Sample Location	Sample ID	Date Sampled	Laboratory SDG No.	VOCs (1)	Metals (2)	PCBs (3)	Major Anions/ Cations (4)	Water Quality (5)
Surface Water Samples from Unnamed Streams								
SW-01	EP-SW-01-4	9/11/1997	2216A	√ [1]	√ [1]	√ [1]	√ [1]	√ [1]
SW-02	EP-SW-02-04	9/11/1997	2216A	√	√	√	√	√
SW-03	EP-SW-03-04	NA[2]						
SW-04	EP-SW-04-04	9/11/1997	2216A	√	√	√	√	√
SW-04	EP-SW-04-04 dup	9/11/1997	2216A	√	√	√	√	√
Surface Water Sample from Below Spillway								
SW-05	EP-SW-05-04	NA[2]						
Lake Surface Water Samples								
SW-06	EP-SW-06-4	9/10/1997	2216A		√	√	√	√
SW-07	EP-SW-07-4	9/10/1997	2216A		√	√	√	√
Lake Surface Water Sample - Northwest Outlet								
SW-08	EP-SW-08-4	9/10/1997	2216A		√	√	√	√
Background Surface Water Samples - Turnpike Lake								
SW-09A	EP-SW-9A-4	9/10/1997	2216A		√	√	√	√
SW-10A	EP-SW-10A-4	9/10/1997	2216A		√	√	√	√
SW-12	EP-SW-12-4	9/10/1997	2216A		√	√	√	√
SW-13	EP-SW-13-4	NA[2]						
Inlet Lake Mirimichi								
SW-11	EP-SW-11-4	9/10/1997	2216A	√	√	√	√	√
QA/QC Samples								
Equip. Blank	EP-SW-04-EB-04	9/11/1997	2216A	√	√	√	√	√
Trip Blank	TB 091097	9/10/1997	2216A	√				
Trip Blank	TB091197	9/11/1997	2216A	√				

Notes:
(1) VOCs - Volatile organic compounds by EPA Method 8260A. Table 2.1.2 presents the list of analytes.
(2) Metals - Priority Pollutant Metals. Table 2.1.4 presents the list of analytes.
(3) PCBs - Polychlorinated biphenyls. Table 2.1.5 presents the list of analytes.
(4) Major Cations and Anions.
(5) Water Quality Parameters.
1 - Matrix spike and matrix spike duplicate was conducted on this sample.
2 - NA - Not analyzed because it was not possible to sample. See field dailies for explanation.

Table 5.5.1: RFI Phase II Sediment Sampling Program **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Sample Location	Sample ID	Laboratory SDG Number	Sample Collection Date	Analyses						
				VOCs(1)	Metals (2)	Total Organic Carbon	Cation Exchange Capacity	pH	Moisture Content	Physical Test Samples (3)
Sediment Samples from Unnamed Streams										
SD-02	EP-SD-02-2	0826A	04-15-97		√				√	
SD-39	EP-SD-39-2	0826A	04-15-97	√*	√*	√*	√*	√*	√*	√
SD-39 duplicate	EP-SD-39-2-D	0826A	04-15-97	√	√	√	√	√	√	
SD-40	EP-SD-40-2	0826A	04-15-97	√	√	√	√	√	√	√
Sediment Samples from Turnpike Lake - South Embayment										
SD-14	EP-SD-14-2	0826A	04-15-97		√				√	
SD-22	EP-SD-22-2	0826A	04-15-97		√				√	
SD-25	EP-SD-25-2	0826A	04-15-97		√				√	
SD-38	EP-SD-38-2	0826A	04-15-97		√	√	√	√	√	√
Background Lake Sediment Samples										
SD-09A	EP-SD-09A-2	0826A	04-15-97		√	√	√	√	√	√
SD-10A	EP-SD-10A-2	0826A	04-15-97		√				√	
QA/QC samples										
Trip Blank	Trip Blank	0826A	04-15-97	√						
Equipment Blank	EP-SD-09A-2-EB	0826A	04-15-97		√	√		√		
Equipment Blank	EP-SD-22-2-EB	0826A	04-15-97		√					

Notes:

(1) Samples were analyzed for volatile organic compounds by EPA Test Method 8260. Table 4.1.2 presents the list of analytes.
(2) Samples were analyzed for priority pollutant metals. Table 4.1.4 presents the list of analytes.
(3) Samples for physical testing were analyzed for soil classification by ASTM D2487, grain size distributed by ASTM D422, Atterburg Limits by ASTM D4318, and dry density by ASTM D4564.
(4) * indicates sample was used for matrix spike/matrix spike duplicate.
(5) "D" in sample ID indicates duplicate sample.
(6) "EB" in sample ID indicates equipment blank.

Table 5.6.1: RFI Phase II Fish Tissue Analytical Program DRAFT
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Sample Location	Species	Type	Sample ID	Laboratory SDG No.	Date Sampled	Matrix	Metals	PCBs	Lipids
South Embayment	game	muscle	EP-FTM-SE-GS-002	59230	6/18/1996	tissue	X	X	X
South Embayment	game	muscle	EP-FTM-SE-GS-003	59242	6/18/1996	tissue	X	X	X
South Embayment	game	muscle	EP-FTM-SE-GS-004	59242	6/18/1996	tissue	X	X	X
South Embayment	game	muscle	EP-FTM-SE-GS-005a	59242	6/18/1996	tissue	X	X	X
South Embayment	game	muscle (dup)	EP-FTM-SE-GS-005b	59242	6/18/1996	tissue	X	X	X
South Embayment	game	offal	EP-FTO-SE-GS-002	59230	6/18/1996	tissue	X	X	X
South Embayment	game	offal	EP-FTO-SE-GS-003	59242	6/18/1996	tissue	X	X	X
South Embayment	game	offal	EP-FTO-SE-GS-004	59242	6/18/1996	tissue	X	X	X
South Embayment	game	offal	EP-FTO-SE-GS-005a	59230	6/18/1996	tissue	X	X	X
South Embayment	game	offal (dup)	EP-FTO-SE-GS-005b	59230	6/18/1996	tissue	X	X	X
South Embayment	prey	whole	EP-FTW-SE-PS-001	59230	6/18/1996	tissue	X	X	X
South Embayment	prey	whole	EP-FTW-SE-PS-002	59230	6/18/1996	tissue	X	X	X
South Embayment	prey	whole	EP-FTW-SE-PS-003	59230	6/18/1996	tissue	X	X	X
South Embayment	prey	whole	EP-FTW-SE-PS-004	59230	6/18/1996	tissue	X	X	X
South Embayment	prey	whole	EP-FTW-SE-PS-005	59230	6/18/1996	tissue	X	X	X
South Embayment	bottom feeder	muscle	EP-FTM-SE-BF-001a	59230	6/19/1996	tissue	X	X	X
South Embayment	bottom feeder	muscle (dup)	EP-FTM-SE-BF-001b	59230	6/19/1996	tissue	X	X	X
South Embayment	bottom feeder	muscle	EP-FTM-SE-BF-002	59460	6/25/1996	tissue	X	X	X
South Embayment	bottom feeder	muscle	EP-FTM-SE-BF-003	59460	6/26/1996	tissue	X	X	X
South Embayment	bottom feeder	muscle	EP-FTM-SE-BF-004	59460	6/26/1996	tissue	X	X	X
South Embayment	bottom feeder	muscle	EP-FTM-SE-BF-005	59460	7/3/1996	tissue	X	X	X
South Embayment	bottom feeder	offal	EP-FTO-SE-BF-001	59242	6/19/1996	tissue	X[1]	X[1]	X[1]
South Embayment	bottom feeder	offal	EP-FTO-SE-BF-002	59460	6/25/1996	tissue	X	X	X
South Embayment	bottom feeder	offal	EP-FTO-SE-BF-003a	59460	6/26/1996	tissue	X	X	X
South Embayment	bottom feeder	offal (dup)	EP-FTO-SE-BF-003b	59460	6/26/1996	tissue	X	X	X
South Embayment	bottom feeder	offal	EP-FTO-SE-BF-004	59460	6/26/1996	tissue	X[1]	X[1]	X[1]
South Embayment	bottom feeder	offal	EP-FTO-SE-BF-005	59460	7/3/1996	tissue	X	X	X
Private Impoundment	game	muscle	EP-FTM-PI-GS-001	59242	6/19/1996	tissue	X[1]	X[1]	X[1]
Private Impoundment	game	offal	EP-FTO-PI-GS-001	59230	6/19/1996	tissue	X	X	X
Old Mill Pond	game	muscle	EP-FTM-MP-GS-001	59230	6/18/1996	tissue	X	X	X

Table 5.6.1: RFI Phase II Fish Tissue Analytical Program DRAFT
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BASF Corporation, Plainville, Massachusetts

Sample Location	Species	Type	Sample ID	Laboratory SDG No.	Date Sampled	Matrix	Metals	PCBs	Lipids
Old Mill Pond	game	muscle	EP-FTM-MP-GS-002	59230	6/19/1996	tissue	X	X	X
Old Mill Pond	game	muscle	EP-FTM-MP-GS-003	59242	6/20/1996	tissue	X	X	X
Old Mill Pond	game	muscle	EP-FTM-MP-GS-004	59242	6/20/1996	tissue	X	X	X
Old Mill Pond	game	muscle	EP-FTM-MP-GS-005	59242	6/21/1996	tissue	X[1]	X[1]	X[1]
Old Mill Pond	game	offal	EP-FTO-MP-GS-001	59230	6/18/1996	tissue	X	X	X
Old Mill Pond	game	offal	EP-FTO-MP-GS-002a	59230	6/19/1996	tissue	X	X	X
Old Mill Pond	game	offal (dup)	EP-FTO-MP-GS-002b	59230	6/19/1996	tissue	X	X	X
Old Mill Pond	game	offal	EP-FTO-MP-GS-003	59242	6/20/1996	tissue	X	X	X
Old Mill Pond	game	offal	EP-FTO-MP-GS-004	59242	6/20/1996	tissue	X	X	X
Old Mill Pond	game	offal	EP-FTO-MP-GS-005	59242	6/21/1996	tissue	X	X	X
Old Mill Pond	bottom feeder	muscle	EP-FTM-MP-BF-001	59242	6/18/1996	tissue	X	X	X
Old Mill Pond	bottom feeder	muscle	EP-FTM-MP-BF-002	59242	6/18/1996	tissue	X	X	X
Old Mill Pond	bottom feeder	muscle	EP-FTM-MP-BF-003	59230	6/18/1996	tissue	X	X	X
Old Mill Pond	bottom feeder	muscle	EP-FTM-MP-BF-004	59242	6/18/1996	tissue	X	X	X
Old Mill Pond	bottom feeder	muscle	EP-FTM-MP-BF-005	59230	6/19/1996	tissue	X	X	X
Old Mill Pond	bottom feeder	offal	EP-FTO-MP-BF-001	59242	6/18/1996	tissue	X	X	X
Old Mill Pond	bottom feeder	offal	EP-FTO-MP-BF-002	59242	6/18/1996	tissue	X	X	X
Old Mill Pond	bottom feeder	offal	EP-FTO-MP-BF-003	59230	6/18/1996	tissue	X	X	X
Old Mill Pond	bottom feeder	offal	EP-FTO-MP-BF-004	59242	6/18/1996	tissue	X	X	X
Old Mill Pond	bottom feeder	offal	EP-FTO-MP-BF-005	59230	6/19/1996	tissue	X[1]	X[1]	X[1]
South Embayment	-	equipment rinsate	EP-FEB-SE-TB-002	59230	6/18/96	water	X	X	(2)
South Embayment	-	equipment rinsate	EP-FEB-SE-TB-005	59460	6/25/1996	water	X	X	(2)
South Embayment	-	equipment rinsate	EP-FEB-SE-TB-006	59460	7/3/96	water	X	X	(2)
Private Impoundment	-	equipment rinsate	EP-FEB-PI-TB-004	59230	6/19/96	water	X	X	(2)

Notes:

1. MS/MSD samples
2. These samples were not analyzed for lipids because they are composed of deionized water, which would not produce a meaningful value.

Table 5.6.2: RFI Phase II Fish Sampling Program -- Summary of Field Measurements DRAFT
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Sample Location	Fish Class	Species	Sample ID	Date Sampled	Fish Length (mm)	Weight (g)	Total Fillet Weight (g)	Total Offal Weight (g)
South Embayment	large mouth bass	game	EP-FTM-SE-GS-002 EP-FTO-SE-GS-002	6/18/1996	315	425.5	113.8	300.8
South Embayment	large mouth bass	game	EP-FTM-SE-GS-003 EP-FTO-SE-GS-003	6/18/1996	200	109.9	32.3	76.5
South Embayment	yellow perch	game	EP-FTM-SE-GS-004 EP-FTO-SE-GS-004	6/18/1996	205	123.1	40.9	76.3
South Embayment	large mouth bass	game	EP-FTM-SE-GS-005a EP-FTO-SE-GS-005a	6/18/1996	465	1580.4	255.8	471.0
South Embayment	large mouth bass	game	EP-FTM-SE-GS-005b EP-FTO-SE-GS-005b	6/18/1996			255.2	598.4
South Embayment	blue gill	prey	EP-FTW-SE-PS-001	6/18/1996	192	163.2		
South Embayment	blue gill	prey	EP-FTW-SE-PS-002	6/18/1996	190	132.2		
South Embayment	red ear gravid female	prey	EP-FTW-SE-PS-003	6/18/1996	165	99.6		
South Embayment	red ear gravid female	prey	EP-FTW-SE-PS-004	6/18/1996	175	111.0		
South Embayment	blue gill	prey	EP-FTW-SE-PS-005	6/18/1996	180	110.8		
South Embayment	bullhead	bottom feeder	EP-FTM-SE-BF-001a EP-FTO-SE-BF-001	6/19/1996	345	605.4	74.3	432
South Embayment			EP-FTM-SE-BF-001b				98.9	
South Embayment	bullhead	bottom feeder	EP-FTM-SE-BF-002 EP-FTO-SE-BF-002	6/25/1996	300	351.5	103.5	236.1
South Embayment	bullhead	bottom feeder	EP-FTM-SE-BF-003 EP-FTO-SE-BF-003a	6/26/1996	295	378.2	100.7	268.8
			EP-FTO-SE-BF-003b[1]					
South Embayment [2]	bullhead	bottom feeder	EP-FTM-SE-BF-004 EP-FTO-SE-BF-004	6/26/1996	350	467.5	127.4	336.7
South Embayment	bullhead	bottom feeder	EP-FTM-SE-BF-005 EP-FTO-SE-BF-005	7/3/1996	310	420.4	112.4	290.9
Private Impoundment	pickerel	game	EP-FTM-PI-GS-001 EP-FTO-PI-GS-001	6/19/1996	305	180.1	52.7	119.6

Table 5.6.2: RFI Phase II Fish Sampling Program -- Summary of Field Measurements DRAFT
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Sample Location	Fish Class	Species	Sample ID	Date Sampled	Fish Length (mm)	Weight (g)	Total Fillet Weight (g)	Total Offal Weight (g)
Old Mill Pond	large mouth bass	game	EP-FTM-MP-GS-001 EP-FTO-MP-GS-001	6/18/1996	255	219.6	58.5	158.4
Old Mill Pond	pickerel	game	EP-FTM-MP-GS-002 EP-FTO-MP-GS-002a	6/19/1996	360	253.3	95.8	150.1
			EP-FTO-MP-GS-002b[1]					
Old Mill Pond	large mouth bass	game	EP-FTM-MP-GS-003 EP-FTO-MP-GS-003	6/20/1996	287	273.9	88.5	180.7
Old Mill Pond	large mouth bass	game	EP-FTM-MP-GS-004 EP-FTO-MP-GS-004	6/20/1996	340	618	149.7	468.3
Old Mill Pond	pickerel	game	EP-FTM-MP-GS-005 EP-FTO-MP-GS-005	6/21/1996	354	343.9	126.0	23.5
Old Mill Pond	bullhead	bottom feeder	EP-FTM-MP-BF-001 EP-FTO-MP-BF-001	6/18/1996	260	235.6	55.6	170
Old Mill Pond	bullhead	bottom feeder	EP-FTM-MP-BF-002 EP-FTO-MP-BF-002	6/18/1996	255	222.7	58.2	164.5
Old Mill Pond	bullhead	bottom feeder	EP-FTM-MP-BF-003 EP-FTO-MP-BF-003	6/18/1996	265	273	69.7	172.2
Old Mill Pond	bullhead	bottom feeder	EP-FTM-MP-BF-004 EP-FTO-MP-BF-004	6/18/1996	240	207.9	51.8	153.9
Old Mill Pond	bullhead	bottom feeder	EP-FTM-MP-BF-005 EP-FTO-MP-BF-005	6/19/1996	250	241.3	58.5	176.7

Notes:
1. Sample was duplicated in the laboratory.
2. Some chafing was observed on the fish as a result of the fish becoming entangled in the net.

Table 5.9.1: Percent Completeness Achieved for Chemical Analytical Data **DRAFT**
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Medium and Chemical Category	Percent Completeness Achieved
Soil	
Volatile Organic Compounds	100%
Metals	94%
Polychlorinated Biphenyls	100%
Ground Water - Round 3	
Volatile Organic Compounds	100%
Metals	94%
Polychlorinated Biphenyls	100%
Ground Water - Round 4	
Volatile Organic Compounds	99%
Metals	100%
Polychlorinated Biphenyls	100%
Surface Water - Round 3	
Volatile Organic Compounds	98%
Metals	100%
Major Cations/Anions	100%
Water Quality Parameters	100%
Polychorinated Biphenyls	100%
Surface Water - Round 4	
Volatile Organic Compounds	99%
Metals	100%
Major Cations/Anions	99%
Water Quality Parameters	99%
Polychorinated Biphenyls	100%
Sediments	
Volatile Organic Compounds	87%
Metals	100%
Fish	
Metals	100%
Polychlorinated Biphenyls	100%
Lipid Content	100%

Table 6.1.1: Supplemental RFI Soil Sampling Program
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Soil Boring	Sample ID	Date Collected	Lab Report No.	Analyses[1] VOC	SVOC	PCB	PPM	TOC
SB-50	AOCA1 SB1-1-1	10-10-05	L0512119	√		√	√	
SB-50	AOCA1 SB1-2-7	10-10-05	L0512119	√		√	√	
SB-50	AOCA1 SB1-3-9	10-10-05	L0512119	√		√	√	
SB-51	AOCA1 SB2-1-1	10-11-05	L0512119	√		√	√	
SB-51	AOCA1 SB2-2-5	10-11-05	L0512119	√		√	√	
SB-51	AOCA1 SB2-3-9	10-11-05	L0512119	√		√	√	
SB-52	AOCA1 SB2-3-9 (dup)	10-11-05	L0512119	√		√	√	
SB-52	AOCA1 SB3-1-1	10-10-05	L0512119	√		√	√	
SB-52	AOCA1 SB3-2-7	10-10-05	L0512119	√		√	√	
SB-52	AOCA1 SB3-3-9	10-10-05	L0512119	√		√	√	
SB-53	SB-4-0-2	11-10-05	L0513787	√	√		√	
SB-53	SB-4-4-6	11-10-05	L0513787	√	√		√	
SB-53	SB-4-8-10	11-10-05	L0513787	√	√		√	
SB-54	SB-3-0-2	11-10-05	L0513787	√	√		√	
SB-54	SB-3-3-5	11-10-05	L0513787	√	√		√	
SB-54	SB-3-7.5-9.5	11-10-05	L0513787	√	√		√	
SB-54	SB-3-7.5-9.5 (dup)	11-10-05	L0513787	√	√		√	
SB-55	AOC14 SB2-1-10	10-24-05	L0512756	√			√	
SB-55	AOC14 SB2-1-10 (dup)	10-24-05	L0512756	√			√	
SB-55	AOC14 SB2-16	10-24-05	L0512756	√			√	
SB-56	AOC14 SB1-1-9	10-21-05	L0512684	√			√	
SB-56	AOC14 SB1-2-15	10-21-05	L0512684	√			√	
SB-56	AOC14 SB1-2-15 (dup)	10-21-05	L0512684	√			√	
SB-57	SB-220-0.5-2	09-14-05	L0510808	√	√		√	
SB-57	SB-220-2-4	09-14-05	L0510808	√	√		√	
SB-57	SB-220-6-8	09-14-05	L0510808	√	√		√	
SB-57	SB-220-10-11.5	09-14-05	L0510808	√	√		√	
SB-57	SB-220-12-14	09-14-05	L0510808					√
SB-58	AOC 30 SB-1-6	11-14-05	L0514001			√		
SB-59	AOC 30 SB-2-5	11-14-05	L0514001			√		
MW-12B	MW12B-A	09-23-05	L0511458					√
	MW12B-B	09-23-05	L0511458					√
MW-45B	MW-45B-12-14	09-16-05	L0510956					√
	MW-45B-22-23.5	09-16-05	L0510956					√
		AOC 30 Concrete Pit Samples						
AOC30	AOC30-2S	10-05-05	L0511851	√				
	AOC30-2N	10-05-05	L0511851	√				
	AOC30-1	10-04-05	L0511859	√				
		Surface Soil Samples						
	AOCA-1SS-01	12/05/05	L0514775	√		√	√	
	AOCA-1SS-01 (dup)	12/05/05	L0514775	√		√	√	
	AOCA-1SS-02	12/05/05	L0514775	√		√	√	
	AOCA-1SS-03	12/05/05	L0514775	√		√	√	
		Floodplain Soil Samples						
	FS-SD-01	06/01/10	L1008325				√	
	FS-SD-50	06/01/10	L1008325				√	
	FS-SD-204	06/01/10	L1008325				√	
	FS-SD-209	06/01/10	L1008325				√	

Table 6.1.1: Supplemental RFI Soil Sampling Program
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Soil Boring	Sample ID	Date Collected	Lab Report No.	Analyses[1] VOC	SVOC	PCB	PPM	TOC
	FS-TRIB-LB	06/03/10	L1008325				√	
	FS-TRIB-RB	06/03/10	L1008325				√	
		Quality Control Samples						
Equip. Blank	EB-220	09/14/05	L0510808	√			√	
Equip. Blank	EB-1	10/05/05	L0511851	√				
Equip. Blank	AOCA1 SB2-EB	10/11/05	L0512119	√		√	√	
Equip. Blank	AOC 14 SB1-EB	10/21/05	L0512684	√			√	
Equip. Blank	AOC14 SB2 EB	10/24/05	L0512756	√			√	
Equip. Blank	Equip	11/10/05	L0513787	√			√	
Equip. Blank	AOCA-1 SS-03E	12/05/05	L0514775	√		√	√	
Field Blank	FB-091505	09/15/05	L0510808	√				
Trip Blank	TB-091405	09/14/05	L0510808	√				
Trip Blank	Trip Blank	10/05/05	L0511851	√				
Trip Blank	Trip Blank	10/11/05	L0512119	√				
Trip Blank	Trip Blank	10/21/05	L0512684	√				
Trip Blank	Trip Blank	10/24/05	L0512756	√				
Trip Blank	Trip	11/10/05	L0513787	√				
Trip Blank	Trip Blank	12/05/05	L0514775	√				
Trip Blank	Trip Blank	06/02/10	L1008325	√				
Trip Blank	Trip Blank	06/03/10	L1008325	√				

Notes:

(1) Analyses: VOC = Volatile Organic Compound
SVOC = Semi-Volatile Organic Compound
PCB = Polychlorinated Biphenyls
PPM = Priority Pollutant Metals
TOC = Total Organic Carbon

Trip and field blanks consisted of a water matrix.

Table 6.1.2: Supplemental RFI Surface and Subsurface Soil, Ground Water, Surface Water and Sediment Sampling Programs -Volatile Organic Compound Analytes
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Analyte	Soil Reporting Limit (µg/kg)[1]	Water Reporting Limit (µg/L)[1]
1,1,1,2-Tetrachloroethane	5	1
1,1,1-Trichloroethane	5	1
1,1,2,2-Tetrachloroethane	5	1
1,1,2-Trichloroethane	5	1
1,1-Dichloroethane	5	1
1,1-Dichloroethene	5	1
1,1-Dichloropropene	5	1
1,2,3-Trichlorobenzene	5	1
1,2,3-Trichloropropane	5	1
1,2,4-Trichlorobenzene	5	1
1,2,4-Trimethylbenzene	5	1
1,2-Dibromo-3-chloropropane	50	1
1,2-Dibromoethane	10	1
1,2-Dichlorobenzene	5	1
1,2-Dichloroethane	5	1
1,2-Dichloropropane	5	1
1,3,5-Trimethylbenzene	5	1
1,3-Dichlorobenzene	5	1
1,3-Dichloropropane	5	1
1,4-Dichlorobenzene	5	1
1,4-Dioxane	5	1
2,2-Dichloropropane	5	1
2-Butanone	50	50
2-Hexanone	50	50
4-Methyl-2-pentanone	50	50
Acetone	50	50
Benzene	5	1
Bromobenzene	5	1
Bromochloromethane	20	1
Bromodichloromethane	5	1
Bromoform	5	1
Bromomethane	10	5
Carbon disulfide	5	5
Carbon tetrachloride	5	1
Chlorobenzene	5	1
Chloroethane	10	1
Chloroform	5	1
Chloromethane	10	1
Dibromochloromethane	5	1
Dibromomethane	10	1
Dichlorodifluoromethane	10	1
Ethyl ether	5	1
Ethyl-Tert-Butyl-Ether	5	1
Ethylbenzene	5	1

Hexachlorobutadiene	5	1
Isopropyl Ether	5	1
Isopropylbenzene	5	1
Methyl tert butyl ether	5	5
Methylene chloride	5	1
Naphthalene	10	1
Styrene	5	1
Tertiary-Amyl Methyl Ether	5	1
Tetrachloroethene	5	1
Tetrahydrofuran	5	1
Toluene	5	1
Trichloroethene	5	1
Trichlorofluoromethane	5	1
Vinyl chloride	5	1
cis-1,2-Dichloroethene	5	1
cis-1,3-Dichloropropene	5	1
n-Butylbenzene	5	1
n-Propylbenzene	5	1
o-Chlorotoluene	5	1
o-Xylene	5	1
p-Chlorotoluene	5	1
p-Isopropyltoluene	5	1
p/m-Xylene	5	1
sec-Butylbenzene	5	1
tert-Butylbenzene	5	1
trans-1,2-Dichloroethene	5	1
trans-1,3-Dichloropropene	5	1

Notes:
(1) Actual sample reporting limits may be elevated due to matrix interferences, sample/extraction dilutions, or difficulties encountered in laboratory preparation or analysis

Table 6.1.3: Supplemental RFI Subsurface Soil Sampling Program - Semi-Volatile Organic Compound Analytes
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Analyte	Soil Reporting Limit (mg/kg)[1]
1,2,4-Trichlorobenzene	0.35
1,2-Dichlorobenzene	0.35
1,3-Dichlorobenzene	0.35
1,4-Dichlorobenzene	0.35
2,4,5-Trichlorophenol	0.35
2,4,6-Trichlorophenol	0.35
2,4-Dichlorophenol	0.7
2,4-Dimethylphenol	0.35
2,4-Dinitrophenol	1.4
2,4-Dinitrotoluene	0.35
2,6-Dinitrotoluene	0.35
2-Chloronaphthalene	0.35
2-Chlorophenol	0.42
2-Methylnaphthalene	0.35
2-Methylphenol	0.42
2-Nitrophenol	1.4
3,3'-Dichlorobenzidine	0.7
3-Methylphenol/4-Methylphenol	0.42
4-Bromophenyl phenyl ether	0.35
4-Chloroaniline	0.35
4-Nitrophenol	0.7
Acenaphthene	0.35
Acenaphthylene	0.35
Acetophenone	1.4
Aniline	0.7
Anthracene	0.35
Azobenzene	0.35
Benzo(a)anthracene	0.35
Benzo(a)pyrene	0.35
Benzo(b)fluoranthene	0.35
Benzo(ghi)perylene	0.35
Benzo(k)fluoranthene	0.35
Bis(2-Ethylhexyl)phthalate	0.7
Bis(2-chloroethoxy)methane	0.35
Bis(2-chloroethyl)ether	0.35
Bis(2-chloroisopropyl)ether	0.35
Butyl benzyl phthalate	0.35
Chrysene	0.35
Di-n-butylphthalate	0.35
Di-n-octylphthalate	0.35
Dibenzo(a,h)anthracene	0.35
Dibenzofuran	0.35
Diethyl phthalate	0.35
Dimethyl phthalate	0.35

Fluoranthene	0.35
Fluorene	0.35
Hexachlorobenzene	0.35
Hexachlorobutadiene	0.7
Hexachloroethane	0.35
Indeno(1,2,3-cd)Pyrene	0.35
Isophorone	0.35
Naphthalene	0.35
Nitrobenzene	0.35
Pentachlorophenol	1.4
Phenanthrene	0.35
Phenol	0.49
Pyrene	0.35

Notes:
(1) Actual sample reporting limits may be elevated due to matrix interferences, sample/extraction dilutions, or difficulties encountered in laboratory preparation or analysis

Table 6.1.4: Supplemental RFI Surface and Subsurface Soil, Ground Water, Surface Water and Sediment Sampling Programs -Metals Analytes
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Analyte	Soil Reporting Limit (mg/kg)[1,2]	Water Reporting Limit (µg/L)[1,3]
Antimony	2.0	0.2
Arsenic	0.4	0.4
Beryllium	0.2	0.5
Cadmium	0.4	0.4
Chromium	0.4	0.2
Copper	0.4	0.5
Lead	2.0	0.2
Mercury	0.08	0.2
Nickel	1.0	0.5
Selenium	2.0	1.0
Silver	0.4	0.1
Thallium	2.0	0.1
Zinc	2.0	2.0

Notes:
(1) Actual sample reporting limits may be elevated due to matrix interferences, sample/extraction dilutions, or difficulties encoutered in laboratory preparation or analysis.
(2) Soil analyses conducted using EPA Method 6010B except for mercury which was analyzed using EPA Method 7471.
(3) Water analyses conducted using EPA Method 6020A except for mercury which was analyzed using EPA Method 7470 A.

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Table 6.1.5: Supplemental RFI Surface and Subsurface Soil and Sediment Sampling Programs
Polychlorinated Biphenyl (PCB) Analytes
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Analyte	Soil Reporting Limit (µg/kg)[1,2]
Aroclor 1221	50
Aroclor 1232	50
Aroclor 1242/1016	50
Aroclor 1248	50
Aroclor 1254	50
Aroclor 1260	50
Aroclor 1262	50
Aroclor 1268	50

Notes:
(1) Actual sample reporting limits may be elevated due to matrix interferences, sample/extraction dilutions, or difficulties encountered in laboratory preparation or analysis.
(2) Samples analyzed using EPA Method 8082.

Table 6.1.6 Supplemental RFI Soil Sampling Results - VOCs (high)
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LOCATION		AOC30-2S		AOC30-1		SB-56		SB-55		SB-55	
SAMPLE ID		AOC30-2S		AOC30-1		AOC 14_SB1_1_9		AOC14 SB2-1-10		AOC14 SB2-D	
SAMPLING DATE		05-OCT-05		04-OCT-05		21-OCT-05		24-OCT-05		24-OCT-05	
LAB SAMPLE ID		L0511851-01		L0511859-01		L0512684-01		L0512756-01		L0512756-02	
	Units		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035-High											
1,1,1,2-Tetrachloroethane	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
1,1,1-Trichloroethane	mg/kg	2.3		0.57		0.059	U	0.046	U	0.041	U
1,1,2,2-Tetrachloroethane	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
1,1,2-Trichloroethane	mg/kg	0.1	U	0.05	U	0.089	U	0.069	U	0.061	U
1,1-Dichloroethane	mg/kg	0.18		0.05	U	0.089	U	0.069	U	0.061	U
1,1-Dichloroethene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
1,1-Dichloropropene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
1,2,3-Trichlorobenzene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
1,2,3-Trichloropropane	mg/kg	0.68	U	0.33	U	0.59	U	0.46	U	0.41	U
1,2,4-Trichlorobenzene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
1,2,4-Trimethylbenzene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
1,2-Dibromo-3-chloropropane	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
1,2-Dibromoethane	mg/kg	0.27	U	0.13	U	0.24	U	0.18	U	0.16	U
1,2-Dichlorobenzene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
1,2-Dichloroethane	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
1,2-Dichloropropane	mg/kg	0.24	U	0.12	U	0.21	U	0.16	U	0.14	U
1,3,5-Trimethylbenzene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
1,3-Dichlorobenzene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
1,3-Dichloropropane	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
1,4-Dichlorobenzene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
1,4-Dioxane	mg/kg	34	U	16	U	30	U	23	U	20	U
2,2-Dichloropropane	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
2-Butanone	mg/kg	0.68	U	0.33	U	0.59	U	0.46	U	0.41	U
2-Hexanone	mg/kg	0.68	U	0.33	U	0.59	U	0.46	U	0.41	U
4-Methyl-2-pentanone	mg/kg	0.68	U	0.33	U	0.59	U	0.46	U	0.41	U
Acetone	mg/kg	0.68	U	0.33	U	0.59	U	0.46	U	0.41	U
Benzene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
Bromobenzene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
Bromochloromethane	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
Bromodichloromethane	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
Bromoform	mg/kg	0.27	U	0.13	U	0.24	U	0.18	U	0.16	U
Bromomethane	mg/kg	0.14	U	0.066	U	0.12	U	0.092	U	0.081	U
Carbon disulfide	mg/kg	0.68	U	0.33	U	0.59	U	0.46	U	0.41	U
Carbon tetrachloride	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
Chlorobenzene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
Chloroethane	mg/kg	0.14	U	0.066	U	0.12	U	0.092	U	0.081	U
Chloroform	mg/kg	0.1	U	0.05	U	0.089	U	0.069	U	0.061	U
Chloromethane	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
Dibromochloromethane	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U

Table 6.1.6 Supplemental RFI Soil Sampling Results - VOCs (high)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		AOC30-2S		AOC30-1		SB-56		SB-55		SB-55	
SAMPLE ID		AOC30-2S		AOC30-1		AOC 14_SB1_1_9		AOC14 SB2-1-10		AOC14 SB2-D	
SAMPLING DATE		05-OCT-05		04-OCT-05		21-OCT-05		24-OCT-05		24-OCT-05	
LAB SAMPLE ID		L0511851-01		L0511859-01		L0512684-01		L0512756-01		L0512756-02	
	Units		Qual		Qual		Qual		Qual		Qual
Dibromomethane	mg/kg	0.68	U	0.33	U	0.59	U	0.46	U	0.41	U
Dichlorodifluoromethane	mg/kg	0.68	UJ	0.33	UJ	0.59	U	0.46	UJ	0.41	UJ
Ethyl ether	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.27	U	0.13	U	0.24	U	0.18	U	0.16	U
Ethylbenzene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
Hexachlorobutadiene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
Isopropyl Ether	mg/kg	0.27	U	0.13	U	0.24	U	0.18	U	0.16	U
Isopropylbenzene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
Methyl tert butyl ether	mg/kg	0.14	U	0.066	U	0.12	U	0.092	U	0.081	U
Methylene chloride	mg/kg	0.68	U	0.33	U	0.59	U	0.46	U	0.41	U
Naphthalene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
Styrene	mg/kg	0.14	U	0.066	U	0.12	U	0.092	U	0.081	U
Tertiary-Amyl Methyl Ether	mg/kg	0.27	U	0.13	U	0.24	U	0.18	U	0.16	U
Tetrachloroethene	mg/kg	0.068	U	0.033	U	0.27		0.24		0.18	
Tetrahydrofuran	mg/kg	1.4	U	0.66	U	1.2	U	0.92	U	0.81	U
Toluene	mg/kg	0.1	U	0.05	U	0.089	U	0.069	U	0.061	U
Trichloroethene	mg/kg	0.18		0.18		0.059	U	0.046	U	0.041	U
Trichlorofluoromethane	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
Vinyl chloride	mg/kg	0.14	U	0.066	U	0.12	U	0.092	U	0.081	U
cis-1,2-Dichloroethene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
cis-1,3-Dichloropropene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
n-Butylbenzene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
n-Propylbenzene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
o-Chlorotoluene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
o-Xylene	mg/kg	0.14	U	0.066	U	0.12	U	0.092	U	0.081	U
p-Chlorotoluene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
p-Isopropyltoluene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
p/m-Xylene	mg/kg	0.14	U	0.066	U	0.12	U	0.092	U	0.081	U
sec-Butylbenzene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U
tert-Butylbenzene	mg/kg	0.34	U	0.16	U	0.3	U	0.23	U	0.2	U
trans-1,2-Dichloroethene	mg/kg	0.1	U	0.05	U	0.089	U	0.069	U	0.061	U
trans-1,3-Dichloropropene	mg/kg	0.068	U	0.033	U	0.059	U	0.046	U	0.041	U

U - Not Detected
J - Estimated value

Table 6.1.6 Supplemental RFI Soil Sampling Results - VOCs (high)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SB-53		SB-54		SB-54		SB-54		SB-54	
SAMPLE ID		SB-4-0-2		SB-3-0-2		SB-3-3-5		SB-3-7.5-9.5		SB-3-7.5-9.5 DUP	
SAMPLING DATE		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05	
LAB SAMPLE ID		L0513787-01		L0513787-04		L0513787-05		L0513787-06		L0513787-07	
	Units		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035-High											
1,1,1,2-Tetrachloroethane	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
1,1,1-Trichloroethane	mg/kg	0.05		0.048	U	0.036	U	0.049	U	0.056	U
1,1,2,2-Tetrachloroethane	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
1,1,2-Trichloroethane	mg/kg	0.061	U	0.072	U	0.054	U	0.074	U	0.083	U
1,1-Dichloroethane	mg/kg	0.061	U	0.072	U	0.054	U	0.074	U	0.083	U
1,1-Dichloroethene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
1,1-Dichloropropene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2,3-Trichlorobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2,3-Trichloropropane	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
1,2,4-Trichlorobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2,4-Trimethylbenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2-Dibromo-3-chloropropane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2-Dibromoethane	mg/kg	0.16	U	0.19	U	0.14	U	0.2	U	0.22	U
1,2-Dichlorobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,2-Dichloroethane	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
1,2-Dichloropropane	mg/kg	0.14	U	0.17	U	0.12	U	0.17	U	0.19	U
1,3,5-Trimethylbenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,3-Dichlorobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,3-Dichloropropane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,4-Dichlorobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
1,4-Dioxane	mg/kg	20	U	24	U	18	U	25	U	28	U
2,2-Dichloropropane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
2-Butanone	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
2-Hexanone	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
4-Methyl-2-pentanone	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
Acetone	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
Benzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Bromobenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Bromochloromethane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Bromodichloromethane	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Bromoform	mg/kg	0.16	U	0.19	U	0.14	U	0.2	U	0.22	U
Bromomethane	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
Carbon disulfide	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
Carbon tetrachloride	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Chlorobenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Chloroethane	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
Chloroform	mg/kg	0.061	U	0.072	U	0.054	U	0.074	U	0.083	U
Chloromethane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Dibromochloromethane	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U

Table 6.1.6 Supplemental RFI Soil Sampling Results - VOCs (high)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SB-53		SB-54		SB-54		SB-54		SB-54	
SAMPLE ID		SB-4-0-2		SB-3-0-2		SB-3-3-5		SB-3-7.5-9.5		SB-3-7.5-9.5 DUP	
SAMPLING DATE		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05	
LAB SAMPLE ID		L0513787-01		L0513787-04		L0513787-05		L0513787-06		L0513787-07	
	Units		Qual		Qual		Qual		Qual		Qual
Dibromomethane	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
Dichlorodifluoromethane	mg/kg	0.41	UJ	0.48	UJ	0.36	UJ	0.49	UJ	0.56	UJ
Ethyl ether	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.16	U	0.19	U	0.14	U	0.2	U	0.22	U
Ethylbenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Hexachlorobutadiene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Isopropyl Ether	mg/kg	0.16	U	0.19	U	0.14	U	0.2	U	0.22	U
Isopropylbenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Methyl tert butyl ether	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
Methylene chloride	mg/kg	0.41	U	0.48	U	0.36	U	0.49	U	0.56	U
Naphthalene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Styrene	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
Tertiary-Amyl Methyl Ether	mg/kg	0.16	U	0.19	U	0.14	U	0.2	U	0.22	U
Tetrachloroethene	mg/kg	3.2		0.91		0.86		1.3	J	2.5	J
Tetrahydrofuran	mg/kg	0.82	U	0.96	U	0.72	U	0.99	U	1.1	U
Toluene	mg/kg	0.061	U	0.072	U	0.054	U	0.074	U	0.083	U
Trichloroethene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
Trichlorofluoromethane	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
Vinyl chloride	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
cis-1,2-Dichloroethene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
cis-1,3-Dichloropropene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
n-Butylbenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
n-Propylbenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
o-Chlorotoluene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
o-Xylene	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
p-Chlorotoluene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
p-Isopropyltoluene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
p/m-Xylene	mg/kg	0.082	U	0.096	U	0.072	U	0.099	U	0.11	U
sec-Butylbenzene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U
tert-Butylbenzene	mg/kg	0.2	U	0.24	U	0.18	U	0.25	U	0.28	U
trans-1,2-Dichloroethene	mg/kg	0.061	U	0.072	U	0.054	U	0.074	U	0.083	U
trans-1,3-Dichloropropene	mg/kg	0.041	U	0.048	U	0.036	U	0.049	U	0.056	U

U - Not Detected
J - Estimated value

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-57		SB-57		SB-57		SB-57		AOC30-2N	
SAMPLE ID		SB-220-0.5-2		SB-220-2-4		SB-220-6-8		SB-220-10-11.5		AOC30-2N	
SAMPLING DATE		14-SEP-05		14-SEP-05		14-SEP-05		14-SEP-05		05-OCT-05	
LAB SAMPLE ID		L0510808-01		L0510808-02		L0510808-03		L0510808-05		L0511851-02	
	Units		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035-Low											
1,1,1,2-Tetrachloroethane	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
1,1,1-Trichloroethane	mg/kg	0.00069		0.0008	U	0.00078	U	0.00083	U	>0.21	J
1,1,2,2-Tetrachloroethane	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
1,1,2-Trichloroethane	mg/kg	0.001	U	0.0012	U	0.0012	U	0.0012	U	0.0015	U
1,1-Dichloroethane	mg/kg	0.001	U	0.0012	U	0.0012	U	0.0012	U	0.03	
1,1-Dichloroethene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.0016	
1,1-Dichloropropene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
1,2,3-Trichlorobenzene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
1,2,3-Trichloropropane	mg/kg	0.0067	U	0.008	U	0.0078	U	0.0083	U	0.01	U
1,2,4-Trichlorobenzene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	UJ
1,2,4-Trimethylbenzene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
1,2-Dibromo-3-chloropropane	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
1,2-Dibromoethane	mg/kg	0.0027	U	0.0032	U	0.0031	U	0.0033	U	0.0041	U
1,2-Dichlorobenzene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
1,2-Dichloroethane	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
1,2-Dichloropropane	mg/kg	0.0023	U	0.0028	U	0.0027	U	0.0029	U	0.0036	U
1,3,5-Trimethylbenzene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
1,3-Dichlorobenzene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
1,3-Dichloropropane	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
1,4-Dichlorobenzene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
1,4-Dioxane	mg/kg	0.34	U	0.4	U	0.39	U	0.42	U	0.52	U
2,2-Dichloropropane	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
2-Butanone	mg/kg	0.0067	U	0.008	U	0.0078	U	0.0083	U	0.01	U
2-Hexanone	mg/kg	0.0067	U	0.008	U	0.0078	U	0.0083	U	0.01	U
4-Methyl-2-pentanone	mg/kg	0.0067	UJ	0.008	UJ	0.0078	U	0.0083	UJ	0.01	U
Acetone	mg/kg	0.024		0.018		0.0078	U	0.014		0.023	
Benzene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
Bromobenzene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
Bromochloromethane	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
Bromodichloromethane	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
Bromoform	mg/kg	0.0027	U	0.0032	U	0.0031	U	0.0033	U	0.0041	U
Bromomethane	mg/kg	0.0013	UJ	0.0016	UJ	0.0016	UJ	0.0017	UJ	0.0021	U
Carbon disulfide	mg/kg	0.0067	U	0.008	U	0.0078	U	0.0083	U	0.01	U
Carbon tetrachloride	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
Chlorobenzene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
Chloroethane	mg/kg	0.0013	U	0.0016	U	0.0016	U	0.0017	U	0.0021	U
Chloroform	mg/kg	0.001	U	0.0012	U	0.0012	U	0.0012	U	0.0015	U
Chloromethane	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
Dibromochloromethane	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
Dibromomethane	mg/kg	0.0067	U	0.008	U	0.0078	U	0.0083	U	0.01	U

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low) **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SB-57		SB-57		SB-57		SB-57		AOC30-2N	
SAMPLE ID		SB-220-0.5-2		SB-220-2-4		SB-220-6-8		SB-220-10-11.5		AOC30-2N	
SAMPLING DATE		14-SEP-05		14-SEP-05		14-SEP-05		14-SEP-05		05-OCT-05	
LAB SAMPLE ID		L0510808-01		L0510808-02		L0510808-03		L0510808-05		L0511851-02	
	Units		Qual		Qual		Qual		Qual		Qual
Dichlorodifluoromethane	mg/kg	0.0067	U	0.008	U	0.0078	U	0.0083	U	0.01	U
Ethyl ether	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.0027	U	0.0032	U	0.0031	U	0.0033	U	0.0041	U
Ethylbenzene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
Hexachlorobutadiene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
Isopropyl Ether	mg/kg	0.0027	U	0.0032	U	0.0031	U	0.0033	U	0.0041	U
Isopropylbenzene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
Methyl tert butyl ether	mg/kg	0.0013	U	0.0016	U	0.0016	U	0.0017	U	0.0021	U
Methylene chloride	mg/kg	0.0067	U	0.008	U	0.0078	U	0.0083	U	0.01	U
Naphthalene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
Styrene	mg/kg	0.0013	U	0.0016	U	0.0016	U	0.0017	U	0.0021	U
Tertiary-Amyl Methyl Ether	mg/kg	0.0027	U	0.0032	U	0.0031	U	0.0033	U	0.0041	U
Tetrachloroethene	mg/kg	0.018		0.0073		0.0015		0.0016		0.0016	
Tetrahydrofuran	mg/kg	0.013	U	0.016	U	0.016	U	0.017	U	0.021	U
Toluene	mg/kg	0.001	U	0.0012	U	0.0012	U	0.0012	U	0.0015	U
Trichloroethene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.0042	
Trichlorofluoromethane	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
Vinyl chloride	mg/kg	0.0013	U	0.0016	U	0.0016	U	0.0017	U	0.0021	U
cis-1,2-Dichloroethene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
cis-1,3-Dichloropropene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
n-Butylbenzene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
n-Propylbenzene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
o-Chlorotoluene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
o-Xylene	mg/kg	0.0013	U	0.0016	U	0.0016	U	0.0017	U	0.0021	U
p-Chlorotoluene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
p-Isopropyltoluene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
p/m-Xylene	mg/kg	0.0013	U	0.0016	U	0.0016	U	0.0017	U	0.0021	U
sec-Butylbenzene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U
tert-Butylbenzene	mg/kg	0.0034	U	0.004	U	0.0039	U	0.0042	U	0.0052	U
trans-1,2-Dichloroethene	mg/kg	0.001	U	0.0012	U	0.0012	U	0.0012	U	0.0015	U
trans-1,3-Dichloropropene	mg/kg	0.00067	U	0.0008	U	0.00078	U	0.00083	U	0.001	U

U - Not Detected
J - Estimated value
Loc. ID with "-RE" indicates a re-analysis by the lab

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		AOC30-2N-RE		SB-50		SB-50		SB-50		SB-50	
SAMPLE ID		AOC30-2N-RE		AOCA1 SB1-1-1		AOCA1 SB1-1-1RE		AOCA1 SB1-2-7		AOCA1 SB1-3-9	
SAMPLING DATE		05-OCT-05		10-OCT-05		10-OCT-05		10-OCT-05		11-OCT-05	
LAB SAMPLE ID		L0511851-02		L0512119-01		L0512119-01		L0512119-02		L0512119-03	
	Units		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035-Low											
1,1,1,2-Tetrachloroethane	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
1,1,1-Trichloroethane	mg/kg	0.074		0.0011	U	0.0008	U	0.00075	U	0.00074	U
1,1,2,2-Tetrachloroethane	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
1,1,2-Trichloroethane	mg/kg	0.0009	U	0.0017	U	0.0012	U	0.0011	U	0.0011	U
1,1-Dichloroethane	mg/kg	0.013		0.0017	U	0.0012	U	0.0011	U	0.0011	U
1,1-Dichloroethene	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
1,1-Dichloropropene	mg/kg	0.003	U	0.0057	U	0.004	U	0.0038	U	0.0037	U
1,2,3-Trichlorobenzene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
1,2,3-Trichloropropane	mg/kg	0.006	U	0.011	U	0.008	U	0.0075	U	0.0074	U
1,2,4-Trichlorobenzene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	UJ	0.0037	UJ
1,2,4-Trimethylbenzene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
1,2-Dibromo-3-chloropropane	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
1,2-Dibromoethane	mg/kg	0.0024	U	0.0045	U	0.0032	U	0.003	U	0.003	U
1,2-Dichlorobenzene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
1,2-Dichloroethane	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
1,2-Dichloropropane	mg/kg	0.0021	U	0.004	U	0.0028	U	0.0026	U	0.0026	U
1,3,5-Trimethylbenzene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
1,3-Dichlorobenzene	mg/kg	0.003	U	0.0057	UJ	0.004	U	0.0038	U	0.0037	U
1,3-Dichloropropane	mg/kg	0.003	U	0.0057	U	0.004	UJ	0.0038	U	0.0037	U
1,4-Dichlorobenzene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
1,4-Dioxane	mg/kg	0.3	U	0.57	U	0.4	U	0.38	U	0.37	U
2,2-Dichloropropane	mg/kg	0.003	U	0.0057	U	0.004	U	0.0038	U	0.0037	U
2-Butanone	mg/kg	0.006	U	0.011	U	0.008	U	0.0075	U	0.0074	U
2-Hexanone	mg/kg	0.006	U	0.011	U	0.008	U	0.0075	U	0.0074	U
4-Methyl-2-pentanone	mg/kg	0.006	U	0.011	U	0.008	U	0.0075	U	0.0074	U
Acetone	mg/kg	0.019		0.12		0.15		0.021		0.013	
Benzene	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
Bromobenzene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
Bromochloromethane	mg/kg	0.003	U	0.0057	U	0.004	U	0.0038	U	0.0037	U
Bromodichloromethane	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
Bromoform	mg/kg	0.0024	U	0.0045	U	0.0032	U	0.003	U	0.003	U
Bromomethane	mg/kg	0.0012	U	0.0023	UJ	0.0016	UJ	0.0015	UJ	0.0015	UJ
Carbon disulfide	mg/kg	0.006	U	0.011	U	0.008	U	0.0075	U	0.0074	U
Carbon tetrachloride	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
Chlorobenzene	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
Chloroethane	mg/kg	0.0012	U	0.0023	U	0.0016	U	0.0015	U	0.0015	U
Chloroform	mg/kg	0.0009	U	0.0017	U	0.0012	U	0.0011	U	0.0011	U
Chloromethane	mg/kg	0.003	U	0.0057	U	0.004	U	0.0038	U	0.0037	U
Dibromochloromethane	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
Dibromomethane	mg/kg	0.006	U	0.011	U	0.008	U	0.0075	U	0.0074	U

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		AOC30-2N-RE		SB-50		SB-50		SB-50		SB-50	
SAMPLE ID		AOC30-2N-RE		AOCA1 SB1-1-1		AOCA1 SB1-1-1RE		AOCA1 SB1-2-7		AOCA1 SB1-3-9	
SAMPLING DATE		05-OCT-05		10-OCT-05		10-OCT-05		10-OCT-05		11-OCT-05	
LAB SAMPLE ID		L0511851-02		L0512119-01		L0512119-01		L0512119-02		L0512119-03	
	Units		Qual		Qual		Qual		Qual		Qual
Dichlorodifluoromethane	mg/kg	0.006	U	0.011	UJ	0.008	UJ	0.0075	UJ	0.0074	UJ
Ethyl ether	mg/kg	0.003	U	0.0057	U	0.004	U	0.0038	U	0.0037	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.0024	U	0.0045	U	0.0032	U	0.003	U	0.003	U
Ethylbenzene	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
Hexachlorobutadiene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
Isopropyl Ether	mg/kg	0.0024	U	0.0045	U	0.0032	U	0.003	U	0.003	U
Isopropylbenzene	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
Methyl tert butyl ether	mg/kg	0.0012	U	0.0023	U	0.0016	U	0.0015	U	0.0015	U
Methylene chloride	mg/kg	0.006	U	0.011	U	0.008	U	0.0075	U	0.0074	U
Naphthalene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
Styrene	mg/kg	0.0012	U	0.0023	U	0.0016	U	0.0015	U	0.0015	U
Tertiary-Amyl Methyl Ether	mg/kg	0.0024	U	0.0045	U	0.0032	U	0.003	U	0.003	U
Tetrachloroethene	mg/kg	0.0006	U	0.0011	U	0.0015		0.00075	U	0.00074	U
Tetrahydrofuran	mg/kg	0.012	U	0.023	U	0.016	U	0.015	U	0.015	U
Toluene	mg/kg	0.0009	U	0.0017	U	0.0012	U	0.0011	U	0.0011	U
Trichloroethene	mg/kg	0.00086		0.0011	U	0.0008	U	0.00075	U	0.00074	U
Trichlorofluoromethane	mg/kg	0.003	U	0.0057	U	0.004	U	0.0038	U	0.0037	U
Vinyl chloride	mg/kg	0.0012	U	0.0023	U	0.0016	U	0.0015	U	0.0015	U
cis-1,2-Dichloroethene	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
cis-1,3-Dichloropropene	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U
n-Butylbenzene	mg/kg	0.0006	U	0.0011	UJ	0.0008	UJ	0.00075	U	0.00074	U
n-Propylbenzene	mg/kg	0.0006	U	0.0011	UJ	0.0008	UJ	0.00075	U	0.00074	U
o-Chlorotoluene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
o-Xylene	mg/kg	0.0012	U	0.0023	U	0.0016	U	0.0015	U	0.0015	U
p-Chlorotoluene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
p-Isopropyltoluene	mg/kg	0.0006	U	0.0011	UJ	0.0008	UJ	0.00075	U	0.00074	U
p/m-Xylene	mg/kg	0.0012	U	0.0023	U	0.0016	U	0.0015	U	0.0015	U
sec-Butylbenzene	mg/kg	0.0006	U	0.0011	UJ	0.0008	UJ	0.00075	U	0.00074	U
tert-Butylbenzene	mg/kg	0.003	U	0.0057	UJ	0.004	UJ	0.0038	U	0.0037	U
trans-1,2-Dichloroethene	mg/kg	0.0009	U	0.0017	U	0.0012	U	0.0011	U	0.0011	U
trans-1,3-Dichloropropene	mg/kg	0.0006	U	0.0011	U	0.0008	U	0.00075	U	0.00074	U

U - Not Detected
J - Estimated value
Loc. ID with "-RE" indicates a re-analysis by the lab

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-51		SB-51		SB-51		SB-51		SB-52	
SAMPLE ID		AOCA1 SB2-1-1		AOCA1 SB2-2-5		AOCA1 SB2-3-9		AOCA1 SB2-3-9 (dup)		AOCA1 SB3-1-1	
SAMPLING DATE		11-OCT-05		11-OCT-05		11-OCT-05		11-OCT-05		10-OCT-05	
LAB SAMPLE ID		L0512119-04		L0512119-05		L0512119-06		L0512119-11		L0512119-07	
	Units		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035-Low											
1,1,1,2-Tetrachloroethane	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
1,1,1-Trichloroethane	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
1,1,2,2-Tetrachloroethane	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
1,1,2-Trichloroethane	mg/kg	0.0013	U	0.0014	U	0.0014	U	0.0017	U	0.0012	U
1,1-Dichloroethane	mg/kg	0.0013	U	0.0014	U	0.0014	U	0.0017	U	0.0012	U
1,1-Dichloroethene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
1,1-Dichloropropene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	U
1,2,3-Trichlorobenzene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
1,2,3-Trichloropropane	mg/kg	0.0089	U	0.0095	U	0.0091	U	0.011	U	0.0077	U
1,2,4-Trichlorobenzene	mg/kg	0.0045	UJ	0.0047	U	0.0046	U	0.0055	UJ	0.0038	UJ
1,2,4-Trimethylbenzene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
1,2-Dibromo-3-chloropropane	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
1,2-Dibromoethane	mg/kg	0.0036	U	0.0038	U	0.0036	U	0.0044	U	0.0031	U
1,2-Dichlorobenzene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
1,2-Dichloroethane	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
1,2-Dichloropropane	mg/kg	0.0031	U	0.0033	U	0.0032	U	0.0039	U	0.0027	U
1,3,5-Trimethylbenzene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
1,3-Dichlorobenzene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
1,3-Dichloropropane	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	U
1,4-Dichlorobenzene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
1,4-Dioxane	mg/kg	0.45	U	0.47	U	0.46	U	0.55	U	0.38	U
2,2-Dichloropropane	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	U
2-Butanone	mg/kg	0.0089	U	0.0095	U	0.0091	U	0.011	U	0.0077	U
2-Hexanone	mg/kg	0.0089	U	0.0095	U	0.0091	U	0.011	U	0.0077	U
4-Methyl-2-pentanone	mg/kg	0.0089	U	0.0095	U	0.0091	U	0.011	U	0.0077	U
Acetone	mg/kg	0.01		0.022		0.01		0.013		0.085	J
Benzene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
Bromobenzene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
Bromochloromethane	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	U
Bromodichloromethane	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
Bromoform	mg/kg	0.0036	U	0.0038	U	0.0036	U	0.0044	U	0.0031	U
Bromomethane	mg/kg	0.0018	UJ	0.0019	UJ	0.0018	UJ	0.0022	UJ	0.0015	UJ
Carbon disulfide	mg/kg	0.0089	U	0.0095	U	0.0091	U	0.011	U	0.0077	U
Carbon tetrachloride	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
Chlorobenzene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
Chloroethane	mg/kg	0.0018	U	0.0019	U	0.0018	U	0.0022	U	0.0015	U
Chloroform	mg/kg	0.0013	U	0.0014	U	0.0014	U	0.0017	U	0.0012	U
Chloromethane	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	U
Dibromochloromethane	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
Dibromomethane	mg/kg	0.0089	U	0.0095	U	0.0091	U	0.011	U	0.0077	U

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low) **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SB-51		SB-51		SB-51		SB-51		SB-52	
SAMPLE ID		AOCA1 SB2-1-1		AOCA1 SB2-2-5		AOCA1 SB2-3-9		AOCA1 SB2-3-9 (dup)		AOCA1 SB3-1-1	
SAMPLING DATE		11-OCT-05		11-OCT-05		11-OCT-05		11-OCT-05		10-OCT-05	
LAB SAMPLE ID		L0512119-04		L0512119-05		L0512119-06		L0512119-11		L0512119-07	
	Units		Qual		Qual		Qual		Qual		Qual
Dichlorodifluoromethane	mg/kg	0.0089	UJ	0.0095	UJ	0.0091	UJ	0.011	UJ	0.0077	UJ
Ethyl ether	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.0036	U	0.0038	U	0.0036	U	0.0044	U	0.0031	U
Ethylbenzene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
Hexachlorobutadiene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
Isopropyl Ether	mg/kg	0.0036	U	0.0038	U	0.0036	U	0.0044	U	0.0031	U
Isopropylbenzene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
Methyl tert butyl ether	mg/kg	0.0018	U	0.0019	U	0.0018	U	0.0022	U	0.0015	U
Methylene chloride	mg/kg	0.0089	U	0.0095	U	0.0091	U	0.011	U	0.0077	U
Naphthalene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
Styrene	mg/kg	0.0018	U	0.0019	U	0.0018	U	0.0022	U	0.0015	U
Tertiary-Amyl Methyl Ether	mg/kg	0.0036	U	0.0038	U	0.0036	U	0.0044	U	0.0031	U
Tetrachloroethene	mg/kg	0.0019		0.00095	U	0.00091	U	0.0011	U	0.0042	J
Tetrahydrofuran	mg/kg	0.018	U	0.019	U	0.018	U	0.022	U	0.015	U
Toluene	mg/kg	0.0013	U	0.0014	U	0.0014	U	0.0017	U	0.0012	U
Trichloroethene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
Trichlorofluoromethane	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	U
Vinyl chloride	mg/kg	0.0018	U	0.0019	U	0.0018	U	0.0022	U	0.0015	U
cis-1,2-Dichloroethene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
cis-1,3-Dichloropropene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U
n-Butylbenzene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	UJ
n-Propylbenzene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	UJ
o-Chlorotoluene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
o-Xylene	mg/kg	0.0018	U	0.0019	U	0.0018	U	0.0022	U	0.0015	U
p-Chlorotoluene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
p-Isopropyltoluene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	UJ
p/m-Xylene	mg/kg	0.0018	U	0.0019	U	0.0018	U	0.0022	U	0.0015	U
sec-Butylbenzene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	UJ
tert-Butylbenzene	mg/kg	0.0045	U	0.0047	U	0.0046	U	0.0055	U	0.0038	UJ
trans-1,2-Dichloroethene	mg/kg	0.0013	U	0.0014	U	0.0014	U	0.0017	U	0.0012	U
trans-1,3-Dichloropropene	mg/kg	0.00089	U	0.00095	U	0.00091	U	0.0011	U	0.00077	U

U - Not Detected
J - Estimated value
Loc. ID with "-RE" indicates a re-analysis by the lab

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-52		SB-52		SB-52		SB-52		SB-56	
SAMPLE ID		AOCA1 SB3-1-1RE		AOCA1 SB3-2-7		AOCA1 SB3-2-7RE		AOCA1 SB3-3-9		AOC 14_SB1_2_15	
SAMPLING DATE		10-OCT-05		10-OCT-05		10-OCT-05		10-OCT-05		21-OCT-05	
LAB SAMPLE ID		L0512119-07		L0512119-08		L0512119-08		L0512119-09		L0512684-02	
	Units		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035-Low											
1,1,1,2-Tetrachloroethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
1,1,1-Trichloroethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
1,1,2,2-Tetrachloroethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
1,1,2-Trichloroethane	mg/kg	0.0017	U	0.0015	U	0.0015	U	0.0013	U	0.0011	U
1,1-Dichloroethane	mg/kg	0.0017	U	0.0015	U	0.0015	U	0.0013	U	0.0011	U
1,1-Dichloroethene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
1,1-Dichloropropene	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
1,2,3-Trichlorobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,2,3-Trichloropropane	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U
1,2,4-Trichlorobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	UJ	0.0038	U
1,2,4-Trimethylbenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,2-Dibromo-3-chloropropane	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,2-Dibromoethane	mg/kg	0.0046	U	0.004	U	0.004	U	0.0035	U	0.0031	U
1,2-Dichlorobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,2-Dichloroethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
1,2-Dichloropropane	mg/kg	0.004	U	0.0035	U	0.0035	U	0.003	U	0.0027	U
1,3,5-Trimethylbenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,3-Dichlorobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,3-Dichloropropane	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
1,4-Dichlorobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
1,4-Dioxane	mg/kg	0.57	U	0.5	U	0.5	U	0.44	U	0.38	U
2,2-Dichloropropane	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
2-Butanone	mg/kg	0.011	U	0.01	U	0.012	J	0.0087	U	0.0076	U
2-Hexanone	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U
4-Methyl-2-pentanone	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U
Acetone	mg/kg	0.078	J	0.037		0.062	J	0.021		0.0076	U
Benzene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Bromobenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
Bromochloromethane	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
Bromodichloromethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Bromoform	mg/kg	0.0046	U	0.004	U	0.004	U	0.0035	U	0.0031	U
Bromomethane	mg/kg	0.0023	UJ	0.002	UJ	0.002	UJ	0.0017	UJ	0.0015	U
Carbon disulfide	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U
Carbon tetrachloride	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Chlorobenzene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Chloroethane	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
Chloroform	mg/kg	0.0017	U	0.0015	U	0.0015	U	0.0013	U	0.0011	U
Chloromethane	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
Dibromochloromethane	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Dibromomethane	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low) **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SB-52		SB-52		SB-52		SB-52		SB-56	
SAMPLE ID		AOCA1 SB3-1-1RE		AOCA1 SB3-2-7		AOCA1 SB3-2-7RE		AOCA1 SB3-3-9		AOC 14_SB1_2_15	
SAMPLING DATE		10-OCT-05		10-OCT-05		10-OCT-05		10-OCT-05		21-OCT-05	
LAB SAMPLE ID		L0512119-07		L0512119-08		L0512119-08		L0512119-09		L0512684-02	
	Units		Qual		Qual		Qual		Qual		Qual
Dichlorodifluoromethane	mg/kg	0.011	UJ	0.01	UJ	0.0099	UJ	0.0087	UJ	0.0076	U
Ethyl ether	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.0046	U	0.004	U	0.004	U	0.0035	U	0.0031	U
Ethylbenzene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Hexachlorobutadiene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
Isopropyl Ether	mg/kg	0.0046	U	0.004	U	0.004	U	0.0035	U	0.0031	U
Isopropylbenzene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Methyl tert butyl ether	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
Methylene chloride	mg/kg	0.011	U	0.01	U	0.0099	U	0.0087	U	0.0076	U
Naphthalene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
Styrene	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
Tertiary-Amyl Methyl Ether	mg/kg	0.0046	U	0.004	U	0.004	U	0.0035	U	0.0031	U
Tetrachloroethene	mg/kg	0.018	J	0.0053		0.0064	J	0.0011		0.0018	
Tetrahydrofuran	mg/kg	0.023	U	0.02	U	0.02	U	0.017	U	0.015	U
Toluene	mg/kg	0.0017	U	0.0015	U	0.0015	U	0.0013	U	0.0011	U
Trichloroethene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
Trichlorofluoromethane	mg/kg	0.0057	U	0.005	U	0.005	U	0.0044	U	0.0038	U
Vinyl chloride	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
cis-1,2-Dichloroethene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
cis-1,3-Dichloropropene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U
n-Butylbenzene	mg/kg	0.0011	U	0.001	UJ	0.00099	U	0.00087	U	0.00076	U
n-Propylbenzene	mg/kg	0.0011	UJ	0.001	U	0.00099	UJ	0.00087	U	0.00076	U
o-Chlorotoluene	mg/kg	0.0057	UJ	0.005	U	0.005	U	0.0044	U	0.0038	U
o-Xylene	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
p-Chlorotoluene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
p-Isopropyltoluene	mg/kg	0.0011	UJ	0.001	UJ	0.00099	UJ	0.00087	U	0.00076	U
p/m-Xylene	mg/kg	0.0023	U	0.002	U	0.002	U	0.0017	U	0.0015	U
sec-Butylbenzene	mg/kg	0.0011	UJ	0.001	UJ	0.00099	UJ	0.00087	U	0.00076	U
tert-Butylbenzene	mg/kg	0.0057	UJ	0.005	UJ	0.005	UJ	0.0044	U	0.0038	U
trans-1,2-Dichloroethene	mg/kg	0.0017	U	0.0015	U	0.0015	U	0.0013	U	0.0011	U
trans-1,3-Dichloropropene	mg/kg	0.0011	U	0.001	U	0.00099	U	0.00087	U	0.00076	U

U - Not Detected
J - Estimated value
Loc. ID with "-RE" indicates a re-analysis by the lab

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-56		SB-55		SB-53		SB-53		SS-A1-01	
SAMPLE ID		AOC 14_SB1_2_15 (dup)		AOC14 SB-2-16		SB-4-4-6		SB-4-8-10		AOCA-1SS-01	
SAMPLING DATE		21-OCT-05		24-OCT-05		10-NOV-05		10-NOV-05		05-DEC-05	
LAB SAMPLE ID		L0512684-03		L0512756-03		L0513787-02		L0513787-03		L0514775-01	
	Units		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035-Low											
1,1,1,2-Tetrachloroethane	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
1,1,1-Trichloroethane	mg/kg	0.00054	U	0.0041		0.00065	U	0.00084		0.00087	U
1,1,2,2-Tetrachloroethane	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
1,1,2-Trichloroethane	mg/kg	0.00081	U	0.0013	U	0.00098	U	0.0011	U	0.0013	U
1,1-Dichloroethane	mg/kg	0.00081	U	0.0013	U	0.00098	U	0.0011	U	0.0013	U
1,1-Dichloroethene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
1,1-Dichloropropene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2,3-Trichlorobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2,3-Trichloropropane	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U
1,2,4-Trichlorobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2,4-Trimethylbenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2-Dibromo-3-chloropropane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2-Dibromoethane	mg/kg	0.0022	U	0.0034	U	0.0026	U	0.0028	U	0.0035	U
1,2-Dichlorobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,2-Dichloroethane	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
1,2-Dichloropropane	mg/kg	0.0019	U	0.003	U	0.0023	U	0.0025	U	0.003	U
1,3,5-Trimethylbenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,3-Dichlorobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,3-Dichloropropane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,4-Dichlorobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
1,4-Dioxane	mg/kg	0.27	U	0.42	U	0.33	U	0.35	U	0.44	U
2,2-Dichloropropane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
2-Butanone	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.013	
2-Hexanone	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U
4-Methyl-2-pentanone	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U
Acetone	mg/kg	0.0054	U	0.026		0.013		0.031		0.21	
Benzene	mg/kg	0.00054	U	0.0011		0.00065	U	0.00071	U	0.00087	U
Bromobenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Bromochloromethane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Bromodichloromethane	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Bromoform	mg/kg	0.0022	U	0.0034	U	0.0026	U	0.0028	U	0.0035	U
Bromomethane	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
Carbon disulfide	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U
Carbon tetrachloride	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Chlorobenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Chloroethane	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
Chloroform	mg/kg	0.00081	U	0.0013	U	0.00098	U	0.0011	U	0.0013	U
Chloromethane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Dibromochloromethane	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Dibromomethane	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-56		SB-55		SB-53		SB-53		SS-A1-01	
SAMPLE ID		AOC 14_SB1_2_15 (dup)		AOC14 SB-2-16		SB-4-4-6		SB-4-8-10		AOCA-1SS-01	
SAMPLING DATE		21-OCT-05		24-OCT-05		10-NOV-05		10-NOV-05		05-DEC-05	
LAB SAMPLE ID		L0512684-03		L0512756-03		L0513787-02		L0513787-03		L0514775-01	
	Units		Qual		Qual		Qual		Qual		Qual
Dichlorodifluoromethane	mg/kg	0.0054	U	0.0084	UJ	0.0065	UJ	0.0071	UJ	0.0087	UJ
Ethyl ether	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.0022	U	0.0034	U	0.0026	U	0.0028	U	0.0035	U
Ethylbenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Hexachlorobutadiene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Isopropyl Ether	mg/kg	0.0022	U	0.0034	U	0.0026	U	0.0028	U	0.0035	U
Isopropylbenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Methyl tert butyl ether	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
Methylene chloride	mg/kg	0.0054	U	0.0084	U	0.0065	U	0.0071	U	0.0087	U
Naphthalene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Styrene	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
Tertiary-Amyl Methyl Ether	mg/kg	0.0022	U	0.0034	U	0.0026	U	0.0028	U	0.0035	U
Tetrachloroethene	mg/kg	0.0014		0.044		0.0025		0.014		0.00087	U
Tetrahydrofuran	mg/kg	0.011	U	0.017	U	0.013	U	0.014	U	0.017	U
Toluene	mg/kg	0.00081	U	0.0019		0.00098	U	0.0011	U	0.0013	U
Trichloroethene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
Trichlorofluoromethane	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
Vinyl chloride	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
cis-1,2-Dichloroethene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
cis-1,3-Dichloropropene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
n-Butylbenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
n-Propylbenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
o-Chlorotoluene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
o-Xylene	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
p-Chlorotoluene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
p-Isopropyltoluene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
p/m-Xylene	mg/kg	0.0011	U	0.0017	U	0.0013	U	0.0014	U	0.0017	U
sec-Butylbenzene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U
tert-Butylbenzene	mg/kg	0.0027	U	0.0042	U	0.0033	U	0.0035	U	0.0044	U
trans-1,2-Dichloroethene	mg/kg	0.00081	U	0.0013	U	0.00098	U	0.0011	U	0.0013	U
trans-1,3-Dichloropropene	mg/kg	0.00054	U	0.00084	U	0.00065	U	0.00071	U	0.00087	U

U - Not Detected
J - Estimated value
Loc. ID with "-RE" indicates a re-analysis by the lab

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SS-A1-01		SS-A1-02		SS-A1-03		SS-A1-03	
SAMPLE ID		AOCA-1SS-01D		AOCA-1SS-02		AOCA-1SS-03		AOCA-1SS-03RE	
SAMPLING DATE		05-DEC-05		05-DEC-05		05-DEC-05		05-DEC-05	
LAB SAMPLE ID		L0514775-02		L0514775-03		L0514775-04		L0514775-04	
	Units		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035-Low									
1,1,1,2-Tetrachloroethane	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
1,1,1-Trichloroethane	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
1,1,2,2-Tetrachloroethane	mg/kg	0.001	U	0.00084	U	0.00099	U	0.0022	J
1,1,2-Trichloroethane	mg/kg	0.0015	U	0.0012	U	0.0015	U	0.0015	U
1,1-Dichloroethane	mg/kg	0.0015	U	0.0012	U	0.0015	U	0.0015	U
1,1-Dichloroethene	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
1,1-Dichloropropene	mg/kg	0.0052	U	0.0042	U	0.005	U	0.005	U
1,2,3-Trichlorobenzene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
1,2,3-Trichloropropane	mg/kg	0.01	U	0.0084	U	0.0099	U	0.0099	U
1,2,4-Trichlorobenzene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
1,2,4-Trimethylbenzene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
1,2-Dibromo-3-chloropropane	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
1,2-Dibromoethane	mg/kg	0.0041	U	0.0033	U	0.004	U	0.004	U
1,2-Dichlorobenzene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
1,2-Dichloroethane	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
1,2-Dichloropropane	mg/kg	0.0036	U	0.0029	U	0.0035	U	0.0035	U
1,3,5-Trimethylbenzene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
1,3-Dichlorobenzene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
1,3-Dichloropropane	mg/kg	0.0052	U	0.0042	U	0.005	U	0.005	U
1,4-Dichlorobenzene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
1,4-Dioxane	mg/kg	0.52	U	0.42	U	0.5	U	0.5	U
2,2-Dichloropropane	mg/kg	0.0052	U	0.0042	U	0.005	U	0.005	U
2-Butanone	mg/kg	0.014	J	0.01	J	0.011	J	0.0099	U
2-Hexanone	mg/kg	0.01	U	0.0084	U	0.0099	U	0.0099	U
4-Methyl-2-pentanone	mg/kg	0.01	U	0.0084	U	0.0099	U	0.0099	U
Acetone	mg/kg	0.26	J	0.17	J	0.23	J	0.22	J
Benzene	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
Bromobenzene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
Bromochloromethane	mg/kg	0.0052	U	0.0042	U	0.005	U	0.005	U
Bromodichloromethane	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
Bromoform	mg/kg	0.0041	U	0.0033	U	0.004	U	0.004	U
Bromomethane	mg/kg	0.0021	U	0.0017	U	0.002	U	0.002	U
Carbon disulfide	mg/kg	0.01	U	0.0084	U	0.0099	U	0.0099	U
Carbon tetrachloride	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
Chlorobenzene	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
Chloroethane	mg/kg	0.0021	U	0.0017	U	0.002	U	0.002	U
Chloroform	mg/kg	0.0015	U	0.0012	U	0.0015	U	0.0015	U
Chloromethane	mg/kg	0.0052	U	0.0042	U	0.005	U	0.005	U
Dibromochloromethane	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
Dibromomethane	mg/kg	0.01	U	0.0084	U	0.0099	U	0.0099	U

Table 6.1.7 Supplemental RFI Soil Sampling Results - VOCs (low)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SS-A1-01		SS-A1-02		SS-A1-03		SS-A1-03	
SAMPLE ID		AOCA-1SS-01D		AOCA-1SS-02		AOCA-1SS-03		AOCA-1SS-03RE	
SAMPLING DATE		05-DEC-05		05-DEC-05		05-DEC-05		05-DEC-05	
LAB SAMPLE ID		L0514775-02		L0514775-03		L0514775-04		L0514775-04	
	Units		Qual		Qual		Qual		Qual
Dichlorodifluoromethane	mg/kg	0.01	UJ	0.0084	UJ	0.0099	UJ	0.0099	UJ
Ethyl ether	mg/kg	0.0052	U	0.0042	U	0.005	U	0.005	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.0041	U	0.0033	U	0.004	U	0.004	U
Ethylbenzene	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
Hexachlorobutadiene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
Isopropyl Ether	mg/kg	0.0041	U	0.0033	U	0.004	U	0.004	U
Isopropylbenzene	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
Methyl tert butyl ether	mg/kg	0.0021	U	0.0017	U	0.002	U	0.002	U
Methylene chloride	mg/kg	0.01	U	0.0084	U	0.0099	U	0.0099	U
Naphthalene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
Styrene	mg/kg	0.0021	U	0.0017	U	0.002	U	0.002	U
Tertiary-Amyl Methyl Ether	mg/kg	0.0041	U	0.0033	U	0.004	U	0.004	U
Tetrachloroethene	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
Tetrahydrofuran	mg/kg	0.021	U	0.017	U	0.02	U	0.02	U
Toluene	mg/kg	0.0015	U	0.0012	U	0.0015	U	0.0015	U
Trichloroethene	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
Trichlorofluoromethane	mg/kg	0.0052	U	0.0042	U	0.005	U	0.005	U
Vinyl chloride	mg/kg	0.0021	U	0.0017	U	0.002	U	0.002	U
cis-1,2-Dichloroethene	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
cis-1,3-Dichloropropene	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U
n-Butylbenzene	mg/kg	0.001	UJ	0.00084	U	0.00099	UJ	0.00099	UJ
n-Propylbenzene	mg/kg	0.001	UJ	0.00084	U	0.00099	UJ	0.00099	UJ
o-Chlorotoluene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
o-Xylene	mg/kg	0.0021	U	0.0017	U	0.002	U	0.002	U
p-Chlorotoluene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
p-Isopropyltoluene	mg/kg	0.001	UJ	0.0025	J	0.00099	UJ	0.025	J
p/m-Xylene	mg/kg	0.0021	U	0.0017	U	0.002	U	0.002	U
sec-Butylbenzene	mg/kg	0.001	UJ	0.00084	U	0.00099	UJ	0.00099	UJ
tert-Butylbenzene	mg/kg	0.0052	UJ	0.0042	U	0.005	UJ	0.005	UJ
trans-1,2-Dichloroethene	mg/kg	0.0015	U	0.0012	U	0.0015	U	0.0015	U
trans-1,3-Dichloropropene	mg/kg	0.001	U	0.00084	U	0.00099	U	0.00099	U

U - Not Detected
J - Estimated value
Loc. ID with "-RE" indicates a re-analysis by the lab

Table 6.1.8 Supplemental RFI Soil Sampling Results - SVOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-57		SB-57		SB-57		SB-57	
SAMPLE ID		SB-220-0.5-2		SB-220-2-4		SB-220-6-8		SB-220-10-11.5	
SAMPLING DATE		14-SEP-05		14-SEP-05		14-SEP-05		14-SEP-05	
LAB SAMPLE ID		L0510808-01		L0510808-02		L0510808-03		L0510808-05	
	Units		Qual		Qual		Qual		Qual
Semivolatile Organics by MCP 8270C									
1,2,4-Trichlorobenzene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
1,2-Dichlorobenzene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
1,3-Dichlorobenzene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
1,4-Dichlorobenzene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
2,4,5-Trichlorophenol	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
2,4,6-Trichlorophenol	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
2,4-Dichlorophenol	mg/kg	0.73	U	0.79	U	0.78	U	0.83	U
2,4-Dimethylphenol	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
2,4-Dinitrophenol	mg/kg	1.5	U	1.6	U	1.6	U	1.7	U
2,4-Dinitrotoluene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
2,6-Dinitrotoluene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
2-Chloronaphthalene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
2-Chlorophenol	mg/kg	0.44	U	0.48	U	0.46	U	0.5	U
2-Methylnaphthalene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
2-Methylphenol	mg/kg	0.44	U	0.48	U	0.46	U	0.5	U
2-Nitrophenol	mg/kg	1.5	U	1.6	U	1.6	U	1.7	U
3,3'-Dichlorobenzidine	mg/kg	0.73	U	0.79	U	0.78	U	0.83	U
3-Methylphenol/4-Methylphenol	mg/kg	0.44	U	0.48	U	0.46	U	0.5	U
4-Bromophenyl phenyl ether	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
4-Chloroaniline	mg/kg	0.37	UJ	0.4	UJ	0.39	UJ	0.42	UJ
4-Nitrophenol	mg/kg	0.73	U	0.79	U	0.78	U	0.83	U
Acenaphthene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Acenaphthylene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Acetophenone	mg/kg	1.5	U	1.6	U	1.6	U	1.7	U
Aniline	mg/kg	0.73	UJ	0.79	UJ	0.78	UJ	0.83	UJ
Anthracene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Azobenzene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Benzo(a)anthracene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Benzo(a)pyrene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Benzo(b)fluoranthene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Benzo(ghi)perylene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Benzo(k)fluoranthene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Bis(2-Ethylhexyl)phthalate	mg/kg	0.73	U	0.79	U	0.78	U	0.83	U
Bis(2-chloroethoxy)methane	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Bis(2-chloroethyl)ether	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Bis(2-chloroisopropyl)ether	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Butyl benzyl phthalate	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U

Table 6.1.8 Supplemental RFI Soil Sampling Results - SVOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

SAMPLE ID		SB-220-0.5-2		SB-220-2-4		SB-220-6-8		SB-220-10-11.5	
SAMPLING DATE		14-SEP-05		14-SEP-05		14-SEP-05		14-SEP-05	
LAB SAMPLE ID		L0510808-01		L0510808-02		L0510808-03		L0510808-05	
	Units		Qual		Qual		Qual		Qual
Chrysene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Di-n-butylphthalate	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Di-n-octylphthalate	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Dibenzo(a,h)anthracene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Dibenzofuran	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Diethyl phthalate	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Dimethyl phthalate	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Fluoranthene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Fluorene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Hexachlorobenzene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Hexachlorobutadiene	mg/kg	0.73	U	0.79	U	0.78	U	0.83	U
Hexachloroethane	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Indeno(1,2,3-cd)Pyrene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Isophorone	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Naphthalene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Nitrobenzene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Pentachlorophenol	mg/kg	1.5	U	1.6	U	1.6	U	1.7	U
Phenanthrene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U
Phenol	mg/kg	0.51	U	0.56	U	0.54	U	0.58	U
Pyrene	mg/kg	0.37	U	0.4	U	0.39	U	0.42	U

U - Not Detected
J - Estimated value

Table 6.1.8 Supplemental RFI Soil Sampling Results - SVOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-53		SB-53		SB-53		SB-54		SB-54
SAMPLE ID		SB-4-0-2		SB-4-4-6		SB-4-8-10		SB-3-0-2		SB-3-3-5
SAMPLING DATE		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05
LAB SAMPLE ID		L0513787-01		L0513787-02		L0513787-03		L0513787-04		L0513787-05
	Units		Qual		Qual		Qual		Qual	
Semivolatile Organics by MCP 8270C										
1,2,4-Trichlorobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
1,2-Dichlorobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
1,3-Dichlorobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
1,4-Dichlorobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2,4,5-Trichlorophenol	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2,4,6-Trichlorophenol	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2,4-Dichlorophenol	mg/kg	0.7	U	0.69	U	0.71	U	0.78	U	0.68
2,4-Dimethylphenol	mg/kg	0.35	UJ	0.34	UJ	0.35	UJ	0.39	UJ	0.34
2,4-Dinitrophenol	mg/kg	1.4	U	1.4	U	1.4	U	1.6	U	1.4
2,4-Dinitrotoluene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2,6-Dinitrotoluene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2-Chloronaphthalene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2-Chlorophenol	mg/kg	0.42	U	0.41	U	0.42	U	0.47	U	0.41
2-Methylnaphthalene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
2-Methylphenol	mg/kg	0.42	U	0.41	U	0.42	U	0.47	U	0.41
2-Nitrophenol	mg/kg	1.4	U	1.4	U	1.4	U	1.6	U	1.4
3,3'-Dichlorobenzidine	mg/kg	0.7	U	0.69	U	0.71	U	0.78	U	0.68
3-Methylphenol/4-Methylphenol	mg/kg	0.42	U	0.41	U	0.42	U	0.47	U	0.41
4-Bromophenyl phenyl ether	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
4-Chloroaniline	mg/kg	0.35	UJ	0.34	UJ	0.35	UJ	0.39	UJ	0.34
4-Nitrophenol	mg/kg	0.7	U	0.69	U	0.71	U	0.78	U	0.68
Acenaphthene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Acenaphthylene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Acetophenone	mg/kg	1.4	U	1.4	U	1.4	U	1.6	U	1.4
Aniline	mg/kg	0.7	UJ	0.69	UJ	0.71	UJ	0.78	UJ	0.68
Anthracene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Azobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Benzo(a)anthracene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Benzo(a)pyrene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Benzo(b)fluoranthene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Benzo(ghi)perylene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Benzo(k)fluoranthene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Bis(2-Ethylhexyl)phthalate	mg/kg	0.7	U	0.69	U	0.71	U	0.78	U	0.68
Bis(2-chloroethoxy)methane	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Bis(2-chloroethyl)ether	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Bis(2-chloroisopropyl)ether	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Butyl benzyl phthalate	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34

Table 6.1.8 Supplemental RFI Soil Sampling Results - SVOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

SAMPLE ID		SB-4-0-2		SB-4-4-6		SB-4-8-10		SB-3-0-2		SB-3-3-5
SAMPLING DATE		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05
LAB SAMPLE ID		L0513787-01		L0513787-02		L0513787-03		L0513787-04		L0513787-05
	Units		Qual		Qual		Qual		Qual	
Chrysene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Di-n-butylphthalate	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Di-n-octylphthalate	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Dibenzo(a,h)anthracene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Dibenzofuran	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Diethyl phthalate	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Dimethyl phthalate	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Fluoranthene	mg/kg	0.46		0.34	U	0.35	U	0.39	U	0.34
Fluorene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Hexachlorobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Hexachlorobutadiene	mg/kg	0.7	U	0.69	U	0.71	U	0.78	U	0.68
Hexachloroethane	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Indeno(1,2,3-cd)Pyrene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Isophorone	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Naphthalene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Nitrobenzene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Pentachlorophenol	mg/kg	1.4	U	1.4	U	1.4	U	1.6	U	1.4
Phenanthrene	mg/kg	0.35	U	0.34	U	0.35	U	0.39	U	0.34
Phenol	mg/kg	0.49	U	0.48	U	0.5	U	0.55	U	0.48
Pyrene	mg/kg	0.39		0.34	U	0.35	U	0.39	U	0.34

U - Not Detected
J - Estimated value

Table 6.1.8 Supplemental RFI Soil Sampling Results - SVOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION			SB-54		SB-54	
SAMPLE ID			SB-3-7.5-9.5		SB-3-7.5-9.5 DUP	
SAMPLING DATE			10-NOV-05		10-NOV-05	
LAB SAMPLE ID			L0513787-06		L0513787-07	
	Units	Qual		Qual		Qual
Semivolatile Organics by MCP 8270C						
1,2,4-Trichlorobenzene	mg/kg	U	0.36	U	0.36	U
1,2-Dichlorobenzene	mg/kg	U	0.36	U	0.36	U
1,3-Dichlorobenzene	mg/kg	U	0.36	U	0.36	U
1,4-Dichlorobenzene	mg/kg	U	0.36	U	0.36	U
2,4,5-Trichlorophenol	mg/kg	U	0.36	U	0.36	U
2,4,6-Trichlorophenol	mg/kg	U	0.36	U	0.36	U
2,4-Dichlorophenol	mg/kg	U	0.72	U	0.72	U
2,4-Dimethylphenol	mg/kg	UJ	0.36	UJ	0.36	UJ
2,4-Dinitrophenol	mg/kg	U	1.4	U	1.4	U
2,4-Dinitrotoluene	mg/kg	U	0.36	U	0.36	U
2,6-Dinitrotoluene	mg/kg	U	0.36	U	0.36	U
2-Chloronaphthalene	mg/kg	U	0.36	U	0.36	U
2-Chlorophenol	mg/kg	U	0.43	U	0.43	U
2-Methylnaphthalene	mg/kg	U	0.36	U	0.36	U
2-Methylphenol	mg/kg	U	0.43	U	0.43	U
2-Nitrophenol	mg/kg	U	1.4	U	1.4	U
3,3'-Dichlorobenzidine	mg/kg	U	0.72	U	0.72	U
3-Methylphenol/4-Methylphenol	mg/kg	U	0.43	U	0.43	U
4-Bromophenyl phenyl ether	mg/kg	U	0.36	U	0.36	U
4-Chloroaniline	mg/kg	UJ	0.36	UJ	0.36	UJ
4-Nitrophenol	mg/kg	U	0.72	U	0.72	U
Acenaphthene	mg/kg	U	0.36	U	0.36	U
Acenaphthylene	mg/kg	U	0.36	U	0.36	U
Acetophenone	mg/kg	U	1.4	U	1.4	U
Aniline	mg/kg	UJ	0.72	UJ	0.72	UJ
Anthracene	mg/kg	U	0.36	U	0.36	U
Azobenzene	mg/kg	U	0.36	U	0.36	U
Benzo(a)anthracene	mg/kg	U	0.36	U	0.36	U
Benzo(a)pyrene	mg/kg	U	0.36	U	0.36	U
Benzo(b)fluoranthene	mg/kg	U	0.36	U	0.36	U
Benzo(ghi)perylene	mg/kg	U	0.36	U	0.36	U
Benzo(k)fluoranthene	mg/kg	U	0.36	U	0.36	U
Bis(2-Ethylhexyl)phthalate	mg/kg	U	0.72	U	0.72	U
Bis(2-chloroethoxy)methane	mg/kg	U	0.36	U	0.36	U
Bis(2-chloroethyl)ether	mg/kg	U	0.36	U	0.36	U
Bis(2-chloroisopropyl)ether	mg/kg	U	0.36	U	0.36	U
Butyl benzyl phthalate	mg/kg	U	0.36	U	0.36	U

Table 6.1.8 Supplemental RFI Soil Sampling Results - SVOCs
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BASF Corporation, Plainville, Massachusetts

DRAFT

SAMPLE ID			SB-3-7.5-9.5		SB-3-7.5-9.5 DUP	
SAMPLING DATE			10-NOV-05		10-NOV-05	
LAB SAMPLE ID			L0513787-06		L0513787-07	
	Units	Qual		Qual		Qual
Chrysene	mg/kg	U	0.36	U	0.36	U
Di-n-butylphthalate	mg/kg	U	0.36	U	0.36	U
Di-n-octylphthalate	mg/kg	U	0.36	U	0.36	U
Dibenzo(a,h)anthracene	mg/kg	U	0.36	U	0.36	U
Dibenzofuran	mg/kg	U	0.36	U	0.36	U
Diethyl phthalate	mg/kg	U	0.36	U	0.36	U
Dimethyl phthalate	mg/kg	U	0.36	U	0.36	U
Fluoranthene	mg/kg	U	0.36	U	0.36	U
Fluorene	mg/kg	U	0.36	U	0.36	U
Hexachlorobenzene	mg/kg	U	0.36	U	0.36	U
Hexachlorobutadiene	mg/kg	U	0.72	U	0.72	U
Hexachloroethane	mg/kg	U	0.36	U	0.36	U
Indeno(1,2,3-cd)Pyrene	mg/kg	U	0.36	U	0.36	U
Isophorone	mg/kg	U	0.36	U	0.36	U
Naphthalene	mg/kg	U	0.36	U	0.36	U
Nitrobenzene	mg/kg	U	0.36	U	0.36	U
Pentachlorophenol	mg/kg	U	1.4	U	1.4	U
Phenanthrene	mg/kg	U	0.36	U	0.36	U
Phenol	mg/kg	U	0.51	U	0.51	U
Pyrene	mg/kg	U	0.36	U	0.36	U

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-57		SB-57		SB-57		SB-57	
SAMPLE ID		SB-220-0.5-2		SB-220-2-4		SB-220-6-8		SB-220-10-11.5	
SAMPLING DATE		14-SEP-05		14-SEP-05		14-SEP-05		14-SEP-05	
LAB SAMPLE ID		L0510808-01		L0510808-02		L0510808-03		L0510808-05	
	Units		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series									
Antimony, Total	mg/kg	2.2	U	2.4	U	2.3	U	2.5	U
Arsenic, Total	mg/kg	0.75		0.47	U	0.46	U	1	U
Beryllium, Total	mg/kg	0.22		0.24	U	0.23	U	0.25	U
Cadmium, Total	mg/kg	0.44	U	0.47	U	0.46	U	0.5	U
Chromium, Total	mg/kg	11		8.8		3.9		5.3	
Copper, Total	mg/kg	6.9		7.1		5		6	
Lead, Total	mg/kg	9.5		6.3		3.1		3.3	
Mercury, Total	mg/kg	0.084	U	0.091	U	0.093	U	0.097	U
Nickel, Total	mg/kg	17		6.7		4.6		5.7	
Selenium, Total	mg/kg	2.2	U	2.4	U	2.3	U	2.5	U
Silver, Total	mg/kg	0.44		0.47	U	0.46	U	0.5	U
Thallium, Total	mg/kg	2.2	U	2.4	U	2.3	U	2.5	U
Zinc, Total	mg/kg	18		21		16		18	

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-50		SB-50		SB-50		SB-51	
SAMPLE ID		AOCA1 SB1-1-1		AOCA1 SB1-2-7		AOCA1 SB1-3-9		AOCA1 SB2-1-1	
SAMPLING DATE		10-OCT-05		10-OCT-05		11-OCT-05		11-OCT-05	
LAB SAMPLE ID		L0512119-01		L0512119-02		L0512119-03		L0512119-04	
	Units		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series									
Antimony, Total	mg/kg	2.5	U	2.1	U	2.1	U	2.1	U
Arsenic, Total	mg/kg	2.3		1		1		1.2	
Beryllium, Total	mg/kg	0.25	U	0.21	U	0.21	U	0.21	U
Cadmium, Total	mg/kg	2.1		0.41	U	5		2.4	
Chromium, Total	mg/kg	7.7		6.4		6.8		3.9	
Copper, Total	mg/kg	10		6.8		30		6.9	
Lead, Total	mg/kg	14		4		3.2		3.5	
Mercury, Total	mg/kg	0.098	U	0.087	U	0.082	U	0.087	U
Nickel, Total	mg/kg	5.2		5		5.6		4.5	
Selenium, Total	mg/kg	2.5	U	2.1	U	2.1	U	2.1	U
Silver, Total	mg/kg	3.4		0.41	U	1.3		1.6	
Thallium, Total	mg/kg	2.5	U	2.1	U	2.1	U	2.1	U
Zinc, Total	mg/kg	65		19		26		21	

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-51		SB-51		SB-51		SB-52	
SAMPLE ID		AOCA1 SB2-2-5		AOCA1 SB2-3-9		AOCA1 SB2-3-9-DUP		AOCA1 SB3-1-1	
SAMPLING DATE		11-OCT-05		11-OCT-05		11-OCT-05		10-OCT-05	
LAB SAMPLE ID		L0512119-05		L0512119-06		L0512119-11		L0512119-07	
	Units		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series									
Antimony, Total	mg/kg	2.1	U	2	U	2.1	U	2.2	U
Arsenic, Total	mg/kg	1		1		0.9		1.6	
Beryllium, Total	mg/kg	0.21	U	0.2	U	0.21	U	0.22	U
Cadmium, Total	mg/kg	0.62		0.41	U	0.42		3	
Chromium, Total	mg/kg	6.1		8.4		8.7		7.7	
Copper, Total	mg/kg	6.4		16		14		10	
Lead, Total	mg/kg	4.3		5.1		4.9		8.7	
Mercury, Total	mg/kg	0.083	U	0.076	U	0.082	U	0.091	U
Nickel, Total	mg/kg	4.4		11		9.3		5.4	
Selenium, Total	mg/kg	2.1	U	2	U	2.1	U	2.2	U
Silver, Total	mg/kg	1.6		4.5	J	2.9	J	4.8	
Thallium, Total	mg/kg	2.1	U	2	U	2.1	U	2.2	U
Zinc, Total	mg/kg	15		18		19		23	

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
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DRAFT

LOCATION		SB-52		SB-52		SB-56		SB-56	
SAMPLE ID		AOCA1 SB3-2-7		AOCA1 SB3-3-9		AOC 14_SB1-1-9		AOC 14_SB1-2-15	
SAMPLING DATE		10-OCT-05		10-OCT-05		21-OCT-05		21-OCT-05	
LAB SAMPLE ID		L0512119-08		L0512119-09		L0512684-01		L0512684-02	
	Units		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series									
Antimony, Total	mg/kg	2.5	U	2.1	U	2.2	U	2.1	U
Arsenic, Total	mg/kg	1.7		1.2		1.7		0.98	
Beryllium, Total	mg/kg	0.25	U	0.21		0.22	U	0.21	U
Cadmium, Total	mg/kg	13		4.6		0.44	U	0.41	U
Chromium, Total	mg/kg	9.2		12		8.2		6.4	
Copper, Total	mg/kg	120		50		6.8		6.3	
Lead, Total	mg/kg	18		4.6		4.6		3.7	
Mercury, Total	mg/kg	0.097	U	0.079	U	0.091	U	0.082	U
Nickel, Total	mg/kg	5.9		27		5.9		6.5	
Selenium, Total	mg/kg	2.5	U	2.1	U	2.2	U	2.1	U
Silver, Total	mg/kg	62		11		0.44	U	0.41	U
Thallium, Total	mg/kg	2.5	U	2.1	U	2.2	U	2.1	U
Zinc, Total	mg/kg	51		36		16		13	

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
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DRAFT

LOCATION		SB-56		SB-55		SB-55		SB-55
SAMPLE ID		AOC 14_SB1-2-15DUP		AOC14 SB2-1-10		AOC14 SB2-1-10DUP		AOC14 SB-2-16
SAMPLING DATE		21-OCT-05		24-OCT-05		24-OCT-05		24-OCT-05
LAB SAMPLE ID		L0512684-03		L0512756-01		L0512756-02		L0512756-03
	Units		Qual		Qual		Qual	
Total Metals by MCP 6000/7000 series								
Antimony, Total	mg/kg	2	U	2.2	U	2.2	U	2
Arsenic, Total	mg/kg	0.95		1.8		2.4		0.41
Beryllium, Total	mg/kg	0.2	U	0.25		0.25		0.2
Cadmium, Total	mg/kg	0.41	U	0.45	U	0.43	U	0.41
Chromium, Total	mg/kg	6.7		8.8		10		16
Copper, Total	mg/kg	5.2		7.4		8.1		8.2
Lead, Total	mg/kg	3.4		4.8		5.3		3.8
Mercury, Total	mg/kg	0.084	U	0.092	U	0.088	U	0.08
Nickel, Total	mg/kg	5		4.9		6		6.2
Selenium, Total	mg/kg	2	U	2.2	U	2.2	U	2
Silver, Total	mg/kg	0.41	U	0.45	U	0.43	U	0.41
Thallium, Total	mg/kg	2	U	2.2	U	2.2	U	2
Zinc, Total	mg/kg	13		18		20		16

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION			SB-53		SB-53		SB-53		SB-54	
SAMPLE ID			SB-4-0-2		SB-4-4-6		SB-4-8-10		SB-3-0-2	
SAMPLING DATE			10-NOV-05		10-NOV-05		10-NOV-05		10-NOV-05	
LAB SAMPLE ID			L0513787-01		L0513787-02		L0513787-03		L0513787-04	
	Units	Qual		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series										
Antimony, Total	mg/kg	U	2.1	U	2	U	2.1	U	2.3	U
Arsenic, Total	mg/kg	U	1.9		1.2		1		2.1	
Beryllium, Total	mg/kg	U	0.21	U	0.2	U	0.21	U	0.23	U
Cadmium, Total	mg/kg	U	1200		15		9		0.46	U
Chromium, Total	mg/kg		110		14		14		5.5	
Copper, Total	mg/kg		290		8		12		9.7	
Lead, Total	mg/kg		38		4.4		4.4		4.3	
Mercury, Total	mg/kg	U	0.23		0.08	U	0.084	U	0.089	U
Nickel, Total	mg/kg		18		4.4		5.4		7.5	
Selenium, Total	mg/kg	U	2.1	U	2	U	2.1	U	2.3	U
Silver, Total	mg/kg	U	110		6.2		4.3		2.9	
Thallium, Total	mg/kg	U	2.1	U	2	U	2.1	U	2.3	U
Zinc, Total	mg/kg		440		20		32		18	

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
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BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-54		SB-54		SB-54		SS-A1-01	
SAMPLE ID		SB-3-3-5		SB-3-7.5-9.5		SB-3-7.5-9.5 DUP		SS-A1-01	
SAMPLING DATE		10-NOV-05		10-NOV-05		10-NOV-05		05-DEC-05	
LAB SAMPLE ID		L0513787-05		L0513787-06		L0513787-07		L0514775-01	
	Units		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series									
Antimony, Total	mg/kg	2	U	2.1	U	2.1	U	2.3	U
Arsenic, Total	mg/kg	1.2		1.1		1.2		1.5	
Beryllium, Total	mg/kg	0.2	U	0.21	U	0.21	U	0.23	U
Cadmium, Total	mg/kg	0.41	U	2.8		2.9		2	
Chromium, Total	mg/kg	7.4		4.8		4.8		4.6	
Copper, Total	mg/kg	8.5		53	J	100	J	12	
Lead, Total	mg/kg	3.7		5.6		6.1		13	
Mercury, Total	mg/kg	0.079	U	0.09	U	0.089	U	0.091	U
Nickel, Total	mg/kg	10		9	J	20	J	4.6	
Selenium, Total	mg/kg	2	U	2.1	U	2.1	U	2.3	U
Silver, Total	mg/kg	1.1		4.2	J	10	J	4.3	
Thallium, Total	mg/kg	2	U	2.1	U	2.1	U	2.3	U
Zinc, Total	mg/kg	20		54		55		26	

U - Not Detected
J - Estimated value

Table 6.1.9 Supplemental RFI Soil Sampling Results - Metals
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BASF Corporation, Plainville, Massachusetts

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LOCATION		SS-A1-01		SS-A1-02		SS-A1-03	
SAMPLE ID		SS-A1-01 Dup		SS-A1-02		SS-A1-03	
SAMPLING DATE		05-DEC-05		05-DEC-05		05-DEC-05	
LAB SAMPLE ID		L0514775-02		L0514775-03		L0514775-04	
	Units		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series							
Antimony, Total	mg/kg	2.3	U	2.4	U	2.3	U
Arsenic, Total	mg/kg	1.6		1.9		1.5	
Beryllium, Total	mg/kg	0.23	U	0.24	U	0.23	U
Cadmium, Total	mg/kg	2.2		6.6		2.9	
Chromium, Total	mg/kg	4.9		8.7		6.8	
Copper, Total	mg/kg	11		25		30	
Lead, Total	mg/kg	13		36		11	
Mercury, Total	mg/kg	0.091	U	0.098	U	0.087	U
Nickel, Total	mg/kg	4.3		5.8		4.9	
Selenium, Total	mg/kg	2.3	U	2.4	U	2.3	U
Silver, Total	mg/kg	4.7		20		20	
Thallium, Total	mg/kg	2.3	U	2.4	U	2.3	U
Zinc, Total	mg/kg	33		38		29	

U - Not Detected
J - Estimated value

Table 6.1.10 Supplemental RFI Soil Sampling Results - PCBs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SS-A1-01		SS-A1-01		SS-A1-02		SS-A1-03	
SAMPLE ID		SS-A1-01		SS-A1-01Dup		SS-A1-02		SS-A1-03	
SAMPLING DATE		05-DEC-05		05-DEC-05		05-DEC-05		05-DEC-05	
LAB SAMPLE ID		L0514775-01		L0514775-02		L0514775-03		L0514775-04	
			Qual		Qual		Qual		Qual
Polychlorinated Biphenyls by MCP 8082									
	Units								
Aroclor 1221	mg/kg	0.0379	U	0.0392	U	0.0406	U	0.0383	U
Aroclor 1232	mg/kg	0.0379	U	0.0392	U	0.0406	U	0.0383	U
Aroclor 1242	mg/kg	0.0379	U	0.0392	U	0.0406	U	0.0383	U
Aroclor 1242/1016	mg/kg	0.0379	U	0.0392	U	0.0406	U	0.0383	U
Aroclor 1248	mg/kg	0.0379	U	0.0392	U	0.0594		0.0383	U
Aroclor 1254	mg/kg	0.0379	U	0.0392	U	0.0476		0.0383	U
Aroclor 1260	mg/kg	0.0379	U	0.0392	U	0.0406	U	0.0383	U
Aroclor 1262	mg/kg	0.0379	U	0.0392	U	0.0406	U	0.0383	U
Aroclor 1268	mg/kg	0.0379	U	0.0392	U	0.0406	U	0.0383	U

U - Not Detected
J - Estimated value

Table 6.1.10 Supplemental RFI Soil Sampling Results - PCBs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-58		SB-59		SB-50		SB-50	
SAMPLE ID		AOC 30 SB-1-6		AOC 30 SB-2-5		AOCA1 SB1-1-1		AOCA1 SB1-2-7	
SAMPLING DATE		14-NOV-05		14-NOV-05		10-OCT-05		10-OCT-05	
LAB SAMPLE ID		L0514001-01		L0514001-02		L0512119-01		L0512119-02	
			Qual		Qual		Qual		Qual
Polychlorinated Biphenyls by MCP 8082									
	Units								
Aroclor 1221	mg/kg	0.0351	U	0.0358	U	0.0417	U	0.0351	U
Aroclor 1232	mg/kg	0.0351	U	0.0358	U	0.0417	U	0.0351	U
Aroclor 1242	mg/kg	0.0351	U	0.0358	U				
Aroclor 1242/1016	mg/kg	0.0351	U	0.0358	U	0.0417	U	0.0351	U
Aroclor 1248	mg/kg	0.0351	U	0.0358	U	0.0417	U	0.0351	U
Aroclor 1254	mg/kg	0.0351	U	0.0358	U	0.0417	U	0.0351	U
Aroclor 1260	mg/kg	0.0351	U	0.0358	U	0.0417	U	0.0351	U
Aroclor 1262	mg/kg	0.0351	U	0.0358	U	0.0417	U	0.0351	U
Aroclor 1268	mg/kg	0.0351	U	0.0358	U	0.0417	U	0.0351	U

U - Not Detected
J - Estimated value

Table 6.1.10 Supplemental RFI Soil Sampling Results - PCBs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-50		SB-51		SB-51		SB-51	
SAMPLE ID		AOCA1 SB1-3-9		AOCA1 SB2-1-1		AOCA1 SB2-2-5		AOCA1 SB2-3-9	
SAMPLING DATE		11-OCT-05		11-OCT-05		11-OCT-05		11-OCT-05	
LAB SAMPLE ID		L0512119-03		L0512119-04		L0512119-05		L0512119-06	
			Qual		Qual		Qual		Qual
Polychlorinated Biphenyls by MCP 8082									
	Units								
Aroclor 1221	mg/kg	0.0351	U	0.0351	U	0.0347	U	0.0347	U
Aroclor 1232	mg/kg	0.0351	U	0.0351	U	0.0347	U	0.0347	U
Aroclor 1242	mg/kg								
Aroclor 1242/1016	mg/kg	0.0351	U	0.0351	U	0.0347	U	0.0347	U
Aroclor 1248	mg/kg	0.0351	U	0.0351	U	0.0347	U	0.0347	U
Aroclor 1254	mg/kg	0.0351	U	0.0351	U	0.0347	U	0.0347	U
Aroclor 1260	mg/kg	0.0351	U	0.0351	U	0.0347	U	0.0347	U
Aroclor 1262	mg/kg	0.0351	U	0.0351	U	0.0347	U	0.0347	U
Aroclor 1268	mg/kg	0.0351	U	0.0351	U	0.0347	U	0.0347	U

U - Not Detected
J - Estimated value

Table 6.1.10 Supplemental RFI Soil Sampling Results - PCBs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-51		SB-52		SB-52		SB-52	
SAMPLE ID		AOCA1 SB2-3-9DUP		AOCA1 SB3-1-1		AOCA1 SB3-2-7		AOCA1 SB3-3-9	
SAMPLING DATE		11-OCT-05		10-OCT-05		10-OCT-05		10-OCT-05	
LAB SAMPLE ID		L0512119-11		L0512119-07		L0512119-08		L0512119-09	
			Qual		Qual		Qual		Qual
Polychlorinated Biphenyls by MCP 8082									
	Units								
Aroclor 1221	mg/kg	0.0355	U	0.0374	U	0.0417	U	0.0355	U
Aroclor 1232	mg/kg	0.0355	U	0.0374	U	0.0417	U	0.0355	U
Aroclor 1242	mg/kg								
Aroclor 1242/1016	mg/kg	0.0355	U	0.0374	U	0.0417	U	0.0355	U
Aroclor 1248	mg/kg	0.0355	U	0.0374	U	0.0417	U	0.0355	U
Aroclor 1254	mg/kg	0.0355	U	0.0374	U	0.0417	U	0.0355	U
Aroclor 1260	mg/kg	0.0355	U	0.0374	U	0.0417	U	0.0355	U
Aroclor 1262	mg/kg	0.0355	U	0.0374	U	0.0417	U	0.0355	U
Aroclor 1268	mg/kg	0.0355	U	0.0374	U	0.0417	U	0.0355	U

U - Not Detected
J - Estimated value

Table 6.1.11 Supplemental RFI Soil Sampling Results - Total Organic Carbon
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SB-220-12-14		MW12B-A		MW12B-B		MW-45B-12-14		MW-45B-22-23.5	
SAMPLING DATE		14-SEP-05		23-SEP-05		23-SEP-05		16-SEP-05		16-SEP-05	
LAB SAMPLE ID		L0510808-06		L0511458-01		L0511458-02		L0510956-01		L0510956-02	
	Units		Qual		Qual		Qual		Qual		Qual
Solids, Total	%	89		92		90		84		84	
Total Organic Carbon	%	0.128		0.03		0.039		0.374		0.121	

Table 6-1-12: Soil and Bedrock Analytical Data - P16C
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

		SAMPLE ID	DEEPWELLBORING -SOIL		RS-1		RS-2		RS-3		RS-4		RS-5		RS-6	
		SAMPLE TYPE	Soil		Rock		Rock		Rock		Rock		Rock		Rock	
		SAMPLE DEPTH (ft. bgs)	28.0' - 29.5'		44.25'		66'		80.75'		120.5'		140.5'		167.0'	
		Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Solids, Total		%	90		100		98		99		99		99		98	
Detected Volatile Organic Compounds																
Tetrachloroethene	1	mg/kg	**0.590**		**0.550**		**2.400**		**1.200**		**1.000**		0.049	U	0.048	U
1,1,1-Trichloroethane	30	mg/kg	0.075	U	**0.086**		**0.220**		**1.100**		**0.800**		**0.420**		**0.900**	
1,1-Dichloroethene	3	mg/kg	0.075	U	**0.084**		**0.340**		**0.440**		**0.320**		0.049	U	0.048	U
Trichloroethene	0.3	mg/kg	**0.180**		0.055	U	**0.140**		0.041	U	0.047	U	0.049	U	0.048	U
cis-1,2-Dichloroethene	0.3	mg/kg	**0.250**		**0.380**		**0.320**		0.041	U	0.047	U	0.049	U	0.048	U
Total VOCs		mg/kg	**1.020**		**1.100**		**3.420**		**2.740**		**2.120**		**0.420**		**0.900**	

Notes:
1. U indicates compound was not detected
2. Bold entries indicate detection at specified concentration.
3. Total VOCs calculated as sum of detected compounds.
4. Only detected compounds are presented.

		SAMPLE ID	**RS-7**		**RS-8**		**RS-9**		**RS-10**		**RS-11**	
		SAMPLE TYPE	**Rock**		**Rock**		**Rock**		**Rock**		**Rock**	
		SAMPLE DEPTH (ft. bgs)	**197.0'**		**215.5'**		**244'**		**255.25'**		**277.25'**	
		Units		**Qual**		**Qual**		**Qual**		**Qual**		**Qual**
Solids, Total		%	97		97		96		98		99	
Detected Volatile Organic Compounds												
Tetrachloroethene	1	mg/kg	0.058	U	0.059	U	**0.069**		**0.170**		0.046	U
1,1,1-Trichloroethane	30	mg/kg	0.058	U	0.059	U	0.064	U	0.046	U	0.046	U
1,1-Dichloroethene	3	mg/kg	0.058	U	0.059	U	0.064	U	0.046	U	0.046	U
Trichloroethene	0.3	mg/kg	0.058	U	0.059	U	0.064	U	0.046	U	0.046	U
cis-1,2-Dichloroethene	0.3	mg/kg	0.058	U	0.059	U	0.064	U	0.046	U	0.046	U
Total VOCs		mg/kg	ND		ND		**0.069**		**0.170**		ND	

Notes:
1. U indicates compound was not detected
2. Bold entries indicate detection at specified concentration.
3. Total VOCs calculated as sum of detected compounds.
4. Only detected compounds are presented.

Table 6.1.13 Southern Perimeter Soil Boring MW54A - VOCs, Metals, PCBs **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW54A		MW54A	
SAMPLE ID		MW54A 0-2 FT		MW54A 8FT	
SAMPLING DATE		30-Aug-10		30-Aug-10	
LAB SAMPLE ID		L1013419-01		L1013419-02	
	Units		Qual		Qual
Volatile Organics by MCP 8260B/5035 (Detecetd Values Only)					
Chloroform	µg/kg			4.1	
Dibromochloromethane	µg/kg			3.3	
Tetrachloroethene	µg/kg			1.6	
Bromodichloromethane	µg/kg			3.4	
Toluene	µg/kg			3.8	
Ethylbenzene	µg/kg			1.1	
m,p-Xylene	µg/kg			4.1	
o-Xylene	µg/kg			2.3	
Naphthalene	µg/kg			4.1	
MCP Total Metals					
Antimony, total	mg/kg	2.3	U		
Arsenic, total	mg/kg	1.6			
Beryllium, total	mg/kg	0.64			
Cadmium, total	mg/kg	2.6			
Chromium, total	mg/kg	6.4			
Copper, total	mg/kg	3.4			
Lead, total	mg/kg	6.8			
Mercury, total	mg/kg	0.08	U		
Nickel, total	mg/kg	6.3			
Selenium, total	mg/kg	2.3	U		
Silver, total	mg/kg	0.45	U		
Thallium, total	mg/kg	2.3	U		
Zinc, total	mg/kg	22			
MCP Polychlorinated Biphenyls					
Aroclor 1016	µg/kg	37.4	U		
Aroclor 1221	µg/kg	37.4	U		
Aroclor 1232	µg/kg	37.4	U		
Aroclor 1242	µg/kg	37.4	U		
Aroclor 1248	µg/kg	37.4	U		
Aroclor 1254	µg/kg	37.4	U		
Aroclor 1260	µg/kg	37.4	U		
Aroclor 1262	µg/kg	37.4	U		
Aroclor 1268	µg/kg	37.4	U		

U - Not Detected

Table 6.2.1: Supplemental RFI Ground Water Sampling Program **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Well Number	Zone	Sample ID	Date Collected	Lab Report No.	VOCs	Total & Dissolved Metals	MNA Parameters
MW01	OB	MW01	22-DEC-05	L0515714	√	√	
MW02	OB	MW02	12-JAN-06	L0600505	√	√	
MW04	OB	MW04	17-JAN-06	L0600713	√	√	√
MW04	OB	MW04 DUP	17-JAN-06	L0600713	√	√	
MW04	OB	MW04	03-AUG-06	L0611068	√		
MW07	OB	MW07	15-DEC-05	L0515362	√[1]	√	√
MW08	OB	MW08	13-JAN-06	L0600613	√	√	
MW09	OB	MW09	20-DEC-05	L0515606	√	√	√
MW09B	BR	MW09B	19-JAN-06	L0600875	√	√	√
MW09B	BR	MW09B	04-APR-06	L0604744	√	√	
MW09C	DBR	MW09C	19-JAN-06	L0600875	√[1]	√	√
MW09C	DBR	MW09C	04-APR-06	L0604744	√	√	
MW12A	OB	MW12A	13-JAN-06	L0600613	√	√	
MW12A	OB	MW12A	06-APR-06	L0604864	√	√	
MW12B	BR	MW12B	13-JAN-06	L0600613	√	√	
MW12B	BR	MW12B	06-APR-06	L0604864	√	√	
MW14	BR	MW14	17-JAN-06	L0600713	√	√	
MW15	BR	MW15	17-JAN-06	L0600713	√	√	√
MW15	BR	MW15	03-AUG-06	L0611068	√		
MW16	BR	MW16	17-JAN-06	L0600713	√	√	
MW17	BR	MW17	17-JAN-06	L0600713	√	√	√
MW17	BR	MW17	03-AUG-06	L0611068	√		
MW17	BR	MW17 DUP	03-AUG-06	L0611068	√		
MW19	BR	MW19	13-JAN-06	L0600613	√	√	
MW20A	OB	MW20A	12-JAN-06	L0600505	√	√	
MW20B	BR	MW20B	12-JAN-06	L0600505	√	√	
MW20C	DBR	MW20C	19-JAN-06	L0600875	√	√	
MW20C	DBR	MW20C	04-APR-06	L0604744	√	√	
MW21A	OB	MW21A	11-JAN-06	L0600417	√	√	√
MW21B	BR	MW21B	11-JAN-06	L0600417	√	√	√
MW21C	DBR	MW21C	12-JAN-06	L0600505	√	√	√
MW21C	DBR	MW21C	04-APR-06	L0604744	√[1]	√	
MW22A	OB	MW22A	21-DEC-05	L0515665	√	√	√
MW22B	BR	MW22B	21-DEC-05	L0515665	√[1]	√	√
MW22C	DBR	MW22C	11-JAN-06	L0600417	√	√	
MW23A	OB	MW23A	10-JAN-06	L0600326	√	√	
MW23B	BR	MW23B	10-JAN-06	L0600326	√	√	
MW26	OB	MW26	20-DEC-05	L0515606	√	√	
MW29	BR	MW29	04-AUG-06	L0611166	√		
MW30A	OB	MW30A	22-DEC-05	L0515714	√	√	
MW30B	BR	MW30B	13-JAN-06	L0600613	√	√	
MW32A	OB	MW32A	04-AUG-06	L0611166	√[1]		
MW32B	BR	MW32B	04-AUG-06	L0611166	√		
MW33A	OB	MW33A	19-DEC-05	L0515541	√	√	
MW33B	BR	MW33B	19-DEC-05	L0515541	√	√	
MW33C	DBR	MW33C	19-DEC-05	L0515541	√	√	
MW37	BR	MW37	15-DEC-05	L0515362	√	√	√
MW38	DBR	MW38	13-JAN-06	L0600613	√	√	
MW40A	OB	MW40A	12-JAN-06	L0600505	√	√	√
MW40B	BR	MW40B	12-JAN-06	L0600505	√	√	√
MW41A	OB	MW41A	10-JAN-06	L0600326	√	√	√
MW41B	BR	MW41B	10-JAN-06	L0600326	√	√	√
MW41B	BR	MW41B DUP	10-JAN-06	L0600326	√	√	√
MW42	DBR	MW42	24-FEB-06	L0602632	√	√	
MW42	DBR	MW42	06-APR-06	L0604864	√	√	
MW43B	BR	MW43B	11-JAN-06	L0600417	√	√	
MW43B	BR	MW43B	04-APR-06	L0604744	√	√	

Table 6.2.1: Supplemental RFI Ground Water Sampling Program **DRAFT**
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BASF Corporation, Plainville, Massachusetts

Well Number	Zone	Sample ID	Date Collected	Lab Report No.	VOCs	Total & Dissolved Metals	MNA Parameters
MW43C	DBR	MW43C	11-JAN-06	L0600417	√	√	
MW43C	DBR	MW43C	04-APR-06	L0604744	√	√	
MW44A	OB	MW44A	18-JAN-06	L0600776	√	√	
MW44A	OB	MW44A	07-APR-06	L0604964	√	√	
MW45A	OB	MW45A	18-JAN-06	L0600776	√	√	
MW45A	OB	MW45A	06-APR-06	L0604864	√	√	
MW45B	BR	MW45B	18-JAN-06	L0600776	√	√	
MW45B	BR	MW45B	06-APR-06	L0604864	√	√	
MW46A	OB	MW46A	18-JAN-06	L0600776	√	√	
MW46A	OB	MW46A	07-APR-06	L0604964	√	√	
MW48A	OB	MW48A	13-JAN-06	L0600613	√	√	
MW48A	OB	MW48A	07-APR-06	L0604964	√	√	
MW48B	BR	MW48B	19-JAN-06	L0600875	√	√	
MW48B	BR	MW48B	07-APR-06	L0604964	√	√	
MW49A	OB	MW49A	19-JAN-06	L0600953	√	√	
MW49A	OB	MW49A	07-APR-06	L0604964	√	√	
MW49A	OB	MW49A-DUP	07-APR-06	L0604964	√	√	
P13	OB	P13	03-AUG-06	L0611068	√		
P13A	BR	P13A	17-JAN-06	L0600713	√	√	√
P13A	BR	P13A DUP	17-JAN-06	L0600713	√	√	
P13A	BR	P13A	03-AUG-06	L0611068	√		
TRIP BLANK		TRIP BLANK	12-DEC-05	L0515541	√		
TRIP BLANK		TRIP BLANK	12-DEC-05	L0515606	√		
TRIP BLANK		TRIP BLANK	12-DEC-05	L0515665	√		
TRIP BLANK		TB-122205	20-DEC-05	L0515714	√		
TRIP BLANK		TRIP BLANK	08-JAN-06	L0600326	√		
TRIP BLANK		TRIP BLANK	11-JAN-06	L0600417	√		
TRIP BLANK		TRIP BLANK	12-JAN-06	L0600505	√		
TRIP BLANK		TRIP BLANK	13-JAN-06	L0600505	√		
TRIP BLANK		TRIP BLANK	17-JAN-06	L0600713	√		
TRIP BLANK		TRIP BLANK	18-JAN-06	L0600776	√		
TRIP BLANK		TRIP BLANK	19-JAN-06	L0600875	√		
TRIP BLANK		TB-011906	19-JAN-06	L0600953	√		
TRIP BLANK		TRIP BLANK	24-FEB-06	L0602632	√		
TRIP BLANK		TB-040406	29-MAR-06	L0604744	√		
TRIP BLANK		TRIP BLANK	29-MAR-06	L0604864	√		
TRIP BLANK		TRIP BLANK	28-JUL-06	L0611166	√		
FIELD BLANK		FB-1	17-JAN-06	L0600713	√	√	
FIELD BLANK		FB-2	19-JAN-06	L0600875	√	√	
FIELD BLANK		FB-3	19-JAN-06	L0600875	√	√	
FIELD BLANK		EB-4/7/06	07-APR-06	L0604964	√	√	
FIELD BLANK		FIELD BLANK	04-AUG-06	L0611166	√		

Notes:

$\sqrt{}^{1}$ = Sample also used for matrix spike/matrix spike duplicate sample

MNA Parameters include:
- sulfate/sulfide
- nitrate/nitrite
- chloride
- dissolved gases
- alkalinity
- carbon dioxide

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW01		MW02		MW04		MW04 DUP		MW04		MW07		MW08		MW09	
SAMPLING DATE		22-DEC-05		12-JAN-06		17-JAN-06		17-JAN-06		03-AUG-06		15-DEC-05		13-JAN-06		20-DEC-05	
LAB SAMPLE ID		L0515714-01		L0600505-04		L0600713-05		L0600713-06		L0611068-01		L0515362-02		L0600613-01		L0515606-01	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260																	
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	0.5	U	0.5	U	220		220		560		0.5	U	9.5		0.5	U
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	38	U	38	U	38	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	0.75	U	0.75	U	38	U	38	U	38	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	25	U	25	U	26		0.5	U	1		0.5	U
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	88	U	88	U	88	U	1.8	U	1.8	U	1.8	U
1,4-Dioxane	ug/l	250	U	250	U	12000	U	12000	U	12000	U	250	U	250	U	250	U
2-Butanone	ug/l	5	U	5	U	250	U	250	U	250	U	5	U	5	U	5	U
2-Chloroethylvinyl ether	ug/l	10	UJ	10	UJ	25000	UJ	25000	UJ	500	UJ	10	UJ	10	UJ	10	UJ
2-Hexanone	ug/l	5	U	5	U	250	U	250	U	250	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	250	U	250	U	250	U	5	U	5	U	5	U
Acetone	ug/l	5	U	5	U	250	U	250	U	250	U	5	U	5	U	5	U
Benzene	ug/l	0.5	U	0.5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	2	U	2	U	100	U	100	U	100	U	2	U	2	U	2	U
Bromomethane	ug/l	1	U	1	U	50	U	50	U	50	U	1	U	1	U	1	U
Carbon disulfide	ug/l	5	U	5	U	250	U	250	U	250	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	0.5	U	0.5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	1	U	1	U	50	U	50	U	50	U	1	U	1	U	1	U
Chloroform	ug/l	0.75	U	0.75	U	38	U	38	U	38	U	0.75	U	0.75	U	0.75	U
Chloromethane	ug/l	2.5	U	2.5	U	120	U	120	U	120	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	ug/l	0.5	U	0.5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	1	U	50	U	50	U	50	U	1	U	1	U	1	U
Methylene chloride	ug/l	5	U	5	U	250	U	250	U	250	U	5	U	5	U	5	U
Styrene	ug/l	1	U	1	U	50	U	50	U	50	U	1	U	1	U	1	U
Tetrachloroethene	ug/l	0.74		0.5	U	2400		2400		3200		0.5	U	6.8		0.5	U
Toluene	ug/l	0.75	U	0.75	U	38	U	38	U	38	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	0.5	U	0.5	U	120		120		260		0.5	U	8		0.5	U
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	120	U	120	U	120	U	2.5	U	2.5	U	2.5	U
Vinyl acetate	ug/l	5	U	5	U	250	U	250	U	250	U	5	U	5	U	5	U
Vinyl chloride	ug/l	1	U	1	U	50	U	50	U	50	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	0.5	U	0.5	U	73		76		190		0.5	U	0.93		0.5	U
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U
o-Xylene	ug/l	1	U	1	U	50	U	50	U	50	U	1	U	1	U	1	U
p/m-Xylene	ug/l	1	U	1	U	50	U	50	U	50	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	38	U	38	U	38	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	25	U	25	U	25	U	0.5	U	0.5	U	0.5	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW09B		MW09B		MW09C		MW09C		MW12A		MW12A		MW12B		MW12B	
SAMPLING DATE		19-JAN-06		04-APR-06		19-JAN-06		04-APR-06		13-JAN-06		06-APR-06		13-JAN-06		06-APR-06	
LAB SAMPLE ID		L0600875-01		L0604744-04		L0600875-02		L0604744-05		L0600613-05		L0604864-03		L0600613-06		L0604864-04	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260																	
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	2.5	U	0.5	U	5	U	0.5	U	2.5	U	0.5	U	50	U
1,1,1-Trichloroethane	ug/l	270		310		420		570		150		160		950		1100	
1,1,2-Trichloroethane	ug/l	0.75	U	3.8	U	0.75	U	7.5	U	0.75	U	3.8	U	0.75	U	75	U
1,1-Dichloroethane	ug/l	9.5		6.4		6.3		5.1	J	35		40		46		75	U
1,1-Dichloroethene	ug/l	5.9		6		6.2		6.3		0.72		2.5	U	38		51	
1,2-Dichloroethane	ug/l	0.5	U	2.5	U	0.5	U	5	U	0.5	U	2.5	U	0.5	U	50	U
1,2-Dichloropropane	ug/l	1.8	U	8.8	U	1.8	U	18	U	1.8	U	8.8	U	1.8	U	180	U
1,4-Dioxane	ug/l	250	U	1200	U	250	U	2500	U	250	U	1200	U	250	U	25000	U
2-Butanone	ug/l	5	U	25	U	5	U	50	U	5	U	25	U	5	U	500	U
2-Chloroethylvinyl ether	ug/l	10	UJ	50	UJ	10	UJ	100	UJ	10	UJ	50	UJ	10	UJ	1000	UJ
2-Hexanone	ug/l	5	U	25	U	5	U	50	U	5	U	25	U	5	U	500	U
4-Methyl-2-pentanone	ug/l	5	U	25	U	5	U	50	U	5	U	25	U	5	U	500	U
Acetone	ug/l	5	U	25	U	5	U	50	U	5	U	25	U	5	U	500	U
Benzene	ug/l	0.5	U	2.5	U	0.5	U	5	U	0.5	U	2.5	U	0.5	U	50	U
Bromodichloromethane	ug/l	0.5	U	2.5	U	0.5	U	5	U	0.5	U	2.5	U	0.5	U	50	U
Bromoform	ug/l	2	U	10	U	2	U	20	U	2	U	10	U	2	U	200	U
Bromomethane	ug/l	1	U	5	U	1	U	10	U	1	U	5	U	1	U	100	U
Carbon disulfide	ug/l	5	U	25	U	5	U	50	U	5	U	25	U	5	U	500	U
Carbon tetrachloride	ug/l	0.5	U	2.5	U	0.5	U	5	U	0.5	U	2.5	U	0.5	U	50	U
Chlorobenzene	ug/l	0.5	U	2.5	U	0.5	U	5	U	0.5	U	2.5	U	0.5	U	50	U
Chloroethane	ug/l	1	U	5	U	1	U	10	U	1	U	5	U	1	U	100	U
Chloroform	ug/l	0.75	U	3.8	U	0.75	U	7.5	U	0.75	U	3.8	U	0.75	U	75	U
Chloromethane	ug/l	2.5	U	12	U	2.5	U	25	U	2.5	U	12	U	2.5	U	250	U
Dibromochloromethane	ug/l	0.5	U	2.5	U	0.5	U	5	U	0.5	U	2.5	U	0.5	U	50	U
Ethylbenzene	ug/l	0.5	U	2.5	U	0.5	U	5	U	0.5	U	2.5	U	0.5	U	50	U
Methyl tert butyl ether	ug/l	1	U	5	U	1	U	10	U	1	U	5	U	1	U	100	U
Methylene chloride	ug/l	5	U	1.8	JU	5	U	50	U	5	U	25	U	5	U	500	U
Styrene	ug/l	1	U	5	U	1	U	10	U	1	U	5	U	1	U	100	U
Tetrachloroethene	ug/l	0.5	U	2.5	U	0.5	U	5	U	240		410		3600		4000	
Toluene	ug/l	0.75	U	3.8	U	0.75	U	7.5	U	0.75	U	3.8	U	0.75	U	75	U
Trichloroethene	ug/l	1.9		2.4	J	0.66		5	U	38		53		280		330	
Trichlorofluoromethane	ug/l	2.5	U	12	U	2.5	U	25	U	2.5	U	12	U	2.5	U	250	U
Vinyl acetate	ug/l	5	U	25	U	5	U	50	U	5	U	25	U	5	U	500	U
Vinyl chloride	ug/l	1	U	5	U	1	U	10	U	1	U	5	U	1.1		100	U
cis-1,2-Dichloroethene	ug/l	0.5	U	2.5	U	0.5	U	5	U	55		230		44		76	
cis-1,3-Dichloropropene	ug/l	0.5	U	2.5	U	0.5	U	5	U	0.5	U	2.5	U	0.5	U	50	U
o-Xylene	ug/l	1	U	5	U	1	U	10	U	1	U	5	U	1	U	100	U
p/m-Xylene	ug/l	1	U	5	U	1	U	10	U	1	U	5	U	1	U	100	U
trans-1,2-Dichloroethene	ug/l	0.75	U	3.8	U	0.75	U	7.5	U	0.75	U	3.8	U	1.9		75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	2.5	U	0.5	U	5	U	0.5	U	2.5	U	0.5	U	50	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW14		MW15		MW15		MW16		MW17		MW17		MW17 DUP		MW19	
SAMPLING DATE		17-JAN-06		17-JAN-06		03-AUG-06		17-JAN-06		17-JAN-06		03-AUG-06		03-AUG-06		13-JAN-06	
LAB SAMPLE ID		L0600713-01		L0600713-03		L0611068-02		L0600713-02		L0600713-04		L0611068-04		L0611068-03		L0600613-02	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260																	
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	50	U	25	U	0.5	U	50	U	50	U	50	U	0.5	U
1,1,1-Trichloroethane	ug/l	240		400		95		250		2700		2300		2300		120	
1,1,2-Trichloroethane	ug/l	0.75	U	75	U	38	U	0.75	U	75	U	75	U	75	U	0.75	U
1,1-Dichloroethane	ug/l	34		75	U	38	U	36		75	U	75	U	75	U	4.3	
1,1-Dichloroethene	ug/l	11		50	U	25	U	9.1		160		140		130		13	
1,2-Dichloroethane	ug/l	0.5	U	50	U	25	U	0.5	U	50	U	50	U	50	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	180	U	88	U	1.8	U	180	U	180	U	180	U	1.8	U
1,4-Dioxane	ug/l	250	U	25000	U	12000	U	250	U	25000	U	25000	U	25000	U	250	U
2-Butanone	ug/l	5	U	500	U	250	U	5	U	500	U	500	U	500	U	5	U
2-Chloroethylvinyl ether	ug/l	10	UJ	100000	UJ	500	UJ	10	UJ	100000	UJ	1000	UJ	1000	UJ	10	UJ
2-Hexanone	ug/l	5	U	500	U	250	U	5	U	500	U	500	U	500	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	500	U	250	U	5	U	500	U	500	U	500	U	5	U
Acetone	ug/l	5	U	500	U	250	U	5	U	500	U	500	U	500	U	5	U
Benzene	ug/l	0.5	U	50	U	25	U	0.5	U	50	U	50	U	50	U	0.5	U
Bromodichloromethane	ug/l	0.5	U	50	U	25	U	0.5	U	50	U	50	U	50	U	0.5	U
Bromoform	ug/l	2	U	200	U	100	U	2	U	200	U	200	U	200	U	2	U
Bromomethane	ug/l	1	U	100	U	50	U	1	U	100	U	100	U	100	U	1	U
Carbon disulfide	ug/l	5	U	500	U	250	U	5	U	500	U	500	U	500	U	5	U
Carbon tetrachloride	ug/l	0.5	U	50	U	25	U	0.5	U	50	U	50	U	50	U	0.5	U
Chlorobenzene	ug/l	0.5	U	50	U	25	U	0.5	U	50	U	50	U	50	U	0.5	U
Chloroethane	ug/l	1	U	100	U	50	U	1	U	100	U	100	U	100	U	1	U
Chloroform	ug/l	0.75	U	75	U	38	U	0.75	U	75	U	75	U	75	U	0.75	U
Chloromethane	ug/l	2.5	U	250	U	120	U	2.5	U	250	U	250	U	250	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	50	U	25	U	0.5	U	50	U	50	U	50	U	0.5	U
Ethylbenzene	ug/l	0.5	U	50	U	25	U	0.5	U	50	U	50	U	50	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	100	U	50	U	1	U	100	U	100	U	100	U	1	U
Methylene chloride	ug/l	5	U	500	U	250	U	5	U	500	U	500	U	500	U	5	U
Styrene	ug/l	1	U	100	U	50	U	1	U	100	U	100	U	100	U	1	U
Tetrachloroethene	ug/l	240		4000		1800		220		6600		5400		5800		51	
Toluene	ug/l	0.75	U	75	U	38	U	0.75	U	75	U	75	U	75	U	0.75	U
Trichloroethene	ug/l	48		280		160		38		310		310		300		98	
Trichlorofluoromethane	ug/l	2.5	U	250	U	120	U	2.5	U	250	U	250	U	250	U	2.5	U
Vinyl acetate	ug/l	5	U	500	U	250	U	5	U	500	U	500	U	500	U	5	U
Vinyl chloride	ug/l	1	U	100	U	50	U	1	U	100	U	100	U	100	U	1	U
cis-1,2-Dichloroethene	ug/l	14		86		88		13		50	U	50	U	50	U	12	
cis-1,3-Dichloropropene	ug/l	0.5	U	50	U	25	U	0.5	U	50	U	50	U	50	U	0.5	U
o-Xylene	ug/l	1	U	100	U	50	U	1	U	100	U	100	U	100	U	1	U
p/m-Xylene	ug/l	1	U	100	U	50	U	1	U	100	U	100	U	100	U	1	U
trans-1,2-Dichloroethene	ug/l	0.75	U	75	U	38	U	0.75	U	75	U	75	U	75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	50	U	25	U	0.5	U	50	U	50	U	50	U	0.5	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW20A		MW20B		MW20C		MW20C		MW21A		MW21B		MW21C		MW21C	
SAMPLING DATE		12-JAN-06		12-JAN-06		19-JAN-06		04-APR-06		11-JAN-06		11-JAN-06		12-JAN-06		04-APR-06	
LAB SAMPLE ID		L0600505-05		L0600505-06		L0600875-03		L0604744-06		L0600417-01		L0600417-02		L0600505-03		L0604744-01	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260																	
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U
1,1,1-Trichloroethane	ug/l	7.7		1.3		0.5	U	0.5	U	9.8		870		610		950	
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.55	J	0.75	U	15	U
1,1-Dichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	2.9		40		55		44	
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.2		57		32		40	
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.97		0.5	U	10	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	35	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U	250	U	250	U	5000	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	100	U
2-Chloroethylvinyl ether	ug/l	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	200	UJ
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	100	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	100	U
Acetone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	100	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.47	J	0.5	U	0.5	U	10	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	40	U
Bromomethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	20	U
Carbon disulfide	ug/l	5	U	5	U	5	U	0.87	J	5	U	5	U	5	U	100	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	20	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	15	U
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	50	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U
Methyl tert butyl ether	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	20	U
Methylene chloride	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	100	U
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	20	U
Tetrachloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	27		780		170		230	
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	46		15	U
Trichloroethene	ug/l	0.89		0.5	U	0.5	U	0.5	U	40		140		38		42	
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	50	U
Vinyl acetate	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	100	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	20	U
cis-1,2-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	40		70		21		23	
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	20	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	20	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.96		3		0.75	U	15	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
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BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW22A		MW22B		MW22C		MW23A		MW23B		MW26		MW29		MW30A	
SAMPLING DATE		21-DEC-05		21-DEC-05		11-JAN-06		10-JAN-06		10-JAN-06		20-DEC-05		04-AUG-06		22-DEC-05	
LAB SAMPLE ID		L0515665-05		L0515665-01		L0600417-06		L0600326-05		L0600326-06		L0515606-02		L0611166-03		L0515714-02	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260																	
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U	0.5	U
1,1,1-Trichloroethane	ug/l	0.5	U	220		0.5	U	0.5	U	0.5	U	0.5	U	720		0.5	U
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	15	U	0.75	U
1,1-Dichloroethane	ug/l	0.75	U	9.1		0.75	U	0.75	U	0.75	U	0.75	U	35		0.75	U
1,1-Dichloroethene	ug/l	0.5	U	8.2		0.5	U	0.5	U	0.5	U	0.5	U	10		0.5	U
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	35	U	1.8	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U	250	U	5000	U	250	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	100	U	5	U
2-Chloroethylvinyl ether	ug/l	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	200	UJ	10	UJ
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	100	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	100	U	5	U
Acetone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	100	U	5	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U	0.5	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U	1.1	
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	40	U	2	U
Bromomethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	20	U	1	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	100	U	5	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U	0.5	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U	0.5	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	20	U	1	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	15	U	3.8	
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	50	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U	0.5	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	1	U	1	U	1	U	7.8		1	U	20	U	1	U
Methylene chloride	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	100	U	5	U
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	20	U	1	U
Tetrachloroethene	ug/l	0.5	U	6.2		0.5	U	0.5	U	0.5	U	0.78		10	U	0.8	
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	15	U	0.75	U
Trichloroethene	ug/l	0.5	U	8.6		0.5	U	0.5	U	0.5	U	0.51		10	U	0.5	U
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	50	U	2.5	U
Vinyl acetate	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	100	U	5	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	20	U	1	U
cis-1,2-Dichloroethene	ug/l	0.5	U	1.5		0.5	U	0.5	U	0.5	U	0.5	U	10	U	0.72	
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U	0.5	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	20	U	1	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	20	U	1	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	15	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	10	U	0.5	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
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DRAFT

LOCATION		MW30B		MW32A		MW32B		MW33A		MW33B		MW33C		MW37		MW38	
SAMPLING DATE		13-JAN-06		04-AUG-06		04-AUG-06		19-DEC-05		19-DEC-05		19-DEC-05		15-DEC-05		13-JAN-06	
LAB SAMPLE ID		L0600613-04		L0611166-01		L0611166-02		L0515541-01		L0515541-02		L0515541-03		L0515362-01		L0600613-03	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260																	
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	5.7		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	200	
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	22		0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	8.1	
1,1-Dichloroethene	ug/l	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	16	
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U	250	U	250	U	250	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
2-Chloroethylvinyl ether	ug/l	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Bromomethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	ug/l	0.5	U	2		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	46	
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	180		1.8		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	87	
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl acetate	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Vinyl chloride	ug/l	4.5		1	U	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	100		0.99		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	12	
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	ug/l	3		0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
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BASF Corporation, Plainville, Massachusetts

LOCATION		MW40A		MW40B		MW41A		MW41B		MW41B DUP		MW42		MW42	
SAMPLING DATE		12-JAN-06		12-JAN-06		10-JAN-06		10-JAN-06		10-JAN-06		24-FEB-06		06-APR-06	
LAB SAMPLE ID		L0600505-01		L0600505-02		L0600326-01		L0600326-02		L0600326-03		L0602632-01		L0604864-05	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260															
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	2.1		790		100		960		1000		0.5	U	0.5	U
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	0.75	U	45		7.4		35		35		0.75	U	0.75	U
1,1-Dichloroethene	ug/l	0.5	U	33		4.7		39		45		0.5	U	0.5	U
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U	250	U	250	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U
2-Chloroethylvinyl ether	ug/l	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	ug/l	5	U	690		5	U	5	U	5	U	6.9		5	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Bromomethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	1	U	1	U	1	U	1	U	0.96	J	1	U
Methylene chloride	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	ug/l	34		460		450		200		200		0.5	U	0.5	U
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	5.3		100		57		54		53		0.5	U	0.5	U
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl acetate	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	21		58		22		30		32		0.5	U	0.5	U
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	ug/l	0.77		2.4		0.76		1.2		1.2		0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW43B		MW43B		MW43C		MW43C		MW44A		MW44A		MW45A	
SAMPLING DATE		11-JAN-06		04-APR-06		11-JAN-06		04-APR-06		18-JAN-06		07-APR-06		18-JAN-06	
LAB SAMPLE ID		L0600417-04		L0604744-02		L0600417-05		L0604744-03		L0600776-01		L0604964-01		L0600776-03	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260															
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	50	U
1,1,1-Trichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	50	U
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	3.8	U	3.8	U	75	U
1,1-Dichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	11		9.6		75	U
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	5.4		5		50	U
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	50	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	8.8	U	8.8	U	180	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	1200	U	1200	U	25000	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	25	U	25	U	500	U
2-Chloroethylvinyl ether	ug/l	10	UJ	10	UJ	10	UJ	10	UJ	50	UJ	50	UJ	1000	UJ
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	25	U	25	U	500	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	25	U	25	U	500	U
Acetone	ug/l	5	U	5	U	5	U	5	U	25	U	25	U	500	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	50	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.39	J	0.5	U	2.5	U	2.5	U	50	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	10	U	10	U	200	U
Bromomethane	ug/l	1	U	1	U	1	U	1	U	5	U	5	U	100	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	25	U	25	U	500	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	50	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	50	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	5	U	5	U	100	U
Chloroform	ug/l	0.75	U	0.75	U	2.4		0.75	U	3.8	U	3.8	U	75	U
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	12	U	12	U	250	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	50	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	50	U
Methyl tert butyl ether	ug/l	1	U	1	U	1.5		2.6		5	U	5	U	100	U
Methylene chloride	ug/l	5	U	5	U	5	U	5	U	25	U	25	U	500	U
Styrene	ug/l	1	U	1	U	1	U	1	U	5	U	5	U	100	U
Tetrachloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	3300	
Toluene	ug/l	0.75	U	0.75	U	1		0.75	U	3.8	U	3.8	U	75	U
Trichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.6		2.5	U	100	
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	12	U	12	U	250	U
Vinyl acetate	ug/l	5	U	5	U	5	U	5	U	25	U	25	U	500	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	8.6		7.4		100	U
cis-1,2-Dichloroethene	ug/l	0.54		0.5	U	0.5	U	0.5	U	260		220		62	
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	50	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	5	U	5	U	100	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	5	U	5	U	100	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	3.8	U	3.8	U	75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	2.5	U	2.5	U	50	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW45A		MW45B		MW45B		MW46A		MW46A		MW48A		MW48A	
SAMPLING DATE		06-APR-06		18-JAN-06		06-APR-06		18-JAN-06		07-APR-06		13-JAN-06		07-APR-06	
LAB SAMPLE ID		L0604864-01		L0600776-04		L0604864-02		L0600776-02		L0604964-02		L0600613-08		L0604964-04	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260															
1,1,1,2-Tetrachloroethane	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.63		0.5	U
1,1,2-Trichloroethane	ug/l	75	U	300	U	300	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	75	U	300	U	300	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethene	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	180	U	700	U	700	U	1.8	U	1.8	U	1.8	U	1.8	U
1,4-Dioxane	ug/l	25000	U	100000	U	100000	U	250	U	250	U	250	U	250	U
2-Butanone	ug/l	500	U	2000	U	2000	U	5	U	5	U	5	U	5	U
2-Chloroethylvinyl ether	ug/l	1000	UJ	4000	UJ	4000	UJ	10	UJ	10	UJ	10	UJ	10	UJ
2-Hexanone	ug/l	500	U	2000	U	2000	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	500	U	2000	U	2000	U	5	U	5	U	5	U	5	U
Acetone	ug/l	500	U	2000	U	2000	U	5	U	5	U	5	U	5	U
Benzene	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	200	U	800	U	800	U	2	U	2	U	2	U	2	U
Bromomethane	ug/l	100	U	400	U	400	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/l	500	U	2000	U	2000	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	100	U	400	U	400	U	1	U	1	U	1	U	1	U
Chloroform	ug/l	75	U	300	U	300	U	0.75	U	0.75	U	0.75	U	0.75	U
Chloromethane	ug/l	250	U	1000	U	1000	U	2.5	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	100	U	400	U	400	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/l	500	U	2000	U	2000	U	5	U	5	U	5	U	5	U
Styrene	ug/l	100	U	400	U	400	U	1	U	1	U	1	U	1	U
Tetrachloroethene	ug/l	6000		17000		15000		8.9		3.6		99		53	
Toluene	ug/l	75	U	300	U	300	U	0.75	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	200		690		650		0.5	U	0.5	U	52		49	
Trichlorofluoromethane	ug/l	250	U	1000	U	1000	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl acetate	ug/l	500	U	2000	U	2000	U	5	U	5	U	5	U	5	U
Vinyl chloride	ug/l	100	U	400	U	400	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	130		200	U	150	J	0.5	U	0.5	U	6.8		12	
cis-1,3-Dichloropropene	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	ug/l	100	U	400	U	400	U	1	U	1	U	1	U	1	U
p/m-Xylene	ug/l	100	U	400	U	400	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	ug/l	75	U	300	U	300	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	50	U	200	U	200	U	0.5	U	0.5	U	0.5	U	0.5	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW48B		MW48B		MW49A		MW49A		MW49A-DUP		P13		P13A		P13A DUP	
SAMPLING DATE		19-JAN-06		07-APR-06		19-JAN-06		07-APR-06		07-APR-06		03-AUG-06		17-JAN-06		17-JAN-06	
LAB SAMPLE ID		L0600875-07		L0604964-05		L0600953-01		L0604964-03		L0604964-07		L0611068-06		L0600713-07		L0600713-08	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260																	
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	10	U	50	U	50	U
1,1,1-Trichloroethane	ug/l	0.5	U	0.5	U	690		400		430		49		1800		1800	
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	15	U	7.5	U	7.5	U	15	U	75	U	75	U
1,1-Dichloroethane	ug/l	2.7		2.3		74		55		59		21		110		120	
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	14		1100		1100	
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	10	U	50	U	50	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	35	U	18	U	18	U	35	U	180	U	180	U
1,4-Dioxane	ug/l	250	U	250	U	5000	U	2500	U	2500	U	5000	U	25000	U	25000	U
2-Butanone	ug/l	5	U	5	U	100	U	50	U	50	U	100	U	500	U	500	U
2-Chloroethylvinyl ether	ug/l	10	UJ	10	UJ	200	UJ	100	UJ	100	UJ	200	UJ	100000	UJ	100000	UJ
2-Hexanone	ug/l	5	U	5	U	100	U	50	U	50	U	100	U	500	U	500	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	100	U	50	U	50	U	100	U	500	U	500	U
Acetone	ug/l	5	U	5	U	100	U	50	U	50	U	100	U	500	U	500	U
Benzene	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	10	U	50	U	50	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	10	U	50	U	50	U
Bromoform	ug/l	2	U	2	U	40	U	20	U	20	U	40	U	200	U	200	U
Bromomethane	ug/l	1	U	1	U	20	U	10	U	10	U	20	U	100	U	100	U
Carbon disulfide	ug/l	5	U	5	U	100	U	50	U	50	U	100	U	500	U	500	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	10	U	50	U	50	U
Chlorobenzene	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	10	U	50	U	50	U
Chloroethane	ug/l	1	U	1	U	20	U	10	U	10	U	20	U	100	U	100	U
Chloroform	ug/l	0.75	U	0.75	U	15	U	7.5	U	7.5	U	15	U	75	U	75	U
Chloromethane	ug/l	2.5	U	2.5	U	50	U	25	U	25	U	50	U	250	U	250	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	10	U	50	U	50	U
Ethylbenzene	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	10	U	50	U	50	U
Methyl tert butyl ether	ug/l	1	U	1	U	20	U	10	U	10	U	20	U	100	U	100	U
Methylene chloride	ug/l	5	U	5	U	100	U	50	U	50	U	100	U	500	U	500	U
Styrene	ug/l	1	U	1	U	20	U	10	U	10	U	20	U	100	U	100	U
Tetrachloroethene	ug/l	0.5	U	0.5	U	10	U	6.7		7.2		400		4700		4900	
Toluene	ug/l	0.75	U	0.75	U	15	U	7.5	U	7.5	U	15	U	75	U	75	U
Trichloroethene	ug/l	0.5	U	0.5	U	10	U	37		39		170		360		380	
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	50	U	25	U	25	U	50	U	250	U	250	U
Vinyl acetate	ug/l	5	U	5	U	100	U	50	U	50	U	100	U	500	U	500	U
Vinyl chloride	ug/l	1	U	1	U	20	U	10	U	10	U	20	U	100	U	100	U
cis-1,2-Dichloroethene	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	750		560		570	
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	10	U	50	U	50	U
o-Xylene	ug/l	1	U	1	U	20	U	10	U	10	U	20	U	100	U	100	U
p/m-Xylene	ug/l	1	U	1	U	20	U	10	U	10	U	20	U	100	U	100	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	15	U	7.5	U	7.5	U	15	U	75	U	75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	10	U	5	U	5	U	10	U	50	U	50	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		P13A		TRIP BLANK		TRIP BLANK		TRIP BLANK		TB-122205		TRIP BLANK		TRIP BLANK		TRIP BLANK	
SAMPLING DATE		03-AUG-06		12-DEC-05		12-DEC-05		12-DEC-05		20-DEC-05		08-JAN-06		11-JAN-06		12-JAN-06	
LAB SAMPLE ID		L0611068-05		L0515541-04		L0515606-03		L0515665-04		L0515714-03		L0600326-04		L0600417-03		L0600505-07	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260																	
1,1,1,2-Tetrachloroethane	ug/l	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	2100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	ug/l	75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	77		0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethene	ug/l	480		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	ug/l	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	180	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
1,4-Dioxane	ug/l	25000	U	250	U	250	U	250	U	250	U	250	U	250	U	250	U
2-Butanone	ug/l	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
2-Chloroethylvinyl ether	ug/l	1000	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
2-Hexanone	ug/l	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	ug/l	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	ug/l	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	ug/l	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	200	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Bromomethane	ug/l	100	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/l	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	100	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/l	75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Chloromethane	ug/l	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	ug/l	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	100	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/l	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Styrene	ug/l	100	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	ug/l	3600		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	ug/l	75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	280		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	ug/l	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl acetate	ug/l	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Vinyl chloride	ug/l	100	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	510		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	ug/l	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	ug/l	100	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
p/m-Xylene	ug/l	100	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	ug/l	75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		TRIP BLANK		TRIP BLANK		FB-1		TRIP BLANK		FB-3		FB-2		TRIP BLANK		TB-011906	
SAMPLING DATE		13-JAN-06		17-JAN-06		17-JAN-06		18-JAN-06		19-JAN-06		19-JAN-06		19-JAN-06		19-JAN-06	
LAB SAMPLE ID		L0600505-07		L0600713-09		L0600713-10		L0600776-05		L0600875-04		L0600875-05		L0600875-06		L0600953-02	
			Qual		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260																	
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U	250	U	250	U	250	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
2-Chloroethylvinyl ether	ug/l	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Bromomethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/l	5	U	5	U	5	U	5	U	5	U	5.9		5	U	5	U
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	ug/l	0.5	U	0.5	U	0.77		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl acetate	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

U - Not Detected
J - Estimated value

Table 6.2.2 Supplemental RFI Ground Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		TRIP BLANK		TB-040406		TRIP BLANK		EB-4/7/06		TRIP BLANK		FIELD BLANK	
SAMPLING DATE		24-FEB-06		29-MAR-06		29-MAR-06		07-APR-06		28-JUL-06		04-AUG-06	
LAB SAMPLE ID		L0602632-02		L0604744-07		L0604864-08		L0604964-06		L0611166-04		L0611166-05	
			Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by GC/MS 8260													
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U	250	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
2-Chloroethylvinyl ether	ug/l	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Bromomethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.82		0.88	
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	0.45	J	1	U	1	U	1	U	1	U
Methylene chloride	ug/l	5	U	1.4	J	5	U	5	U	5	U	5	U
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	ug/l	0.5	U	0.36	J	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl acetate	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW01		MW02		MW4		MW4 DUP		MW7		MW8		MW09	
SAMPLING DATE		22-DEC-05		12-JAN-06		17-JAN-06		17-JAN-06		15-DEC-05		13-JAN-06		20-DEC-05	
LAB SAMPLE ID		L0515714-01		L0600505-04		L0600713-05		L0600713-06		L0515362-02		L0600613-01		L0515606-01	
	Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Total Metals															
Antimony, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.4	
Barium, Total	ug/l														
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	357.2		0.5	U	2.1		2.2		0.5	U	0.5	U	0.6	
Chromium, Total	ug/l	10.5		30.3		9.7		10.3		0.8	J	23.7		3.9	
Copper, Total	ug/l	22		0.9		2.5		2.4		0.5	U	2.7		4.4	
Lead, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.8		1.1	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	12.9		3375		1.3		1.3		0.5	U	3.5		2.7	
Selenium, Total	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Silver, Total	ug/l	0.9		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Total	ug/l	239.4		5	U	15.4		16.7		5	U	8		13.1	
Dissolved Metals															
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Barium, Dissolved	ug/l														
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	349.6		0.5	U	2.2		2.1		0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	1.9		1		10.2		9.5		0.5	U	0.5		0.5	U
Copper, Dissolved	ug/l	15.6		0.9		3.4	J	2.3	J	0.5	U	0.8		0.8	
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	11.8		3276		1.3		1.1		0.5	U	0.8		1.2	
Selenium, Dissolved	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Dissolved	ug/l	229.5		9.4		12.8	J	5	UJ	5	U	5	U	8.7	

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW09B		MW9B		MW09C		MW9C		MW12A		MW12A		MW12B	
SAMPLING DATE		19-JAN-06		04-APR-06		19-JAN-06		04-APR-06		13-JAN-06		06-APR-06		13-JAN-06	
LAB SAMPLE ID		L0600875-01		L0604744-04		L0600875-02		L0604744-05		L0600613-05		L0604864-03		L0600613-06	
	Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Total Metals															
Antimony, Total	ug/l	0.5	U	0.23	J	0.5	U	0.06	J	0.5	U	0.47	J	0.5	U
Arsenic, Total	ug/l	0.5		0.27	J	0.5		0.5		0.6		9.2		0.6	
Barium, Total	ug/l														
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	2.6		0.5	U
Cadmium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	2.5		0.5	U
Chromium, Total	ug/l	2.4		0.6		10.9		8.2		3.4		223.2		2.1	
Copper, Total	ug/l	3.6	U	2		2	U	0.6	J	3.5		146.8		3	
Lead, Total	ug/l	1.1		0.23	J	0.7		0.11	J	0.8		62.5		0.5	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.03	J	0.2	U
Nickel, Total	ug/l	11.2		2.4		2.1	U	0.6		3.3		157.1		2.7	
Selenium, Total	ug/l	1	U	0.4	JU	1	U	0.7	JU	1	U	5		1	U
Silver, Total	ug/l	0.5	U	0.03	J	0.5	U	0.04	J	0.5	U	5.5		0.6	
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.28	J	0.5	U
Zinc, Total	ug/l	28.7	U	11.2		6.4	U	2.13	UJ	9.7		303.7		7.4	
Dissolved Metals															
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.06	J	0.5	U	0.09	J	0.5	U
Arsenic, Dissolved	ug/l	0.5	U	0.14	J	0.5	U	0.41	J	0.5	U	0.45	J	0.5	U
Barium, Dissolved	ug/l														
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.7	U	0.1	J	8.4		7.7		0.5	U	0.5		0.5	U
Copper, Dissolved	ug/l	1.3	U	1.9		1.1	U	1.3	J	0.9		1.9		0.8	
Lead, Dissolved	ug/l	0.5	U	0.05	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1.2	U	0.6		0.5	U	0.38	J	0.8		0.8		1.9	
Selenium, Dissolved	ug/l	1	U	0.5	J	1	U	0.5	J	1	U	0.4	J	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Dissolved	ug/l	9.3	U	5.5	U	5	U	3.31	JU	5	U	3.25	JU	5	U

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW12B		MW14		MW15		MW16		MW17		MW19		MW20A	
SAMPLING DATE		06-APR-06		17-JAN-06		17-JAN-06		17-JAN-06		17-JAN-06		13-JAN-06		12-JAN-06	
LAB SAMPLE ID		L0604864-04		L0600713-01		L0600713-03		L0600713-02		L0600713-04		L0600613-02		L0600505-05	
	Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Total Metals															
Antimony, Total	ug/l	0.5	U	0.5	U	0.6		0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Total	ug/l	0.49	J	0.5	U	2.1		0.5	U	1		0.5	U	0.5	U
Barium, Total	ug/l														
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	0.38	J	0.5	U	0.9		3.6		0.5	U	0.5		0.5	U
Chromium, Total	ug/l	7.7		0.9		3		101.8		44.5		0.7		0.5	
Copper, Total	ug/l	1.3	J	2.6		7.6		32.3		2.1		2.8		0.6	
Lead, Total	ug/l	0.22	J	0.5	U	2.9		0.5	U	0.5	U	0.6		0.5	U
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	2.6		3.1		3.1		14.5		6.1		2.1		1.5	
Selenium, Total	ug/l	0.7	JU	1	U	1	U	1	U	1	U	1	U	1	U
Silver, Total	ug/l	0.29	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Total	ug/l	4.84	UJ	10.1		16.8		15.9		5	U	10.4		5	U
Dissolved Metals															
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	0.31	J	0.5	U	0.5	U	0.5	U	0.8		0.5	U	0.5	U
Barium, Dissolved	ug/l														
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.39	J	0.5	U	0.5	U	3.4		0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.1	J	0.5	U	0.5	U	2.1		0.5	U	0.5	U	0.5	U
Copper, Dissolved	ug/l	1.4	J	0.9		1.1		24.8		1.2		1.5		0.5	U
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	2		2.3		0.7		12.8		0.6		2.1		5	
Selenium, Dissolved	ug/l	0.4	J	1	U	1	U	1	U	1	U	0.1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Dissolved	ug/l	5	JU	5.1		5	U	14.5		5	U	7.1		5	U

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW20B		MW20C		MW20C		MW21A		MW21B		MW21C		MW21C	
SAMPLING DATE		12-JAN-06		19-JAN-06		04-APR-06		11-JAN-06		11-JAN-06		12-JAN-06		04-APR-06	
LAB SAMPLE ID		L0600505-06		L0600875-03		L0604744-06		L0600417-01		L0600417-02		L0600505-03		L0604744-01	
	Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Total Metals															
Antimony, Total	ug/l	0.5	U	0.5	U	0.07	J	0.11	J	0.11	J	0.5	U	0.17	J
Arsenic, Total	ug/l	0.5	U	0.5	U	0.5		0.1	J	0.09	J	0.5	U	0.24	J
Barium, Total	ug/l														
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Total	ug/l	1.4		2.6		1.8	J	0.61	J	0.46	J	4.7		2.2	
Copper, Total	ug/l	3		2.7	U	0.9		0.32	J	0.6		3.8		2.4	
Lead, Total	ug/l	1.2		0.8		0.5	U	10.7		0.43	J	2.6		1.3	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	1.9		2.7	U	0.37	J	0.9		0.7		4.8		3.3	
Selenium, Total	ug/l	1	U	1	U	1	U	0.4	J	0.3	J	1	U	0.6	JU
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.03	J	0.03	J	0.5	U	0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.03	J
Zinc, Total	ug/l	7.9		6.7	U	4.07	JU	2.01	J	1.89	J	10.4		10.4	J
Dissolved Metals															
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.07	J	0.12	J	0.13	J	0.5	U	0.15	J
Arsenic, Dissolved	ug/l	0.5	U	0.5	U	0.5		0.16	J	0.5	U	0.5	U	0.5	U
Barium, Dissolved	ug/l														
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.5	U	0.5	U	1.9	J	0.33	J	0.23	J	0.5	U	0.27	J
Copper, Dissolved	ug/l	0.5		0.7	U	0.45	J	0.29	J	0.35	J	0.8		0.44	J
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.09	J	0.14	J	0.15	J	0.5	U	0.1	J
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1.8		0.9	U	0.46	J	0.9		0.5		2.1		1.8	
Selenium, Dissolved	ug/l	1	U	1	U	1		1	U	0.4	J	1	U	0.2	J
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.03	J	0.03	J	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Dissolved	ug/l	5	U	5.4	U	3.43	JU	2.81	J	2.3	J	24.1		2.63	JU

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW22A		MW22B		MW22C		MW23A		MW23B		MW26		MW30A	
SAMPLING DATE		21-DEC-05		21-DEC-05		11-JAN-06		10-JAN-06		10-JAN-06		20-DEC-05		22-DEC-05	
LAB SAMPLE ID		L0515665-05		L0515665-01		L0600417-06		L0600326-05		L0600326-06		L0515606-02		L0515714-02	
	Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Total Metals															
Antimony, Total	ug/l	0.5	U	0.5	U	0.6		0.5	U	0.5	U	0.6		0.5	U
Arsenic, Total	ug/l	0.6		2.5		4.5		0.5	U	0.7		4.7		0.8	
Barium, Total	ug/l														
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.8		0.5	U
Cadmium, Total	ug/l	5.1		0.5	U	0.5	U	0.5	U	0.5	U	28.9		0.5	U
Chromium, Total	ug/l	1.5		0.8		0.37	J	0.5	U	0.5	U	24.7		1.8	
Copper, Total	ug/l	6.9		4.1		0.7		0.5	U	1		28.9		17.7	
Lead, Total	ug/l	21.8		9.2		0.11	J	0.5	U	1.3		15.9		2	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	4.8		0.5		0.6		0.5	U	1		20.7		13.2	
Selenium, Total	ug/l	1	U	1	U	0.4	J	1	U	1	U	1		1	U
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	3.3		0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Total	ug/l	32.8		6.3		4.32	J	5	U	5	U	70.8		32.5	
Dissolved Metals															
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.48	J	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	0.5	U	0.6		4.3		0.5	U	0.5	U	0.5	U	0.5	U
Barium, Dissolved	ug/l														
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	2		0.5	U	0.5	U	0.5	U	0.5	U	9		0.5	U
Chromium, Dissolved	ug/l	1.1		0.5	U	0.26	J	0.5	U	0.5	U	0.5	U	0.5	U
Copper, Dissolved	ug/l	2		0.5	U	0.17	J	0.5	U	0.5	U	0.5		13.9	
Lead, Dissolved	ug/l	4		0.6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	4.9		0.5	U	0.5		0.5	U	0.8		2.1		10.9	
Selenium, Dissolved	ug/l	1	U	1	U	0.6	J	1	U	1	U	1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Dissolved	ug/l	32.5		5	U	2.47	J	5	U	5	U	6.1		24.3	

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW30B		MW33A		MW33B		MW33C		MW37		MW38		MW40A	
SAMPLING DATE		13-JAN-06		19-DEC-05		19-DEC-05		19-DEC-05		15-DEC-05		13-JAN-06		12-JAN-06	
LAB SAMPLE ID		L0600613-04		L0515541-01		L0515541-02		L0515541-03		L0515362-01		L0600613-03		L0600505-01	
	Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Total Metals															
Antimony, Total	ug/l	0.5	U	0.5	U	0.5	U	1		0.5	U	0.5	U	0.5	U
Arsenic, Total	ug/l	14		0.5	U	2.5		0.7		17.4		0.5		0.5	U
Barium, Total	ug/l														
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.7		0.5	U	0.5	U
Cadmium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.7		0.5	U	0.5	U
Chromium, Total	ug/l	5.2		0.5	U	6.5		1.4		22.8		2		0.7	
Copper, Total	ug/l	3.5		1.4		13		4.8		42.7		6.8		1	
Lead, Total	ug/l	0.5		0.5	U	5.6		1.5		17.8		4		0.5	U
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	1.4		0.9		6.7		1.7		21		1.6		0.7	
Selenium, Total	ug/l	1	U	1	U	2		1	U	1	U	1	U	1	U
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Total	ug/l	9.2		8		30		36.2		95.9		18.9		5	U
Dissolved Metals															
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	1.9		0.5	U	0.5	U	0.5	U	0.9		0.5	U	0.5	U
Barium, Dissolved	ug/l														
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper, Dissolved	ug/l	0.5	U	0.9		0.5	U	0.5	U	0.6		0.5		0.5	
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	0.5		2.1		0.5	U	1		1		0.7		1	
Selenium, Dissolved	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Dissolved	ug/l	5	U	8.2		5	U	5	U	5	U	5	U	5	U

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW40B		MW41A		MW41B		MW41B DUP		MW42		MW42		MW43B	
SAMPLING DATE		12-JAN-06		10-JAN-06		10-JAN-06		10-JAN-06		24-FEB-06		06-APR-06		11-JAN-06	
LAB SAMPLE ID		L0600505-02		L0600326-01		L0600326-02		L0600326-03		L0602632-01		L0604864-05		L0600417-04	
	Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Total Metals															
Antimony, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U			0.28	J	0.24	J
Arsenic, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	4.8		5.7	J	0.9	
Barium, Total	ug/l									19.3					
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U			0.31	J	0.17	J
Cadmium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.11	J	0.5	UJ	0.13	J
Chromium, Total	ug/l	0.5	U	1.5		0.5	U	0.5	U	2.8		3.8		10.6	
Copper, Total	ug/l	0.5	U	1.5		0.5	U	0.5	U			5.4		16.7	
Lead, Total	ug/l	0.5	U	0.9		0.5	U	0.5	U	1.4		4.7		3.9	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	1.1		1.1		0.8		0.7				3.7		10.4	
Selenium, Total	ug/l	1	U	1	U	1	U	1	U	3		2	J	0.5	J
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.05	J	0.03	J	3.5	
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U			0.03	J	0.03	J
Zinc, Total	ug/l	5	U	5	U	5	U	5	U			16.5		24.8	
Dissolved Metals															
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U			0.9	J	0.11	J
Arsenic, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	4.3		8.6	J	0.44	J
Barium, Dissolved	ug/l									7.2					
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U			0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.5	J	0.5	U
Chromium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	1.5		1.2		0.4	J
Copper, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U			1.1		0.17	J
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.33	J	0.6		0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1.9		0.5	U	0.8		0.8				0.36	J	1.4	
Selenium, Dissolved	ug/l	1	U	1	U	1	U	1	U	3		4	J	0.5	J
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.03	J	0.05	J	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U			0.5	U	0.5	U
Zinc, Dissolved	ug/l	5	U	11.7		55.6		5	UJ			10.6		1.78	J

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW43B		MW43C		MW43C		MW44A		MW44A		MW45A		MW45A	
SAMPLING DATE		04-APR-06		11-JAN-06		04-APR-06		18-JAN-06		07-APR-06		18-JAN-06		06-APR-06	
LAB SAMPLE ID		L0604744-02		L0600417-05		L0604744-03		L0600776-01		L0604964-01		L0600776-03		L0604864-01	
	Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Total Metals															
Antimony, Total	ug/l	0.47	J	0.43	J	0.26	J	0.5	U	0.5	U	0.5	U	0.16	J
Arsenic, Total	ug/l	1.5	J	3.1		1.6		3.3		3.8		1.7		1.1	
Barium, Total	ug/l														
Beryllium, Total	ug/l	0.4	J	2.1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	0.22	J	0.27	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Total	ug/l	24.6		7.7		0.7		2.3		2.5	U	8.3		4	
Copper, Total	ug/l	37		9.8		1.3		2.4		2.4	U	7.2		2.9	
Lead, Total	ug/l	8.5		13		1.2		1.3		1.2		2.8		1.1	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	22.1		10.9		2.1		2.7		2.2	U	9		3.4	
Selenium, Total	ug/l	1	U	1		0.7	JU	1	U	1	U	1	U	0.7	JU
Silver, Total	ug/l	7.2		0.47	J	0.03	J	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Total	ug/l	0.06	J	0.05	J	0.5	U	0.5	U	0.5	U	0.5	U	0.03	J
Zinc, Total	ug/l	76.5		56		8.8		9.1		16.5	U	24.7		8.7	
Dissolved Metals															
Antimony, Dissolved	ug/l	0.16	J	0.37	J	0.16	J	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	0.34	J	1		0.8		2.6		2.3		0.5	U	0.5	
Barium, Dissolved	ug/l														
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.38	J	0.19	J	0.09	J	0.5	U	0.5	U	0.5	U	0.12	J
Copper, Dissolved	ug/l	1.6		0.15	J	0.9		1.8		0.6		1.6		1.6	
Lead, Dissolved	ug/l	0.08	J	0.08	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	2		1.6		1.5		1.3		0.9		1.3		1.2	
Selenium, Dissolved	ug/l	0.3	J	0.3	J	0.4	J	1	U	1	U	1	U	0.4	J
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Dissolved	ug/l	7.6	U	1.99	J	4	JU	8.8		5	U	5		5.3	U

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		MW45B		MW45B		MW46A		MW46A		MW48A		MW48A		MW48B	
SAMPLING DATE		18-JAN-06		06-APR-06		18-JAN-06		07-APR-06		13-JAN-06		07-APR-06		19-JAN-06	
LAB SAMPLE ID		L0600776-04		L0604864-02		L0600776-02		L0604964-02		L0600613-08		L0604964-04		L0600875-07	
	Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Total Metals															
Antimony, Total	ug/l	0.5	U	0.19	J	0.5	U	0.5	U	0.5	U	0.5	U	1.2	
Arsenic, Total	ug/l	2.1		1.8		0.5	U	0.5	U	0.6		1.1		8.2	
Barium, Total	ug/l														
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.3	
Cadmium, Total	ug/l	0.5	U	0.14	J	382.4		222.2	J	0.5	U	0.5	U	0.5	
Chromium, Total	ug/l	3.5		2.1		2.1		0.5	U	0.6		3	U	43.7	
Copper, Total	ug/l	4.5		4.1		12		4.7	U	3.4		9		96.7	
Lead, Total	ug/l	1.3		2.3		0.6		0.7		0.5	U	0.9		54.5	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	3.7		2.5		12.7		8.9	UJ	3.3		3.4	U	52	
Selenium, Total	ug/l	1	U	0.7	JU	1	U	1	U	1	U	1	U	3	
Silver, Total	ug/l	0.8		0.4	J	0.5	U	0.5	U	0.5	U	0.5	U	1.2	
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Total	ug/l	7.9		10.9		179		157.3	UJ	5	U	10.5	U	181.8	
Dissolved Metals															
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	1.6		1.4		0.5	U	0.5	U	0.6		1		4.3	
Barium, Dissolved	ug/l														
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	366.8		259.2	J	0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.5	U	0.17	J	0.5	U	0.5	U	0.5	U	1.1		0.5	U
Copper, Dissolved	ug/l	0.8		0.7		2.9		4.6		0.5	U	3		0.5	U
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1.3		0.7		11.2		10	J	1.9		2.2		1.3	U
Selenium, Dissolved	ug/l	1	U	0.3	J	1	U	1	U	1	U	1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Dissolved	ug/l	5	U	3.54	JU	166.7		169.4	J	5	U	6.6		5	U

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW48B		MW49A		MW49A		MW49A-DUP		P13A		P13A DUP		FB-1	
SAMPLING DATE		07-APR-06		19-JAN-06		07-APR-06		07-APR-06		17-JAN-06		17-JAN-06		17-JAN-06	
LAB SAMPLE ID		L0604964-05		L0600953-01		L0604964-03		L0604964-07		L0600713-07		L0600713-08		L0600713-10	
	Units		Qual		Qual		Qual		Qual		Qual		Qual		Qual
Total Metals															
Antimony, Total	ug/l	1.1		0.5	U	0.6		0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Total	ug/l	9.8		1.1		3.2	J	2	J	1.5		1.1		0.5	U
Barium, Total	ug/l														
Beryllium, Total	ug/l	1.6		0.5	U	0.8	J	0.5	UJ	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	0.6		0.5	U	0.5		0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Total	ug/l	52.2		3.4		52	J	31.6	J	2.7		2.8		0.5	U
Copper, Total	ug/l	109.7		5.3		72.7	J	44	J	7.6		6.2		0.5	U
Lead, Total	ug/l	59.3		0.9		14	J	8.5	J	1.9		1.5		0.5	U
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	65.5		5.4		34.4	J	24.2	J	4.2		3.2		0.5	U
Selenium, Total	ug/l	4		1	U	1		1	U	1	U	1	U	1	U
Silver, Total	ug/l	0.9		0.5	U	9.5	J	5.5		0.5	U	0.5	U	0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Total	ug/l	243.5		10		83.6	J	53.2	J	8.1		7.3		5	U
Dissolved Metals															
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	4.2		1		0.5	U	0.5	U	0.5		0.5	U	0.5	U
Barium, Dissolved	ug/l														
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper, Dissolved	ug/l	0.8		3.8		1.3	J	1.8	J	0.5	U	0.5	U	0.5	U
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1.5		3.3	J	1.3	J	1.7	J	0.5		0.5	U	0.5	U
Selenium, Dissolved	ug/l	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Dissolved	ug/l	7.3		10.2		5	UJ	6.7	J	5	U	5	U	5	U

U - Not Detected
J - Estimated value

Table 6.2.3 Supplemental RFI Ground Water Sampling Results - Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		FB-3		FB-2		EB-4/7/06		MW54A		MW54B	
SAMPLING DATE		19-JAN-06		19-JAN-06		07-APR-06		16-Nov-10		16-Nov-10	
LAB SAMPLE ID		L0600875-04		L0600875-05		L0604964-06		L1018365-02		L1018365-07	
	Units		Qual		Qual		Qual		Qual		Qual
Total Metals											
Antimony, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	1.1	
Barium, Total	ug/l										
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	0.5	U	0.5	U	0.5	U	3.8		0.5	U
Chromium, Total	ug/l	0.5	U	0.5	U	1.7		1		1.3	
Copper, Total	ug/l	0.8		0.5	U	1		0.9		0.5	U
Lead, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	0.6		0.5	U	1.8		0.7		0.6	
Selenium, Total	ug/l	1	U	1	U	1	U	1	U	1	U
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Zinc, Total	ug/l	5.9		5	U	8.4		5	U	5	U
Dissolved Metals											
Antimony, Dissolved	ug/l	0.5	U	0.5	U			0.5	U	0.5	U
Arsenic, Dissolved	ug/l	0.5	U	0.5	U			0.5	U	1.1	
Barium, Dissolved	ug/l										
Beryllium, Dissolved	ug/l	0.5	U	0.5	U			0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U			0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.5		0.5	U			0.5		1.1	
Copper, Dissolved	ug/l	0.7		0.5	U			0.5	U	0.5	U
Lead, Dissolved	ug/l	0.5	U	0.5	U			0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U			0.2	U	0.2	U
Nickel, Dissolved	ug/l	0.9		0.5	U			0.5	U	0.5	U
Selenium, Dissolved	ug/l	1	U	1	U			1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U			0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U			0.5	U	0.5	U
Zinc, Dissolved	ug/l	6.2		5	U			5	U	5	U

U - Not Detected
J - Estimated value

Table 6.2.4 Supplemental RFI Ground Water Sampling Results - MNA Parameters **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW4		MW4 DUP		MW7		MW9		MW9B	
SAMPLING DATE		17-JAN-06		17-JAN-06		15-DEC-05		20-DEC-05		19-JAN-06	
LAB SAMPLE ID		L0600715-03		L0600715-04		L0515361-02		L0515606-01		L0600877-01	
	Units		Qual		Qual		Qual		Qual		Qual
Dissolved Gases by GC											
Ethane	ug/l	0.5	U	0.5	U			0.5	U	2.6	
Ethene	ug/l	0.5	U	0.5	U			0.5	U	2.55	
Methane	ug/l	0.3	U	0.3	U			0.3	U	0.3	U
Carbon Dioxide	ug/l	38400		50000		34000		50000		12800	
Alkalinity, Total	mg $CaCO_3$/L	41		40		7.4		7.6		59	
Anions by Ion Chromatography											
Chloride	ug/l	20000		20000		6200		13000		27000	
Nitrogen, Nitrite	ug/l	50	U	50	U			50	U	50	U
Nitrogen, Nitrate	ug/l	590		600				60		310	
Sulfate	ug/l	12000		12000		6000		14000		35000	
Sulfide	ug/l	100	U	100	U	100	U	270		100	U
Total Organic Carbon	ug/l	1100		1100				7900		510	

U - Not Detected

Table 6.2.4 Supplemental RFI Ground Water Sampling Results - MNA Parameters **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW9C		MW21C		MW15		MW17		MW21A	
SAMPLING DATE		19-JAN-06		12-JAN-06		17-JAN-06		17-JAN-06		11-JAN-06	
LAB SAMPLE ID		L0600877-02		L0600523-03		L0600715-01		L0600715-02		L0600417-01	
	Units		Qual		Qual		Qual		Qual		Qual
Dissolved Gases by GC											
Ethane	ug/l	1.19		8		2.12		0.5	U	0.5	U
Ethene	ug/l	0.551		4.34		0.721		0.5	U	0.5	U
Methane	ug/l	0.49		1.99		5.59		14.4		0.3	U
Carbon Dioxide	ug/l	600	U	5610		30800		3210		52800	
Alkalinity, Total	mg $CaCO_3$/L	130		60		42		84		13	
Anions by Ion Chromatography											
Chloride	ug/l	30000		64000		28000		32000		97000	
Nitrogen, Nitrite	ug/l	50	U	50	U	50	U	50	U	50	U
Nitrogen, Nitrate	ug/l	310		50	U	290		70		620	
Sulfate	ug/l	32000		25000		11000		13000		8000	
Sulfide	ug/l	100	U	100	U	100	U	100	U	100	U
Total Organic Carbon	ug/l	500	U	1400		1200		1100		820	

U - Not Detected

Table 6.2.4 Supplemental RFI Ground Water Sampling Results - MNA Parameters **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW21B		MW22B		MW22A		MW37		MW40A	
SAMPLING DATE		11-JAN-06		21-DEC-05		21-DEC-05		15-DEC-05		12-JAN-06	
LAB SAMPLE ID		L0600417-02		L0515665-01		L0515665-05		L0515361-01		L0600523-01	
	Units		Qual		Qual		Qual		Qual		Qual
Dissolved Gases by GC											
Ethane	ug/l	0.5	U	0.5	U	0.5	U			0.5	U
Ethene	ug/l	0.5	U	0.5	U	0.5	U			0.5	U
Methane	ug/l	0.312		23.2		314				0.3	U
Carbon Dioxide	ug/l	35200		5510		85900		10100		53400	
Alkalinity, Total	mg $CaCO_3$/L	42		94		48		33		42	
Anions by Ion Chromatography											
Chloride	ug/l	73000		18000		13000		25000		11000	
Nitrogen, Nitrite	ug/l	50	U	50	U	50	U			50	U
Nitrogen, Nitrate	ug/l	650		50	U	50	U			2700	
Sulfate	ug/l	25000		8200		3000		7300		23000	
Sulfide	ug/l	100	U	100	U	100	U	100	U	100	U
Total Organic Carbon	ug/l	600		540		12000				1900	

U - Not Detected

Table 6.2.4 Supplemental RFI Ground Water Sampling Results - MNA Parameters **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		MW40B		MW41A		MW41B		MW41B DUP		P13A	
SAMPLING DATE		12-JAN-06		10-JAN-06		10-JAN-06		10-JAN-06		17-JAN-06	
LAB SAMPLE ID		L0600523-02		L0600326-01		L0600326-02		L0600326-03		L0600715-05	
	Units		Qual		Qual		Qual		Qual		Qual
Dissolved Gases by GC											
Ethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	4.97	
Ethene	ug/l	0.54		0.5	U	0.5	U	0.5	U	1.02	
Methane	ug/l	1.54		0.3	U	2.15		2.41		129	
Carbon Dioxide	ug/l	39200		33700		24100		23200		4450	
Alkalinity, Total	mg $CaCO_3$/L	45		29		46		46		100	
Anions by Ion Chromatography											
Chloride	ug/l	140000		32000		79000		78000		40000	
Nitrogen, Nitrite	ug/l	50	U	50	U	50	U	50	U	50	U
Nitrogen, Nitrate	ug/l	800		1600		280		280		60	
Sulfate	ug/l	23000		11000		29000		29000		17000	
Sulfide	ug/l	100	U	100	U	100	U	100	U	100	U
Total Organic Carbon	ug/l	2000		1200		530		550		2600	

U - Not Detected

Table 6.3.1: Supplemental RFI Soil Gas Sampling Results
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

	Soil Gas Concentration (ppbv)								
Sample ID	**PCE**	**TCE**	**TCA**	**cis-1,2-DCE**	**trans-1,2-DCE**	**1,2-DCA**	**1,1-DCA**	**1,1-DCE**	**VC**
SG-A1	440	230	240	<5	<5	<1	<5	<2	<2
SG-A1	540	260	230	<5	<5	<1	<5	<2	<2
SG-A2	1600	79	1700	<5	31	<1	<5	44	<2
SG-A3	6700	760	9200	460	27	<1	200	180	2.2
SG-A4	6200	450	7900	150	21	<1	420	200	0.7J
SG-A5	670	7.9	90	<5	<5	<1	<5	<2	<2
SG-A6	560	3.4	130	<5	18	<1	<5	<2	<2
SG-A7	1900	4.9	73	<5	<5	<1	<5	<2	<2
SG-A7.5 (A8N)*	6700	16	47	<5	<5	<1	<5	<2	<2
SG-A8	12000	170	330	<5	20	<1	<5	<2	<2
SG-AA3 (B3-E)*	11000	730	10000	380	25	<1	460	220	0.3J
SG-B1	670	120	64	<5	<5	<1	<5	<2	<2
SG-B2	10000	960	11000	63	18	<1	89	<2	0.8J
SG-B2.5 (B3-N)*	11000	240	7700	<5	28	<1	<5	49	1.2
SG-B3	14000	1400	14000	290	30	<1	200	230	0.9J
SG-B3.5 (B3-S)*	12000	500	1600	120	21	<1	140	500	0.5J
SG-B4	2400	12000	3500	1300	32	<1	190	55	0.8J
SG-B5	170	69	78	<5	20	<1	<5	<2	<2
SG-B6	68	0.2J	20	<5	<5	<1	<5	<2	<2
SG-B7	1200	7.4	86	<5	<5	<1	<5	<2	<2
SG-B8	7900	110	220	<5	18	<1	<5	<2	<2
SG-BB3 (B3-W)*	1800	11	400	<5	<5	<1	<5	<2	0.5J
SG-C1	71	2.7	21	<5	<5	<1	<5	<2	0.4J
SG-C2	1600	260	1200	<5	21	<1	49	160	0.4J
SG-C3	10000	510	11000	<5	24	<1	100	170.0	1.5J
SG-C4	100	14	15	<5	<5	<1	<5	<2	0.3J
SG-C5	170	24	150	<5	18	<1	<5	<2	<2
SG-C6	260	14	96	<5	18	<1	<5	<2	<2
SG-C7	88	24	250	<5	<5	<1	<5	<2	<2
SG-C8	1500	29	440	<5	<5	<1	<5	<2	<2
SG-D1	140	220	4.5	<5	24	<1	<5	<2	0.5J
SG-D2	3000	380	800	<5	<5	<1	<5	130	0.27J
SG-D3	3300	140	2200	<5	18	<1	<5	<2	<2
SG-D4	400	4.5	200	<5	18	<1	<5	<2	<2
SG-D5	320	9.3	160	<5	<5	<1	<5	<2	0.2J
SG-D6	1800	3.2	47	<5	<5	<1	<5	<2	<2

Table 6.3.1: Supplemental RFI Soil Gas Sampling Results
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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	Soil Gas Concentration (ppbv)								
Sample ID	**PCE**	**TCE**	**TCA**	**cis-1,2-DCE**	**trans-1,2-DCE**	**1,2-DCA**	**1,1-DCA**	**1,1-DCE**	**VC**
SG-D7	91	5.3	19	<5	<5	<1	<5	<2	<2
SG-D8	4700	14	910	<5	<5	<1	<5	<2	<2
SG-DD6 (E5)*	1700	11	39	<5	<5	<1	<5	<2	0.5J
SG-DD6.5 (E6)*	7000	1.2	370	<5	18	<1	<5	<2	<2
SG-DD7 (E7)*	3700	9.4	110	<5	<5	<1	<5	<2	<2
SG-E1	78	<1	<1	<5	<5	<1	<5	<2	< 2.0
SG-E2	1800	1.7	20	<5	<5	<1	<5	<2	18
SG-E2	1700	1.1	20	<5	<5	<1	<5	<2	13
SG-E3	1000	70	710	<5	<5	<1	<5	72	<2
SG-E4	160	19	190	<5	<5	<1	<5	<2	<2
SG-E5 (F5)*	430	4.1	210	<5	<5	<1	10	<2	<2
SG-E6 (F6)*	48	<1	27	<5	<5	<1	<5	<2	<2
SG-E6.5 (F7)*	2300	0.9J	160	<5	<5	<1	150	<2	<2
SG-E7 (F8)*	670	2.6	73	<5	<5	<1	<5	<2	1.0
SG-E8 (F9)*	380	10	220	<5	<5	<1	<5	<2	0.8J
SG-EE6 (G8)*	226	22	2500	100	<5	<1	3700	250	2.8
SG-EE6.5 (G9)*	75	25	1000	<5	<5	<1	1100	240	1.4
SG-EE7 (G10)*	200	16	110	<5	<5	<1	13	<5	0.7J
SG-F1	5	0.5J	<1	<5	<5	<1	<5	<2	<2
SG-F2	2600	140	8.1	<5	<5	<1	<5	<2	<2
SG-F3	1400	14	730	<5	<5	<1	<5	<2	<2
SG-F4	47	5.7	95	<5	<5	<1	<5	<2	<2
SG-F5 (H8)*	150	8.8	100	<5	<5	<1	<5	<2	0.3J
SG-F5 (H8)*	170	9.4	100	<5	<5	<1	<5	<2	0.4J
SG-F5 (H8)*	150	8.2	100	<5	<5	<1	<5	<2	0.3J
SG-F6 (H9)*	2400	1.4	1000	<5	<5	<1	150	45	0.6J
SG-F6.5 (H10)*	550	8.4	160	<5	<5	<1	26	<2	0.8J
SG-F7 (H11)*	290	3.2	60	<5	<5	<1	<5	<2	<2
SG-F8 (H12)*	560	14	180	<5	<5	<1	<5	<2	0.7J
SG-G1	15	<1	2.8	<5	<5	<1	<5	<2	<2
SG-G1.5 (G2)*	2000	<1	16	<5	<5	<1	<5	<2	<2
SG-G2 (G3)*	14000	42	280	<5	19	<1	<5	<2	<2
SG-G3 (G4)*	6800	14	96	<5	<5	<1	<5	<2	<2
SG-G3.5 (G5)*	590	9.3	78.0	<5	18	<1	8.3	<2	<2
SG-G4 (G6)*	160	2.8	110	<5	<5	<1	56	<2	< 2.0
SG-G4.5 (G7)*	21	0.8J	15	<5	<5	<1	<5	<2	< 2.0

Table 6.3.1: Supplemental RFI Soil Gas Sampling Results
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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	Soil Gas Concentration (ppbv)								
Sample ID	**PCE**	**TCE**	**TCA**	**cis-1,2-DCE**	**trans-1,2-DCE**	**1,2-DCA**	**1,1-DCA**	**1,1-DCE**	**VC**
SG-H1	72	<1	<1	<5	<5	<1	<5	<2	<2
SG-H1.5 (H2)*	29000	84	5.4	<5	19	<1	<5	<2	1.3J
SG-H2 (H3)*	41000	1200	150	360	26	<1	<5	41	0.7J
SG-H2.5 (H4)*	66000	700	60	370	<5	<1	<5	75	0.6J
SG-H3.5 (H5)*	11.1	<1	<1	<5	24	<1	<5	<2	<2
SG-H4 (H6)*	830	10	140	<5	19	<1	57	50	< 2.0
SG-H4.5 (H7)*	91	0.9J	19	<5	<5	<1	<5	<2	<2
SG-I1	49	0.52J	1.6	<5	<5	<1	<5	<2	<2
SG-I1.5 (I2)*	130	<1	<1	<5	<5	<1	<5	<2	<2
SG-I2 (I3)*	11000	60	4.6	<5	28	<1	<5	<2	<2
SG-I2.5 (I4)*	26000	340	49	86	28	<1	<5	<2	0.9J
SG-I3 (I5)*	5500	10	12	<5	62	<1	<5	<2	8.8
SG-I3.5 (I6)*	4000	0.6J	32	13	46	<1	<5	<2	15
SG-I4 (I7)*	880	7.7	22	<5	24	<1	6.4	<2	<2
SG-I4.5 (I8)*	61	2.2	3.0	<5	<5	<1	<5	<2	5.6
SG-J1	930	<1	2.7	<5	<5	<1	<5	<2	<2
SG-J2	26	<1	<1	<5	26	<1	<5	<2	<2
SG-J4 (J3)*	300	4.0	6.0	<5	60	<1	<5	<2	0.6J
SG-K1	1.2	<1	<1	<5	<5	<1	<5	<2	<2
SG-K2	78	<1	6.1	<5	<5	<1	<5	<2	<2
SG-K3	1000	0.6J	16	<5	<5	<1	<5	<2	<2
SG-K4	80	0.9J	11	<5	<5	<1	<5	<2	<2
SG-K4	62	NA	4	<5	<5	<1	<5	<2	<2

NOTES: PCE - tetrachloroethylene; TCE - trichloroethylene; TCA - 1,1,1-trichloroethane; DCE - dichloroethylene
DCA - dichloroethane; VC - vinyl chloride
*Sample ID numbers in parentheses are those that were assigned in the field. Some have been revised to better reflect the sample position in the sampling grid.
< - not detected, detection limit is reported

Table 6.4.1: Supplemental RFI Surface Water Sampling Program
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Location	Sample ID	Date Collected	Lab Report No.	Analyses[1] VOC	PPM (u)	PPM (f)
SW-01	SW-01	05-31-05	L0505867	√	√	√
SW-02	SW-02	06-01-05	L0505937	√	√	√
SW-03	SW-03	06-02-05	L0505996	√	√	√
SW-03	SW-DUP-1	06-02-05	L0505996	√	√	√
SW-04	SW-04	06-02-05	L0505996	√	√	√
SW-04	SW-DUP-2	06-02-05	L0505996	√		
SW-05	SW-05	06-02-05	L0505996	√	√	√
SW-06	SW-06	06-03-05	L0506096		√	√
SW-07	SW-07	06-03-05	L0506096		√	√
SW-08	SW-08	06-03-05	L0506096		√	√
SW-08	SW-DUP-3	06-03-05	L0506096		√	√
SW-09A	SW-09A	06-03-05	L0506096		√	√
SW-11	SW-11	06-02-05	L0505996	√	√	√
SW-12	SW-12	06-03-05	L0506096		√	√
SW-14	SW-14	06-02-05	L0505996	√	√	√
SW-14	SW-14	04-06-06	L0604864	√	√	√
SW-15	SW-15	06-02-05	L0505996	√	√	√
SW-15	SW-15	04-06-06	L0604864	√	√	√
SW-16	SW-16	06-01-05	L0505937	√	√	√
SW-17	SW-17	05-31-05	L0505867	√	√	√
SW-18	SW-18	06-02-05	L0505996	√	√	√
SW-19	SW-19	06-02-05	L0505996	√	√	√
SW-201	SW-201	06-01-05	L0505937	√	√	√
SW-202	SW-202	06-01-05	L0505937	√	√	√
SW-203	SW-203	06-01-05	L0505937	√		
SW-204	SW-204	06-01-05	L0505937	√	√	√
SW-205	SW-205	06-01-05	L0505937	√		
SW-206	SW-206	06-01-05	L0505937	√	√	√
SW-207	SW-207	06-01-05	L0505937	√	√	√
SD-47	SW-SD-47	06-03-10	L1008325		√	√
SD-48	SW-SD-48	06-03-10	L1008325		√	√
SD-48 +200' US	SW-SD-60	06-03-10	L1008325		√	√
SD-48 +200' DS	SW-SD-61	06-03-10	L1008325		√	√
Tributary to Sawmill Brook	SW-SD-TRIB	06-03-10	L1008325		√	√
		Quality Control Samples				
Equipment Blank	SW-EB1	06/03/05	L0506096		√	√
Equipment Blank	SW-EB2	06/03/05	L0506096		√	√
Trip Blank	Trip Blank	06/03/05	L0506096	√		
Trip Blank	Trip Blank	06/02/05	L0505996	√		

Notes:

(1) Analyses: VOC = Volatile Organic Compound
PPM (u) = Priority Pollutant Metals (unfiltered)
PPM (f) = Priority Pollutant Metals (filtered)

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Location		SW-01	SW-02	SW-03	SW-04	SW-05	SW-06	SW-07
UTM Easting		19309678	19309215	19309309	19309197	19308977	19208867	19308679
UTM Northing		4655218	4654110	4653985	4653955	4653786	4653779	4654015
Date/time		6/2/2005 14:08	6/1/2005 14:02	6/2/2005 11:54	6/2/2005 0:00	6/2/2005 15:43	6/3/2005 11:15	6/3/2005 11:00
	Units							
pH	pH units	6.27	7.14	6.07	6.31	6.41	7.01	7.03
DO	mg/L	8.28	9.4	7.09	9.03	8.84	4.33	10
Conductivity	µS/cm	432	377	485	338	338	337	353
TDS	g/L	0.28	0.24	0.31	0.22	0.22	0.22	0.23
Temp	°C	18.1	16	12.77	18.17	22.85	20.39	20.93
Turbidity	NTUs	--	7.5	9	4.2	<1	<1	<1
ORP	mV	190	102	182	150	124	236	241
Depth	feet	2	0.5	0.167	0.5	--	4.5	3.5
Width	feet	15	10	3	3	--	Lake	Lake
Velocity	ft/s	3	1.5	0.5	3	--	Lake	Lake

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Location		SW-08	SW-09A	SW-11	SW-12	SW-14	SW-15	SW-16
UTM Easting		19308659	19308422	19309190	19308250	19309126	19309136	19309222
UTM Northing		4654228	4653501	4654369	4653981	4654048	4654061	4654133
Date/time		6/3/2005 10:28	6/3/2005 11:34	5/31/2005 12:50	6/3/2005 10:44	6/2/2005 11:18	6/2/2005 10:44	5/31/2005 18:27
	Units							
pH	pH units	6.96	6.99	7.23	6.94	6.29	6.13	7.16
DO	mg/L	9.61	8.44	9.02	9.76	6.77	7.6	9.3
Conductivity	µS/cm	404	325	373	387	242	331	391
TDS	g/L	0.29	0.21	0.24	0.25	0.16	0.21	0.25
Temp	°C	19.57	19.61	13.76	19.35	14.85	12.2	14.68
Turbidity	NTUs	<1	<1	48.9	<1	26.5	35.1	<1
ORP	mV	201	242	154	242	105	251	171
Depth	feet	--	3	2	4	0.167	0.42	0.5
Width	feet	Lake	Lake	15	Lake	3	5	12
Velocity	ft/s	Lake	Lake	1	Lake	0.5	1	1.5

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Location		SW-17	SW-18	SW-19	SW-201	SW-202	SW-203	SW-204
UTM Easting		19309190	19309217	19309067	19309190	19309190	19309195	19309202
UTM Northing		4654246	4654424	4653822	4654081	4654081	4654085	4654106
Date/time		5/31/2005 13:27	6/2/2005 14:34	6/2/2005 15:09	6/1/2005 16:09	6/1/2005 16:48	6/1/2005 14:49	6/1/2005 14:26
	Units							
pH	pH units	6.67	6.28	6.35	7.24	7.14	7.22	7.37
DO	mg/L	10.93	8.44	8.35	9.58	7.93	9.83	10.17
Conductivity	µS/cm	391	402	336	383	324	385	379
TDS	g/L	0.25	0.26	0.22	0.25	0.21	0.25	0.25
Temp	°C	14.17	17.89	20.63	16.69	13.03	15.78	16.26
Turbidity	NTUs	11.1	4.06	18.7	4.4	11.2	1.2	1.9
ORP	mV	172	148		175	191	174	182
Depth	feet	1	1.5	0.167	1.5	0.33	0.67	0.67
Width	feet	5	5	12	5	3	9	8
Velocity	ft/s	2	1	2	1	0.5	1	1.5

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Location		SW-205	SW-206	SW-207	SD-01	SD-02	SD-04
UTM Easting		19309207	19309222	19309221	13309191	19309215	19309197
UTM Northing		4654114	4654115	4654114	4654081	4654110	4653955
Date/time		6/1/2005 13:30	6/1/2005 11:42	6/1/2005 11:08	6/2/2005 10:18	6/1/2005 14:02	6/2/2005 0:00
	Units						
pH	pH units	7	7.12	7.07	6.02	7.14	6.31
DO	mg/L	9.16	9.53	10.05	8.52	9.4	9.03
Conductivity	µS/cm	461	379	391	386	377	338
TDS	g/L	0.3	0.25	0.25	0.25	0.24	0.22
Temp	°C	12.09	14.74	14.07	13.74	16	18.17
Turbidity	NTUs	26.2	0.8	2.6	9.6	7.5	4.2
ORP	mV	205	116	199	242	102	150
Depth	feet	6	1	1	2	0.5	0.5
Width	feet	9	12	12	15	10	3
Velocity	ft/s	0.5	1	1	3	1.5	3

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Location		SD-05	SD-10A	SD-201	SD-202	SD-203	SD-204
UTM Easting		19308977	19308400	19309190	19309190	19309195	19309202
UTM Northing		4653786	4654379	4654081	4654081	4654085	4654106
Date/time		6/2/2005 15:43	6/3/2005 12:56	6/1/2005 16:09	6/1/2005 16:48	6/1/2005 14:49	6/1/2005 14:26
	Units						
pH	pH units	6.41	6.98	7.24	7.14	7.22	7.37
DO	mg/L	8.84	11.46	9.58	7.93	9.83	10.17
Conductivity	µS/cm	338	530	383	324	385	379
TDS	g/L	0.22	0.34	0.25	0.21	0.25	0.25
Temp	°C	22.85	20.12	16.69	13.03	15.78	16.26
Turbidity	NTUs	<1	<1	4.4	11.2	1.2	1.9
ORP	mV	124	208	175	191	174	182
Depth	feet	--	--	1.5	0.33	0.67	0.67
Width	feet	--	--	5	3	9	8
Velocity	ft/s	--	--	1	0.5	1	1.5

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Location		SD-205	SD-206	SD-207	SD-208	SD-209	SD-210
UTM Easting		19309207	19309222	19309221	19309216	19309221	19309221
UTM Northing		4654114	4654115	4654114	4654106	4654129	4654129
Date/time		6/1/2005 13:30	6/1/2005 11:42	6/1/2005 11:08	6/1/2005 10:46	6/1/2005 10:32	6/1/2005 10:16
	Units						
pH	pH units	7	7.12	7.07	7.13	7.08	7.13
DO	mg/L	9.16	9.53	10.05	9.91	9.78	10.22
Conductivity	µS/cm	461	379	391	386	389	389
TDS	g/L	0.3	0.25	0.25	0.25	0.25	0.25
Temp	°C	12.09	14.74	14.07	14.07	13.9	13.78
Turbidity	NTUs	26.2	0.8	2.6	1.7	2.3	4.8
ORP	mV	205	116	199	192	204	221
Depth	feet	6	1	1	--	0.5	0.5
Width	feet	9	12	12	--	12	12
Velocity	ft/s	0.5	1	1	--	1	2

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Location		SD-211	SD-212	SD-213	SD-214	SD-41	SD-42
UTM Easting		19309224	19309227	19309210	19309231	19308818	19308894
UTM Northing		4654147	4654164	4654193	465489	4653723	4653772
Date/time		5/31/2005 17:53	5/31/2005 16:34	5/31/2005 15:36	5/31/2005 0:00	6/3/2005 14:04	6/3/2005 14:27
	Units						
pH	pH units	7.25	7.2	7.23	7.28	7.04	7.14
DO	mg/L	9.55	10.13	10.44	9.72	10	9.39
Conductivity	µS/cm	391	388	387	389	338	342
TDS	g/L	0.25	0.25	0.25	0.25	0.22	0.22
Temp	°C	14.85	15.14	15.19	14.53	21.05	22.65
Turbidity	NTUs	9.5	3.7	5.09	13.6	<1	19.2
ORP	mV	193	188	178	160	181	175
Depth	feet	1	3	1	1.5	4	--
Width	feet	1.2	12	6	5	--	--
Velocity	ft/s	1	1	0.5	1	--	--

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Location		SD-43	SD-44	SD-45	SD-46	SD-47	SD-48
UTM Easting		19308869	19308845	19309126	19309136	19309196	19309217
UTM Northing		4653817	4653993	4654048	4654061	4654400	4654424
Date/time		6/3/2005 14:46	6/3/2005 15:07	6/2/2005 11:18	6/2/2005 10:44	5/31/2005 12:17	6/2/2005 14:34
	Units						
pH	pH units	7.01	7.04	6.29	6.13	7.41	6.28
DO	mg/L	9.68	9.35	6.77	7.6	9.16	8.44
Conductivity	µS/cm	336	339	242	331	417	402
TDS	g/L	0.22	0.22	0.16	0.21	0.27	0.26
Temp	°C	22.46	22.49	14.85	12.2	16	17.89
Turbidity	NTUs	<1	<1	26.5	35.1	<1	4.06
ORP	mV	183	178	105	251	104	148
Depth	feet	--	--	0.167	0.42	2	1.5
Width	feet	--	--	3	5	15	5
Velocity	ft/s	--	--	0.5	1	1	1

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Location		SD-49	SD-50	SD-51	FS-SD-01	FS-SD-50	FS-SD-204
UTM Easting		19309222	19309200	19309067	19309192	19309178	19309199
UTM Northing		4654133	4654237	4653822	4654329	4654198	4654120
Date/time		5/31/2005 18:27	5/31/2005 13:49	6/2/2005 15:09	6/1/2010 17:00	6/1/2010 17:00	6/1/2010 17:00
	Units						
pH	pH units	7.16	7.28	6.35	--	--	--
DO	mg/L	9.3	9.78	8.35	--	--	--
Conductivity	µS/cm	391	391	336	--	--	--
TDS	g/L	0.25	0.25	0.22	--	--	--
Temp	°C	14.68	14.31	20.63	--	--	--
Turbidity	NTUs	<1	4.1	18.7	--	--	--
ORP	mV	171	141	--	--	--	--
Depth	feet	0.5	1 ft	0.167	--	--	--
Width	feet	12	5 ft	12	--	--	--
Velocity	ft/s	1.5	1 fps	2	--	--	--

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Location		FS-SD-209	FS-SD-TRIB-LB	FS-SD-TRIB-RB	SD-09A	SD-43	SD-44
UTM Easting		19309218	~19309248	~19309248	19308422	19308869	19308845
UTM Northing		4654134	~4653893	~4653893	4653501	4653817	4653993
Date/time		6/1/2010 17:00	6/3/2010 9:00	6/3/2010 9:00	6/2/2010 16:03	6/2/2010 12:47	6/2/2010 11:50
	Units						
pH	pH units	--	--	--	6.65	7	6.1
DO	mg/L	--	--	--	7.55	7.25	5.65
Conductivity	µS/cm	--	--	--	253	254	257
TDS	g/L	--	--	--	--	--	--
Temp	°C	--	--	--	28.1	26.2	24.9
Turbidity	NTUs	--	--	--	--	--	--
ORP	mV	--	--	--	--	--	--
Depth	feet	--	--	--	--	--	--
Width	feet	--	--	--	--	--	--
Velocity	ft/s	--	--	--	--	--	--

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Location		SD-46	SD-47	SD-48	SD-50	SD-60	SD-61
UTM Easting		19309135	19309196	19309217	19309178	200' upstream	200' downstream
UTM Northing		4654058	4654400	4654424	4654198	of SD-48	of SD-48
Date/time		6/3/2010 16:00	6/3/2010 13:39	6/3/2010 12:45		6/3/2010 13:08	6/3/2010 12:25
	Units						
pH	pH units	6.48	6.52	6.45	--	6.51	6.27
DO	mg/L	5.6	7	7.25	--	7.1	7
Conductivity	µS/cm	250	278	281	--	280	279
TDS	g/L	--	--	--	--	--	--
Temp	°C	21.2	22.2	22	--	22.2	21.7
Turbidity	NTUs	--	--	--	--	--	--
ORP	mV	--	--	--	--	--	--
Depth	feet	--	--	--	--	--	--
Width	feet	--	--	--	--	--	--
Velocity	ft/s	--	--	--	--	--	--

-- = no measurement

Table 6.4.2. Supplemental RFI Surface Water Quality Measurements
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Location		SD-202	SD-214	SD-TRIB
UTM Easting		19309193	19309232	19309248
UTM Northing		4654084	4654196	4653893
Date/time		6/4/2010 12:15	6/4/2010 10:50	6/3/2010 10:30
	Units			
pH	pH units	6.48	6.1	5.82
DO	mg/L	7.5	8.2	7.2
Conductivity	µS/cm	278	285	415
TDS	g/L	--	--	--
Temp	°C	23.5	21.9	13.3
Turbidity	NTUs	--	--	--
ORP	mV	--	--	--
Depth	feet	--	--	--
Width	feet	--	--	--
Velocity	ft/s	--	--	--

-- = no measurement

Table 6.4.3: Supplemental RFI Surface Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SW-1		SW-02		SW-03		SW-03DUP		SW-04		SW-04DUP	
SAMPLING DATE		31-MAY-05		01-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0505867-10		L0505937-19		L0505996-10		L0505996-12		L0505996-01		L0505996-03	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B													
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	2		2.4		0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,3-Trichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,3-Trichloropropane	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
1,2,4-Trichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-Trimethylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromo-3-chloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromoethane	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
1,2-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
1,3,5-Trimethylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,3-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,3-Dichloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U	250	U
2,2-Dichloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Bromochloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Bromomethane	ug/l	1	U	1	U	1	UJ	1	UJ	1	U	1	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 6.4.3: Supplemental RFI Surface Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SW-1		SW-02		SW-03		SW-03DUP		SW-04		SW-04DUP	
SAMPLING DATE		31-MAY-05		01-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0505867-10		L0505937-19		L0505996-10		L0505996-12		L0505996-01		L0505996-03	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Dibromomethane	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Dichlorodifluoromethane	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Ethyl ether	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Ethyl-Tert-Butyl-Ether	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Isopropyl Ether	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Isopropylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Naphthalene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Tertiary-Amyl Methyl Ether	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Tetrachloroethene	ug/l	2.3		5.4		0.5	U	0.5	U	0.5	U	0.5	U
Tetrahydrofuran	ug/l	10	U	10	U	10	U	10	U	10	U	10	U
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	0.67		1.5		0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	0.66		1.8		0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
p-Chlorotoluene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
p-Isopropyltoluene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
sec-Butylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl acetate	ug/l	--		--		--		--		--		--	

U - Not Detected
J - Estimated Value
-- No Measurement

Table 6.4.3: Supplemental RFI Surface Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SW-05		SW-11		SW-14		SW-14		SW-15		SW-15	
SAMPLING DATE		02-JUN-05		02-JUN-05		02-JUN-05		06-APR-06		02-JUN-05		06-APR-06	
LAB SAMPLE ID		L0505996-19		L0505996-14		L0505996-09		L0604864-06		L0505996-07		L0604864-07	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B													
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
1,1,1-Trichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	20	J	37	
1,1,2,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	--		0.5	U	--	
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	1.5	U
1,1-Dichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	1.6		3.4	
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	1.6		2	
1,1-Dichloropropene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
1,2,3-Trichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
1,2,3-Trichloropropane	ug/l	5	U	5	U	5	U	--		5	U	--	
1,2,4-Trichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
1,2,4-Trimethylbenzene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
1,2-Dibromo-3-chloropropane	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
1,2-Dibromoethane	ug/l	2	U	2	U	2	U	--		2	U	--	
1,2-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	3.5	U
1,3,5-Trimethylbenzene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
1,3-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
1,3-Dichloropropane	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
1,4-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U	500	U
2,2-Dichloropropane	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	UJ	--	
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U	10	U
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	10	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U	10	U
Acetone	ug/l	5	U	5	U	5	U	5	U	5	U	10	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
Bromobenzene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
Bromochloromethane	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U	4	U
Bromomethane	ug/l	1	U	1	UJ	1	U	1	U	1	UJ	2	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	5	U	10	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	2	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	1.5	U
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U

Table 6.4.3: Supplemental RFI Surface Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SW-05		SW-11		SW-14		SW-14		SW-15		SW-15	
SAMPLING DATE		02-JUN-05		02-JUN-05		02-JUN-05		06-APR-06		02-JUN-05		06-APR-06	
LAB SAMPLE ID		L0505996-19		L0505996-14		L0505996-09		L0604864-06		L0505996-07		L0604864-07	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Dibromomethane	ug/l	5	U	5	U	5	U	--		5	U	--	
Dichlorodifluoromethane	ug/l	5	U	5	U	5	U	--		5	U	--	
Ethyl ether	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
Ethyl-Tert-Butyl-Ether	ug/l	2	U	2	U	2	U	--		2	U	--	
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
Hexachlorobutadiene	ug/l	1	U	1	U	1	U	--		1	U	--	
Isopropyl Ether	ug/l	2	U	2	U	2	U	--		2	U	--	
Isopropylbenzene	ug/l	0.5	U	0.5	U	0.5	U	--		0.5	U	--	
Methyl tert butyl ether	ug/l	1	U	1	U	1	U	1	U	1	U	2	U
Methylene chloride	ug/l	5	U	5	U	5	U	0.58	J	5	U	10	U
Naphthalene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	2	U
Tertiary-Amyl Methyl Ether	ug/l	2	U	2	U	2	U	--		2	U	--	
Tetrachloroethene	ug/l	0.5	U	0.5	U	4.8		0.35	J	62		100	
Tetrahydrofuran	ug/l	10	U	10	U	10	U	--		10	U	--	
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	1.5	U
Trichloroethene	ug/l	0.5	U	0.5	U	1.3		0.61		13		18	
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	5	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U	2	U
cis-1,2-Dichloroethene	ug/l	0.5	U	0.5	U	15		3.5		15		13	
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
n-Butylbenzene	ug/l	0.5	U	0.5	U	0.5	U	10	U	0.5	U	20	U
n-Propylbenzene	ug/l	0.5	U	0.5	U	0.5	U	--		0.5	U	--	
o-Chlorotoluene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	2	U
p-Chlorotoluene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
p-Isopropyltoluene	ug/l	0.5	U	0.5	U	0.5	U	--		0.5	U	--	
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	2	U
sec-Butylbenzene	ug/l	0.5	U	0.5	U	0.5	U	--		0.5	U	--	
tert-Butylbenzene	ug/l	2.5	U	2.5	U	2.5	U	--		2.5	U	--	
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	1.5	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
Vinyl acetate	ug/l	--		--		--		5	U	--		10	U

U - Not Detected
J - Estimated Value
-- No Measurement

Table 6.4.3: Supplemental RFI Surface Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SW-16		SW-17		SW-18		SW-19		SW-201		SW-202	
SAMPLING DATE		31-MAY-05		31-MAY-05		02-JUN-05		02-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-03		L0505867-07		L0505996-16		L0505996-18		L0505937-27		L0505937-30	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B													
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	1.3		1.3		0.95		0.5	U	0.5	U	20	
1,1,2,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	2	
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	2	
1,1-Dichloropropene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,3-Trichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,3-Trichloropropane	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
1,2,4-Trichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-Trimethylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromo-3-chloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromoethane	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
1,2-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
1,3,5-Trimethylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,3-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,3-Dichloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U	250	U
2,2-Dichloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Bromochloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Bromomethane	ug/l	1	U	1	U	1		1	U	1	U	1	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 6.4.3: Supplemental RFI Surface Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SW-16		SW-17		SW-18		SW-19		SW-201		SW-202	
SAMPLING DATE		31-MAY-05		31-MAY-05		02-JUN-05		02-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-03		L0505867-07		L0505996-16		L0505996-18		L0505937-27		L0505937-30	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Dibromomethane	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Dichlorodifluoromethane	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Ethyl ether	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Ethyl-Tert-Butyl-Ether	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Isopropyl Ether	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Isopropylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Naphthalene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Tertiary-Amyl Methyl Ether	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Tetrachloroethene	ug/l	2.6		2.9		1.1		0.5	U	0.5	U	61	
Tetrahydrofuran	ug/l	10	U	10	U	10	U	10	U	10	U	10	U
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	0.79		0.84		0.5	U	0.5	U	0.5	U	17	
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	1.1		0.91		0.5	U	0.5	U	0.5	U	18	
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
p-Chlorotoluene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
p-Isopropyltoluene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
sec-Butylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl acetate	ug/l	--		--		--		--		--		--	

U - Not Detected
J - Estimated Value
-- No Measurement

Table 6.4.3: Supplemental RFI Surface Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SW-203		SW-204		SW-205		SW-206		SW-207		SD-EB1	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		31-MAY-05		03-JUN-05	
LAB SAMPLE ID		L0505937-24		L0505937-21		L0505937-18		L0505937-10		L0505937-35		L0506096-09	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B													
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	1.2		4.1		0.5	U	2.2		1.6		0.5	U
1,1,2,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,3-Trichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,3-Trichloropropane	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
1,2,4-Trichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-Trimethylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromo-3-chloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromoethane	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
1,2-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
1,3,5-Trimethylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,3-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,3-Dichloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U	250	U
2,2-Dichloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Bromochloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Bromomethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 6.4.3: Supplemental RFI Surface Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SW-203		SW-204		SW-205		SW-206		SW-207		SD-EB1	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		31-MAY-05		03-JUN-05	
LAB SAMPLE ID		L0505937-24		L0505937-21		L0505937-18		L0505937-10		L0505937-35		L0506096-09	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Dibromomethane	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Dichlorodifluoromethane	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Ethyl ether	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Ethyl-Tert-Butyl-Ether	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Isopropyl Ether	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Isopropylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Naphthalene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
Tertiary-Amyl Methyl Ether	ug/l	2	U	2	U	2	U	2	U	2	U	2	U
Tetrachloroethene	ug/l	2.4		11		0.5	U	5.1		3.8		0.5	U
Tetrahydrofuran	ug/l	10	U	10	U	10	U	10	U	10	U	10	U
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	0.68		3.1		0.5	U	1.6		1.1		0.5	U
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	0.99		3.6		0.5	U	1.8		1.4		0.5	U
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
p-Chlorotoluene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
p-Isopropyltoluene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U	1	U
sec-Butylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl acetate	ug/l	--		--		--		--		--		--	

U - Not Detected
J - Estimated Value
-- No Measurement

Table 6.4.3: Supplemental RFI Surface Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SD-EB2		SW-EB1		SW-EB2		TRIP BLANK		TRIP BLANK	
SAMPLING DATE		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0506096-10		L0506096-13		L0506096-14		L0506096-20		L0505996-21	
	Units		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B											
1,1,1,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,3-Trichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,3-Trichloropropane	ug/l	5	U	5	U	5	U	5	U	5	U
1,2,4-Trichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-Trimethylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromo-3-chloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromoethane	ug/l	2	U	2	U	2	U	2	U	2	U
1,2-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	ug/l	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
1,3,5-Trimethylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,3-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,3-Dichloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dichlorobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dioxane	ug/l	250	U	250	U	250	U	250	U	250	U
2,2-Dichloropropane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
2-Butanone	ug/l	5	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/l	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/l	5	U	5	U	5	U	5	U	5	U
Acetone	ug/l	5	U	5	U	5	U	5	U	5	U
Benzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Bromochloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Bromodichloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	ug/l	2	U	2	U	2	U	2	U	2	U
Bromomethane	ug/l	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/l	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	ug/l	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Chloromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Dibromochloromethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 6.4.3: Supplemental RFI Surface Water Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SD-EB2		SW-EB1		SW-EB2		TRIP BLANK		TRIP BLANK	
SAMPLING DATE		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0506096-10		L0506096-13		L0506096-14		L0506096-20		L0505996-21	
	Units		Qual		Qual		Qual		Qual		Qual
Dibromomethane	ug/l	5	U	5	U	5	U	5	U	5	U
Dichlorodifluoromethane	ug/l	5	U	5	U	5	U	5	U	5	U
Ethyl ether	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Ethyl-Tert-Butyl-Ether	ug/l	2	U	2	U	2	U	2	U	2	U
Ethylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	ug/l	1	U	1	U	1	U	1	U	1	U
Isopropyl Ether	ug/l	2	U	2	U	2	U	2	U	2	U
Isopropylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert butyl ether	ug/l	1	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/l	5	U	5	U	5	U	5	U	5	U
Naphthalene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Styrene	ug/l	1	U	1	U	1	U	1	U	1	U
Tertiary-Amyl Methyl Ether	ug/l	2	U	2	U	2	U	2	U	2	U
Tetrachloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrahydrofuran	ug/l	10	U	10	U	10	U	10	U	10	U
Toluene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
Trichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl chloride	ug/l	1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
o-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U
p-Chlorotoluene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
p-Isopropyltoluene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p/m-Xylene	ug/l	1	U	1	U	1	U	1	U	1	U
sec-Butylbenzene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	ug/l	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
trans-1,2-Dichloroethene	ug/l	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl acetate	ug/l	--		--		--		--		--	

U - Not Detected
J - Estimated Value
-- No Measurement

Table 6.4.4: Supplemental RFI Surface Water Sampling Results - Total and Dissolved Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SW-1		SW-02		SW-03		SW-03DUP		SW-04	
SAMPLING DATE		31-MAY-05		01-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0505867-10		L0505937-19		L0505996-10		L0505996-12		L0505996-01	
	Units		Qual		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series											
Antimony, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Total	ug/l	0.6		0.5	U	0.6		0.5	U	0.6	
Barium, Total	ug/l	NA		NA		NA		NA		NA	
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	0.5		0.6		0.5	U	0.5	U	1	
Chromium, Total	ug/l	0.8		0.9		1.3	J	0.9	J	1.5	
Copper, Total	ug/l	0.9		1.2		0.8		0.7		1.3	
Lead, Total	ug/l	0.5		0.9		0.5	U	0.5	U	2.3	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	1.3		1.5		1.5	J	1.2	J	1	U
Selenium, Total	ug/l	1	U	1	U	1		1		1	U
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Total	ug/l	NA		NA		NA		NA		NA	
Zinc, Total	ug/l	10.2		14.8		20.8	J	26.4	J	11.3	
Dissolved Metals by MCP 6000/7000 series											
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	0.5	U	0.6		0.5	U	0.5		0.5	U
Barium, Dissolved		NA		NA		NA		NA		NA	
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.6		0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	
Copper, Dissolved	ug/l	0.8		0.6		0.5	U	0.5	U	0.6	
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1		1.1		1.1		1.3		1	U
Selenium, Dissolved	ug/l	1	U	1	U	1	U	1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Dissolved		NA		NA		NA		NA		NA	
Zinc, Dissolved	ug/l	5	U	5	U	5	U	5	U	5	U
Hardness by SM 2340B	mg/l										

U - Not Detected
J - Estimated Value
NA - Not Analyzed

Table 6.4.4: Supplemental RFI Surface Water Sampling Results - Total and Dissolved Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SW-05		SW-06		SW-07		SW-08		SW-08DUP	
SAMPLING DATE		02-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05	
LAB SAMPLE ID		L0505996-19		L0506096-01		L0506096-18		L0506096-15		L0506096-16	
	Units		Qual		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series											
Antimony, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Total	ug/l	0.6		0.5	U	0.5	U	0.5	U	0.5	U
Barium, Total	ug/l	NA		NA		NA		NA		NA	
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Total	ug/l	0.5	U	1	U	1	U	1.1		1.2	
Copper, Total	ug/l	0.7		1		1.1		1.3	J	1	J
Lead, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	1	U	1	U	1	U	1	U	1	U
Selenium, Total	ug/l	1		1	U	1	U	1	U	1	U
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Total	ug/l	NA		NA		NA		NA		NA	
Zinc, Total	ug/l	5	U	5	U	5.7	U	5.2	U	5.4	U
Dissolved Metals by MCP 6000/7000 series											
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	0.7		0.5	U	0.5	U	0.5	U	0.5	U
Barium, Dissolved		NA		NA		NA		NA		NA	
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.6		1	U	1	U	1	U	1	U
Copper, Dissolved	ug/l	0.6		1		0.9		0.9		0.9	
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1	U	1	U	1	U	1	U	1	U
Selenium, Dissolved	ug/l	1	U	1	U	1	U	1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Dissolved		NA		NA		NA		NA		NA	
Zinc, Dissolved	ug/l	5	U	12.9		5	U	9.8		5	U
Hardness by SM 2340B	mg/l										

U - Not Detected
J - Estimated Value
NA - Not Analyzed

Table 6.4.4: Supplemental RFI Surface Water Sampling Results - Total and Dissolved Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SW-09A		SW-11		SW-12		SW-14		SW-14	
SAMPLING DATE		03-JUN-05		02-JUN-05		03-JUN-05		02-JUN-05		06-APR-06	
LAB SAMPLE ID		L0506096-02		L0505996-14		L0506096-17		L0505996-09		L0604864-06	
	Units		Qual		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series											
Antimony, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.19	J
Arsenic, Total	ug/l	0.5	U	0.6		0.5	U	0.6		0.8	
Barium, Total	ug/l	NA		NA		NA		NA		NA	
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.7		1	
Chromium, Total	ug/l	1.5		0.6		1.1		1.4		1.3	
Copper, Total	ug/l	1.5		0.7		1		1		1.5	
Lead, Total	ug/l	0.8		0.5		0.5	U	0.9		1.5	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	1	U	1	U	1	U	1.6		2	
Selenium, Total	ug/l	1	U	1		1	U	1		0.6	J
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.09	J
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Total	ug/l	NA		NA		NA		NA		NA	
Zinc, Total	ug/l	19.7	U	5	U	6.9	U	21.3		11.8	
Dissolved Metals by MCP 6000/7000 series											
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	0.5	U	0.5		0.5	U	0.6		0.26	J
Barium, Dissolved		NA		NA		NA		NA		NA	
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.37	J
Chromium, Dissolved	ug/l	1	U	0.5		1	U	0.5		0.39	J
Copper, Dissolved	ug/l	1.1		0.5		0.9		0.5	U	1.6	
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.18	J
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1	U	1	U	1	U	1.2		1.1	
Selenium, Dissolved	ug/l	1	U	1	U	1	U	1	U	0.5	J
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Dissolved		NA		NA		NA		NA		NA	
Zinc, Dissolved	ug/l	12.5		5	U	5	U	5	U	6.7	
Hardness by SM 2340B	mg/l										

U - Not Detected
J - Estimated Value
NA - Not Analyzed

Table 6.4.4: Supplemental RFI Surface Water Sampling Results - Total and Dissolved Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SW-15		SW-15		SW-16		SW-17		SW-18	
SAMPLING DATE		02-JUN-05		06-APR-06		31-MAY-05		31-MAY-05		02-JUN-05	
LAB SAMPLE ID		L0505996-07		L0604864-07		L0505937-03		L0505867-07		L0505996-16	
	Units		Qual		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series											
Antimony, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Total	ug/l	0.5	U	0.5	U	0.6		0.5	U	0.5	U
Barium, Total	ug/l	NA		NA		NA		NA		NA	
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	1.1		0.39	J	0.5	U	1.2		0.5	U
Chromium, Total	ug/l	0.9		0.32	J	1		1.5		1.3	
Copper, Total	ug/l	1.5		1.4		1.4		1.8		0.9	
Lead, Total	ug/l	0.8		0.14	J	0.5	U	2.4		0.5	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	1.8		0.9		1.4		1.9		1	
Selenium, Total	ug/l	1	U	0.5	J	1	U	1	U	1	U
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Total	ug/l	NA		NA		NA		NA		NA	
Zinc, Total	ug/l	14.7		7.2		14.3		11.5		27.3	
Dissolved Metals by MCP 6000/7000 series											
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	0.5	U	0.16	J	0.5	U	0.5	U	0.7	
Barium, Dissolved		NA		NA		NA		NA		NA	
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.8		0.6		0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.6		0.25	J	0.5	U	0.5	U	0.5	
Copper, Dissolved	ug/l	0.9		0.7		0.7		0.8		0.8	
Lead, Dissolved	ug/l	0.5	U	0.35	J	0.5	U	0.5	U	0.6	
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1.5		0.9		1		1.4		1.3	
Selenium, Dissolved	ug/l	1	U	0.4	J	1	U	1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Dissolved		NA		NA		NA		NA		NA	
Zinc, Dissolved	ug/l	5.5		6.4		5	U	5	U	5	U
Hardness by SM 2340B	mg/l										

U - Not Detected
J - Estimated Value
NA - Not Analyzed

Table 6.4.4: Supplemental RFI Surface Water Sampling Results - Total and Dissolved Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SW-19		SW-201		SW-202		SW-204		SW-206	
SAMPLING DATE		02-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505996-18		L0505937-27		L0505937-30		L0505937-21		L0505937-10	
	Units		Qual		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series											
Antimony, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Total	ug/l	0.8		0.5	U	0.5	U	0.5	U	0.5	U
Barium, Total	ug/l	NA		NA		NA		NA		NA	
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	1.4		0.5		0.8		0.6		0.6	
Chromium, Total	ug/l	2.3		0.9		0.9		0.8		0.7	
Copper, Total	ug/l	2.1		1		1.1		1.3		1.1	
Lead, Total	ug/l	4		0.6		0.6		0.6		0.5	U
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	1		1.4		1.5		1.4		1.5	
Selenium, Total	ug/l	1		1	U	1	U	1	U	1	U
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Total	ug/l	NA		NA		NA		NA		NA	
Zinc, Total	ug/l	25.5		17.9		14.6		14.6		25.3	
Dissolved Metals by MCP 6000/7000 series											
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Arsenic, Dissolved	ug/l	0.6		0.6		0.5	U	0.5	U	0.5	U
Barium, Dissolved		NA		NA		NA		NA		NA	
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.6		0.5	U	0.7		0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.5	U	0.5	U	0.6		0.5	U	0.5	U
Copper, Dissolved	ug/l	0.7		0.8		0.8		0.6		0.6	
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1	U	1		1.4		1.1		1.1	
Selenium, Dissolved	ug/l	1	U	1	U	1	U	1	U	1	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium, Dissolved		NA		NA		NA		NA		NA	
Zinc, Dissolved	ug/l	5	U	5	U	6.4		6.2		5	U
Hardness by SM 2340B	mg/l										

U - Not Detected
J - Estimated Value
NA - Not Analyzed

Table 6.4.4: Supplemental RFI Surface Water Sampling Results - Total and Dissolved Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SW-207		SW-EB1		SW-EB2		SW-SD-47		SW-SD-48	
SAMPLING DATE		31-MAY-05		03-JUN-05		03-JUN-05		03-Jun-10		03-Jun-10	
LAB SAMPLE ID		L0505937-35		L0506096-13		L0506096-14		L1008325-08		L1008325-06	
	Units		Qual		Qual		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series											
Antimony, Total	ug/l	0.8		0.5	U	0.5	U	1	U	1	U
Arsenic, Total	ug/l	0.7		0.5	U	0.5	U	0.6		0.7	
Barium, Total	ug/l	NA		NA		NA		22.6		19	
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	0.5		0.5	U	0.5	U	1.3		0.5	
Chromium, Total	ug/l	0.8		1	U	1	U	1		1	U
Copper, Total	ug/l	1		0.5	U	0.5	U	NA		NA	
Lead, Total	ug/l	1.1		0.5	U	0.5	U	4		1	
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	1.9		1	U	1	U	2		1.3	
Selenium, Total	ug/l	1	U	1	U	1	U	5	U	5	U
Silver, Total	ug/l	0.5	U	0.5	U	0.5	U	0.2	U	0.2	U
Thallium, Total	ug/l	0.5	U	0.5	U	0.5	U	0.2	U	0.2	U
Vanadium, Total	ug/l	NA		NA		NA		5	U	5	U
Zinc, Total	ug/l	5	U	5.7		5	U	10	U	10	U
Dissolved Metals by MCP 6000/7000 series											
Antimony, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	1	U	1	U
Arsenic, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Barium, Dissolved		NA		NA		NA		17.3		17	
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	0.6		1	U	1	U	1	U	1	U
Copper, Dissolved	ug/l	0.5		0.5	U	0.5	U	NA		NA	
Lead, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	1	U	1	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	1.1		1	U	1	U	0.8		0.9	
Selenium, Dissolved	ug/l	1	U	1	U	1	U	5	U	5	U
Silver, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.2	U	0.2	U
Thallium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U	0.2	U	0.2	U
Vanadium, Dissolved		NA		NA		NA		5	U	5	U
Zinc, Dissolved	ug/l	5	U	5	U	5	U	10	U	10	U
Hardness by SM 2340B	mg/l							28.2		27.4	

U - Not Detected
J - Estimated Value
NA - Not Analyzed

Table 6.4.4: Supplemental RFI Surface Water Sampling Results - Total and Dissolved Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SW-SD-61		SW-SD-60		SW-SD-TRIB	
SAMPLING DATE		03-Jun-10		03-Jun-10		03-Jun-10	
LAB SAMPLE ID		L1008325-10		L1008325-08		L1008325-08	
	Units		Qual		Qual		Qual
Total Metals by MCP 6000/7000 series							
Antimony, Total	ug/l	1	U	1	U	1	U
Arsenic, Total	ug/l	0.5		0.5		0.5	U
Barium, Total	ug/l	18.7		18.4		42.7	
Beryllium, Total	ug/l	0.5	U	0.5	U	0.5	U
Cadmium, Total	ug/l	0.6		0.5	U	0.5	U
Chromium, Total	ug/l	1	U	1	U	1	U
Copper, Total	ug/l	NA		NA		NA	
Lead, Total	ug/l	2		1		1	U
Mercury, Total	ug/l	0.2	U	0.2	U	0.2	U
Nickel, Total	ug/l	1.3		1.2		2	
Selenium, Total	ug/l	5	U	5	U	5	U
Silver, Total	ug/l	0.2	U	0.2	U	0.2	U
Thallium, Total	ug/l	0.2	U	0.2	U	0.2	U
Vanadium, Total	ug/l	5	U	5	U	5	U
Zinc, Total	ug/l	10	U	10	U	10	U
Dissolved Metals by MCP 6000/7000 series							
Antimony, Dissolved	ug/l	1	U	1	U	1	U
Arsenic, Dissolved	ug/l	0.5	U	0.5	U	0.5	U
Barium, Dissolved		16.9		17.4		42.2	
Beryllium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U
Cadmium, Dissolved	ug/l	0.5	U	0.5	U	0.5	U
Chromium, Dissolved	ug/l	1	U	1	U	1	U
Copper, Dissolved	ug/l	NA		NA		NA	
Lead, Dissolved	ug/l	1	U	1	U	1	U
Mercury, Dissolved	ug/l	0.2	U	0.2	U	0.2	U
Nickel, Dissolved	ug/l	0.9		0.9		1.6	
Selenium, Dissolved	ug/l	5	U	5	U	5	U
Silver, Dissolved	ug/l	0.2	U	0.2	U	0.2	U
Thallium, Dissolved	ug/l	0.2	U	0.2	U	0.2	U
Vanadium, Dissolved		5	U	5	U	5	U
Zinc, Dissolved	ug/l	10	U	10	U	10	U
Hardness by SM 2340B	mg/l	27.2		26.6		37	

U - Not Detected
J - Estimated Value
NA - Not Analyzed

Table 6.5.1: Supplemental RFI Sediment Sampling Program
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Sampling Location	Sample ID	Date Collected	Lab Report No.	Analyses[1] VOC	SEM	PCB	PPM	TOC	RAD	Cd	VPH
SD-01	SD-01	6/2/05	L0505995, L0505996	√	√	√	√	√			
SD-01	SD-DUP -1	6/2/05	L0505996	√			√	√			
SD-02	SD-02	6/1/05	L0505936, L0505936, L0505937	√	√	√	√	√			
SD-03	SD-03	6/2/05	L0505995, L0505996	√	√	√	√	√			
SD-03	SD-DUP-2	6/2/05	L0505996	√			√	√			
SD-04	SD-04	6/2/05	L0505995, L0505996	√	√	√	√	√			
SD-05	SD-05	6/2/05	L0505995, L0505996	√	√	√	√	√			
SD-09A	SD-09A	6/3/05	L0506094, L0506096		√	√	√	√			√
SD-10A	SD-10A	6/3/05	L0506094		√	√	√	√			√
SD-201	SD-201-0-0.5	6/1/05	L0505937	√			√	√			
SD-201	SD-201-1-2	6/1/05	L0505937	√			√	√			
SD-202	SD-202-0-0.5	6/1/05	L0505937	√			√	√			
SD-202	SD-202-1-2	6/1/05	L0505937	√			√	√			
SD-203	SD-203-0-0.5	6/1/05	L0505937	√			√	√			
SD-203	SD-203-1-2	6/1/05	L0505937	√			√	√			
SD-204	SD-204-0-0.5	6/1/05	L0505937	√			√	√			
SD-204	SD-204-1-2	6/1/05	L0505937	√			√	√			
SD-205	SD-205-1-2	6/1/05	L0505937	√				√			
SD-205	SD-205-0-0.5	6/1/05	L0505937	√				√			
SD-206	SD-206-0-0.5	6/1/05	L0505937	√			√	√			
SD-206	SD-206-1-2	6/1/05	L0505937	√			√	√			
SD-207	SD-207-0-0.5	6/1/05	L0505937	√			√	√			
SD-207	SD-207-1-2	6/1/05	L0505937	√			√	√			
SD-208	SD-208-0-0.5	6/1/05	L0505937	√			√	√			
SD-208	SD-208-1-2	6/1/05	L0505937	√			√	√			
SD-209	SD-209-0-0.5	6/1/05	L0505937	√			√	√			
SD-209	SD-209-1-2	6/1/05	L0505937	√			√	√			
SD-210	SD-210-0-0.5	6/1/05	L0505937	√			√	√			
SD-210	SD-210-1-2	6/1/05	L0505937	√			√	√			
SD-211	SD-211-0-0.5	6/1/05	L0505937	√			√	√			
SD-211	SD-211-1-2	6/1/05	L0505937	√			√	√			
SD-212	SD-212-0-0.5	5/31//05	L0505867	√			√	√			
SD-212	SD-212-1-2	5/31//05	L0505867	√			√	√			
SD-213	SD-213-0-0.5	5/31//05	L0505867	√			√	√			
SD-213	SD-213-1-2	5/31//05	L0505867	√			√	√			
SD-214	SD-214-0-0.5	5/31//05	L0505867	√			√	√			
SD-214	SD-214-1-2	5/31//05	L0505867	√			√	√			
SD-41	SD-41	6/3/05	L0506094, L0506096		√	√	√	√			√
SD-41	SD-DUP-3	6/3/05	L0506094, L0506096		√	√	√	√			√
SD-42	SD-42	6/3/05	L0506094, L0506096		√	√	√	√			√
SD-43	SD-43	6/3/05	L0506094, L0506096		√	√	√	√			√
SD-44	SD-44	6/3/05	L0506094, L0506096		√	√	√	√			√
SD-45	SD-45	6/2/05	L0505996, L0506632	√	√	√	√	√			
SD-46	SD-46	6/2/05	L0505995, L0505996, L0506632	√	√	√	√	√			
SD-47	SD-47	5/31//05	L0505867, L0505871	√	√	√	√	√			
SD-48	SD-48	6/2/05	L0505995, L0505996	√	√	√	√	√			
SD-49	SD-49	5/31/05	L0505936, L0505936	√	√	√	√	√			
SD-50	SD-50	5/31//05	L0505867, L0505871	√	√	√	√	√			
SD-51	SD-51	6/2/05	L0505995, L0505996	√	√	√	√	√			
SD-09A	SD-09A	6/2/10	L1008325	√	√		√	√			
SD-43	SD-43	6/2/10	L1008325	√	√		√	√			
SD-44	SD-44	6/2/10	L1008325	√	√		√	√			

Table 6.5.1: Supplemental RFI Sediment Sampling Program
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Sampling Location	Sample ID	Date Collected	Lab Report No.	Analyses[1] VOC	SEM	PCB	PPM	TOC	RAD	Cd	VPH
SD-47	SD-47	6/3/10	L1008325		√		√	√			
SD-48	SD-48	6/3/10	L1008325		√		√	√			
SD-60	SD-48 +200' US	6/3/10	L1008325		√		√	√			
SD-61	SD-48 +200' DS	6/3/10	L1008325		√		√	√			
SD-46	SD-46	6/3/10	L1008325	√	√		√	√			
SD-46	SD-46 DUP	6/3/10	L1008325		√		√	√			
SD-TRIB	Trib to Sawmill Brk Bkgd	6/3/10	L1008325	√	√		√	√			
SD-202	SD-202	6/4/10	L1008325	√	√		√	√			
SD-214	SD-214	6/4/10	L1008325		√		√	√			
SD-50	SD-50	6/4/10	L1013390		√		√	√			
SD-202	SD-301	10/27/10	ENVC00101						√		
SD-204	SD-302	10/27/10	ENVC00101						√		
SD-206	SD-303	10/27/10	ENVC00101						√		
SD-209	SD-304	10/27/10	ENVC00101						√		
SD-210	SD-305	10/27/10	ENVC00101						√		
SD-47	SD-306	10/27/10	ENVC00101						√		
SD-51	SD-307	10/27/10	ENVC00101						√		
SD-308	SD-308	10/27/10	ENVC00101						√		
SD-309	SD-309	10/27/10	ENVC00101						√		
SD-309	SD-309 DUP (SD-323)	10/27/10	ENVC00101						√		
SD-310	SD-310	10/27/10	ENVC00101						√		
SD-311	SD-311	10/28/10	L1017193							√	
SD-312	SD-312	10/28/10	L1017193							√	
SD-313	SD-313	10/28/10	L1017193							√	
SD-314	SD-314	10/28/10	L1017193							√	
SD-319	SD-319	10/28/10	L1017193			√				√	
SD-319	SD-319 DUP (SD-324)	10/28/10	L1017193			√				√	
SD-320	SD-320	10/28/10	L1017193			√					
SD-321	SD-321	10/28/10	L1017193			√					
SD-322	SD-322	10/28/10	L1017193			√					
			Quality Control Samples								
	trip blank (high)	6/1/05	L0505937	√							
	trip blank (low)	6/1/05	L0505937	√							
	trip blank (high)	6/2/05	L0505996	√							
	trip blank (low)	6/2/05	L0505996	√							
	SD-EB1	6/3/05	L0506096				√				
	SD-EB2	6/3/05	L0506096				√				
	SD-EB3	6/3/05	L0506096			√	√				√
	Trip Blank	6/2/10	L1008325	√							
	Trip Blank	6/3/10	L1008325	√							
	Trip Blank	6/4/10	L1008325	√							

Notes:

(1) Analyses: VOC = Volatile Organic Compound
SEM = Simultaneously Extracted Metals/Acid Volatile Sulfides
RAD = Radionuclides (Uranium 234, 235, 238)
PCB = Polychlorinated Biphenyls
VPH = Volatile Petroleum Hydrocarbons/Extractable Petroleum Hydrocarbons (VPH/EPH)
PPM = Priority Pollutant Metals
TOC = Total Organic Carbon

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Client ID		SD-01		SD-01 DUP		SD-02		SD-03		SD-03 DUP	
LOCATION		SD-01		SD-01		SD-02		SD-03		SD-03	
SAMPLING DATE		02-JUN-05		02-JUN-05		01-JUN-05		02-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0505996-04		L0505996-05		L0505937-20		L0505996-11		L0505996-13	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	20.1	J	41.4	J	18.3		21.6		26.3	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	20	U	20	U	8.9	U	12	U	14	U
Arsenic, Total	mg/kg	10		10		5.9		3	J	5.1	J
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	2.3		2.4		1.7		3.9	J	6.8	J
Cadmium, Total	mg/kg	100		120		47		2.4		2.8	U
Chromium, Total	mg/kg	22		22		34		17	J	25	J
Copper, Total	mg/kg	51		50		45		24		33	
Lead, Total	mg/kg	160		160		160		41		50	
Mercury, Total	mg/kg	0.82	U	0.79	U	0.37	U	0.46	U	0.56	U
Nickel, Total	mg/kg	32		33		25		12	J	19	J
Selenium, Total	mg/kg	20	U	20	U	8.9	U	12	U	14	U
Silver, Total	mg/kg	7		7.3		8.2		2.3	U	2.8	U
Thallium, Total	mg/kg	20	U	20	U	8.9	U	12	U	14	U
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	210		210		160		24		29	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-04		SD-05		SD-09A		SD-10A		SD-41	
LOCATION		SD-04		SD-05		SD-09A		SD-10A		SD-41	
SAMPLING DATE		02-JUN-05		02-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05	
LAB SAMPLE ID		L0505996-02		L0505996-20		L0506096-03		L0506096-04		L0506096-05	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	0.495		1.39		25.9		18.7		19.7	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	2.4	U	3	U	35	U	21	U	26	U
Arsenic, Total	mg/kg	1.3		0.61	U	7	U	4.4		6.3	
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	0.24	U	0.3	U	3.5	U	2.1	U	2.6	U
Cadmium, Total	mg/kg	1.1		9.7		13		4.2	U	110	J
Chromium, Total	mg/kg	3		7.5		15		13		61	J
Copper, Total	mg/kg	3.2		8.7		51		54		130	J
Lead, Total	mg/kg	11		23		320		210		210	
Mercury, Total	mg/kg	0.099	U	0.11	U	1.4	U	0.84	U	0.96	U
Nickel, Total	mg/kg	2.3		3.2		19		13		20	
Selenium, Total	mg/kg	2.4	U	3	U	35	U	21	U	26	U
Silver, Total	mg/kg	0.49	U	18		7	U	4.2	U	44	J
Thallium, Total	mg/kg	2.4	U	3	U	35	U	21	U	26	U
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	18		25		380		100		240	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-41DUP		SD-42		SD-43		SD-44		SD-45	
LOCATION		SD-41DUP		SD-42		SD-43		SD-44		SD-45	
SAMPLING DATE		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0506096-06		L0506096-07		L0506096-08		L0506096-19		L0506632-02	
	Units		Qual		Qual		Qual		Qual	L0505996-08	Qual
Total Organic Carbon	%	18		16.8		19.6		8.1		1.89	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	25	U	28	UJ	29	U	12	U	4.9	U
Arsenic, Total	mg/kg	7.4		8.6		6.3		2.5	U	1.8	
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	2.5	U	2.8	U	2.9	U	1.2	U	0.49	U
Cadmium, Total	mg/kg	70	J	85	J	400		57		2.3	
Chromium, Total	mg/kg	30	J	34		50		26		12	
Copper, Total	mg/kg	58	J	64		300		44		18	
Lead, Total	mg/kg	190		180		240		64		13	
Mercury, Total	mg/kg	0.98	U	1.2	U	1	U	0.46	U	0.2	U
Nickel, Total	mg/kg	23		23		37		8.9		7.2	
Selenium, Total	mg/kg	25	U	28	U	29	U	12	U	4.9	U
Silver, Total	mg/kg	17	J	19		170		28		0.99	U
Thallium, Total	mg/kg	25	U	28	U	29	U	12	U	4.9	U
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	240		270		400		75		28	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-46		SD-47		SD-48		SD-49		SD-50	
LOCATION		SD-46		SD-47		SD-48		SD-49		SD-50	
SAMPLING DATE		02-JUN-05		31-MAY-05		02-JUN-05		31-MAY-05		31-MAY-05	
LAB SAMPLE ID		L0505996-06		L0505867-09		L0505996-15		L0505937-04		L0505867-08	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	3.98		39.8		30.4		11.3		24.6	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	4.6	U	21	U	10	U	12	U	16	U
Arsenic, Total	mg/kg	2.2		11		3.2		7.2		8.2	
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	0.52		3.3		2.3		1.2	U	3.2	
Cadmium, Total	mg/kg	2.6		23		2.1	U	51		100	
Chromium, Total	mg/kg	4.2		23		25		22		26	
Copper, Total	mg/kg	6		42		9.7		29		49	
Lead, Total	mg/kg	18		190		13		120		170	
Mercury, Total	mg/kg	0.18	U	0.87	U	0.4	U	0.46	U	0.67	U
Nickel, Total	mg/kg	4.7		21		9.7		21		30	
Selenium, Total	mg/kg	4.6	U	21	U	10	U	12	U	16	U
Silver, Total	mg/kg	1.1		4.2	U	2.1	U	6.7		9.5	
Thallium, Total	mg/kg	4.6	U	21	U	10	U	12	U	16	U
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	36		130		10	U	100		160	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-51		SD-201-0-0.5		SD-201-1-2		SD-202-0-0.5		SD-202-1-2	
LOCATION		SD-51		SD-201		SD-201		SD-202		SD-202	
SAMPLING DATE		02-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505996-17		L0505937-28		L0505937-29		L0505937-31		L0505937-32	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	0.884		28.7		8.29		39.8		9.34	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	3	U	20	U	10	U	20	U	7.9	U
Arsenic, Total	mg/kg	4		4	U	5		6.8		2	
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	0.3	U	2	U	2.1		2.9		1	
Cadmium, Total	mg/kg	5.1		32		2.2		46		2	
Chromium, Total	mg/kg	16		17		21		28		11	
Copper, Total	mg/kg	8.2		21		20		46		11	
Lead, Total	mg/kg	32		51		87		140		31	
Mercury, Total	mg/kg	0.11	U	0.72	U	0.36	U	0.79	U	0.32	U
Nickel, Total	mg/kg	3.8		20		13		31		9.8	
Selenium, Total	mg/kg	3	U	20	U	10	U	20	U	7.9	U
Silver, Total	mg/kg	0.66		4	U	5		8.3		1.6	U
Thallium, Total	mg/kg	3	U	20	U	10	U	20	U	7.9	U
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	27		71		26		130		24	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-203-0-0.5		SD-203-1-2		SD-204-0-0.5		SD-204-1-2		SD-206-0-0.5	
LOCATION		SD-203		SD-203		SD-204		SD-204		SD-206	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-25		L0505937-26		L0505937-22		L0505937-23		L0505937-09	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	9.9		8.26		25.5		17.6		18.2	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	7.7	U	6.4	U	14	U	12	U	13	U
Arsenic, Total	mg/kg	3		2.4		6.3		11		4.3	
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	0.77	U	1.1		1.6		1.3		2.4	
Cadmium, Total	mg/kg	36		36		61		15		45	
Chromium, Total	mg/kg	15		14		25		27		34	
Copper, Total	mg/kg	22		19		37		38		40	
Lead, Total	mg/kg	85		64		130		170		110	
Mercury, Total	mg/kg	0.31	U	0.24	U	0.58	U	0.48	U	0.57	U
Nickel, Total	mg/kg	19		30		23		20		27	
Selenium, Total	mg/kg	7.7	U	6.4	U	14	U	12	U	13	U
Silver, Total	mg/kg	3.8		4.2		8		2.3	U	9.5	
Thallium, Total	mg/kg	7.7	U	6.4	U	14	U	12	U	13	U
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	64		48		150		140		150	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-206-1-2		SD-207-0-0.5		SD-207-1-2		SD-208-0-0.5		SD-208-1-2	
LOCATION		SD-206		SD-207		SD-207		SD-208		SD-208	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-11		L0505937-08		L0505937-12		L0505937-07		L0505937-13	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	16		8.66		17		9.45		25.3	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	11	U	16	U	13	U	18	U	13	U
Arsenic, Total	mg/kg	9.5		6.5		4.4		5.2		7.2	
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	2.1		1.6	U	1.6		1.8	U	1.3	U
Cadmium, Total	mg/kg	12		35		5.3		22		7.4	
Chromium, Total	mg/kg	24		21		17		18		63	
Copper, Total	mg/kg	19		24		12		20		31	
Lead, Total	mg/kg	57		76		24		70		29	
Mercury, Total	mg/kg	0.53	U	0.65	U	0.59	U	0.65	U	0.59	U
Nickel, Total	mg/kg	26		27		13		25		32	
Selenium, Total	mg/kg	11	U	16	U	13	U	18	U	13	U
Silver, Total	mg/kg	2.3	U	5.1		2.6	U	3.6	U	2.7	U
Thallium, Total	mg/kg	11	U	16	U	13	U	18	U	13	U
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	82		91		42		71		44	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-209-0-0.5		SD-209-1-2		SD-210-0-0.5		SD-210-1-2		SD-211-0-0.5	
LOCATION		SD-209		SD-209		SD-210		SD-210		SD-211	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		31-MAY-05	
LAB SAMPLE ID		L0505937-06		L0505937-14		L0505937-05		L0505937-15		L0505937-01	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	27.4		22.7		12.9		20.8		14	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	9.4	U	11	U	7.4	U	9.1	U	16	U
Arsenic, Total	mg/kg	7.2		7.2		7.2		8.2		6.2	
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	0.94	U	2.3	U	1.1		1.8	U	2.6	
Cadmium, Total	mg/kg	46		99		58		18		29	
Chromium, Total	mg/kg	25		31		34		33		20	
Copper, Total	mg/kg	33		55		60		64		26	
Lead, Total	mg/kg	130		210		270		220		75	
Mercury, Total	mg/kg	0.38	U	0.51	U	0.3	U	0.39	U	0.63	U
Nickel, Total	mg/kg	23		23		19		25		23	
Selenium, Total	mg/kg	9.4	U	11	U	7.4	U	9.1	U	16	U
Silver, Total	mg/kg	9.1		17		16		5.7		3.6	
Thallium, Total	mg/kg	9.4	U	11	U	7.4	U	9.1	U	16	U
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	77		140		130		160		88	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-211-1-2		SD-212-0-0.5		SD-212-1-2		SD-213-0-0.5		SD-213-1-2	
LOCATION		SD-211		SD-212		SD-212		SD-213		SD-213	
SAMPLING DATE		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05	
LAB SAMPLE ID		L0505937-02		L0505867-01		L0505867-02		L0505867-03		L0505867-04	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	12.4		24.8		11.8		25.6		36.5	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	15	U	13	U	7.9	U	12	U	12	U
Arsenic, Total	mg/kg	9.2		8.8		4.8		5.3		4.6	
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	1.6		2.5		1.2		2.4		1.9	
Cadmium, Total	mg/kg	87		7.5		3.3		29		2.3	U
Chromium, Total	mg/kg	21		19		12		23		20	
Copper, Total	mg/kg	27		33		9.2		23		16	
Lead, Total	mg/kg	120		130		25		61		12	U
Mercury, Total	mg/kg	0.57	U	0.52	U	0.32	U	0.49	U	0.46	U
Nickel, Total	mg/kg	26		21		9.5		16		9.3	
Selenium, Total	mg/kg	15	U	13	U	7.9	U	12	U	12	U
Silver, Total	mg/kg	6.3		2.6	U	1.6	U	2.8		2.3	U
Thallium, Total	mg/kg	15	U	13	U	7.9	U	12	U	12	U
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	120		120		37		64		14	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-214-0-0.5		SD-214-1-2		SD-EB1		SD-EB2		SD-EB3	
LOCATION		SD-214		SD-214							
SAMPLING DATE		31-MAY-05		31-MAY-05		03-JUN-05		03-JUN-05		03-JUN-05	
LAB SAMPLE ID		L0505867-05		L0505867-06		L0506096-09		L0506096-10		L0506096-12	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	20.3		48.5							
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	13	U	20	U	0.5	U	0.5	U	0.5	U
Arsenic, Total	mg/kg	8.1		17		0.5	U	0.5	U	0.5	U
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	2		2.9		0.5	U	0.5	U	0.5	U
Cadmium, Total	mg/kg	6.4		4	U	0.5	U	0.5	U	0.5	U
Chromium, Total	mg/kg	18		49		1		1	U	1	U
Copper, Total	mg/kg	25		28		0.5		0.5	U	0.6	
Lead, Total	mg/kg	88		20	U	0.5	U	0.5	U	0.5	U
Mercury, Total	mg/kg	0.48	U	0.78	U	0.2	U	0.2	U	0.2	U
Nickel, Total	mg/kg	16		18		1	U	1	U	1	U
Selenium, Total	mg/kg	13	U	20	U	1	U	1	U	1	U
Silver, Total	mg/kg	2.6	U	4	U	0.5	U	0.5	U	0.5	U
Thallium, Total	mg/kg	13	U	20	U	0.5	U	0.5	U	0.5	U
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	81		46		6.1		5	U	5	U

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-43		SD-44		SD-09A		SD-48		SD-47	
LOCATION		SD-43		SD-44		SD-09A		SD-48		SD-47	
SAMPLING DATE		02-JUN-10		02-JUN-10		02-JUN-10		03-JUN-10		03-JUN-10	
LAB SAMPLE ID		L1008325-01		L1008325-02		L1008325-03		L1008325-05		L1008325-07	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	13.1		10.3 / 10.0		11.4 / 10.2		17.4 / 18		18.7 / 19.7	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	1.68		1.02		1.1		0.782		0.798	
Arsenic, Total	mg/kg	6.46		6.1		6.29		6.37		7.16	
Barium, Total	mg/kg	66.4		75.7		85.4		132		157	
Beryllium, Total	mg/kg	1.24		1.29		1.734		2.611		2.753	
Cadmium, Total	mg/kg	780.6		169.6		26.27		44.32		58.07	
Chromium, Total	mg/kg	112		42.1		22.3		21.5		20.7	
Copper, Total	mg/kg	NA		NA		NA		NA		NA	
Lead, Total	mg/kg	238		157		230		96.5		89.8	
Mercury, Total	mg/kg	0.434		0.832		0.162		0.19		0.199	
Nickel, Total	mg/kg	45.6		25		28		29.4		31.6	
Selenium, Total	mg/kg	4.04		3.15		3.8		4.03		4.36	
Silver, Total	mg/kg	326		43.8		5.66		4.62		4.24	
Thallium, Total	mg/kg	0.445	U	0.331	U	0.4477	U	0.2448	U	0.2599	U
Vanadium, Total	mg/kg	98.1		38.5		44.6		38.1		39	
Zinc, Total	mg/kg	550		318		378		143		132	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-48 +200' DS		SD-48 +200' US			SD-46 Dup	Trib to Sawmill Brk Bkgd	
LOCATION		SD-61		SD-60		SD-46	SD-46	SD-TRIB	
SAMPLING DATE		03-JUN-10		03-JUN-10		03-JUN-10	03-JUN-10	03-JUN-10	
LAB SAMPLE ID		L1008325-09		L1008325-11		L1008325-13	L1008325-28	L1008325-15	
	Units		Qual		Qual		Qual		Qual
Total Organic Carbon	%	15.2 / 15.4		17.9 / 17.1		9.12 / 9.25	7.43 / 6.71	15.2 / 15.6	
Total Metals by MCP 6000/7000 series									
Antimony, Total	mg/kg	0.663		0.704		0.214	0.255	0.543	
Arsenic, Total	mg/kg	5.39		6.89		3.7	4.58	2.82	
Barium, Total	mg/kg	127		161		119	105	188	
Beryllium, Total	mg/kg	2.228		2.774		1.459	1.52	4.524	
Cadmium, Total	mg/kg	28.95		47.6		15.52	15.64	26.67	
Chromium, Total	mg/kg	17.2		19.9		18.2	13.5	23.4	
Copper, Total	mg/kg	NA		NA		NA	NA	NA	
Lead, Total	mg/kg	80.4		81.4		47.8	43.8	68.8	
Mercury, Total	mg/kg	0.154		0.192		0.099	0.105	0.181	
Nickel, Total	mg/kg	24.6		31.8		31	21.3	52.5	
Selenium, Total	mg/kg	3.36		4.06		1.56	1.65	3.89	
Silver, Total	mg/kg	2.09		3.05		5.46	4.5	5.67	
Thallium, Total	mg/kg	0.1884	U	0.2728	U	0.2086	0.2005	0.285	U
Vanadium, Total	mg/kg	28.2		37.3		39.5	40.9	26.8	
Zinc, Total	mg/kg	121		131		101	80.4	72.6	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		SD-202		SD-214		SD-50		S-311	
LOCATION		SD-202		SD-214		SD-50		SD-311	
SAMPLING DATE		04-JUN-10		04-JUN-10		04-JUN-10		28-OCT-10	
LAB SAMPLE ID		L1008325-23		L1008325-24		L1013390-01		L1017193-01	
	Units		Qual		Qual		Qual		Qual
Total Organic Carbon	%	8.38 / 7.91		14.2 / 13.2		12.8 / 13.3		NA	
Total Metals by MCP 6000/7000 series									
Antimony, Total	mg/kg	0.342		0.401		0.547		NA	
Arsenic, Total	mg/kg	5.46		14.6		7.59		NA	
Barium, Total	mg/kg	63.6		82.7		48.2		NA	
Beryllium, Total	mg/kg	1.518		2.016		0.8626		NA	
Cadmium, Total	mg/kg	18.35		3.483		0.8438		1.21	
Chromium, Total	mg/kg	22.4		20.7		48.9		NA	
Copper, Total	mg/kg	NA		NA		NA		NA	
Lead, Total	mg/kg	56.8		67.3		30.1		NA	
Mercury, Total	mg/kg	0.086		0.179		0.15		NA	
Nickel, Total	mg/kg	17.1		19.6		24.5		NA	
Selenium, Total	mg/kg	1.33		4.05		1.15		NA	
Silver, Total	mg/kg	6.05		0.484		4.51		NA	
Thallium, Total	mg/kg	0.1174	U	0.1919	U	0.3138	U	NA	
Vanadium, Total	mg/kg	42.9		40.3		36		NA	
Zinc, Total	mg/kg	87.3		143		129		NA	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.2: Supplemental RFI Sediment Sampling Results - TOC and Total Metals
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Client ID		S-312		S-313		S-314		S-319		S-324	
LOCATION		SD-312		SD-313		SD-314		SD-319		SD-319 DUP	
SAMPLING DATE		28-OCT-10		28-OCT-10		28-OCT-10		28-OCT-10		28-OCT-10	
LAB SAMPLE ID		L1017193-02		L1017193-03		L1017193-04		L1017193-09		L1017193-13	
	Units		Qual		Qual		Qual		Qual		Qual
Total Organic Carbon	%	NA		NA		NA		NA		NA	
Total Metals by MCP 6000/7000 series											
Antimony, Total	mg/kg	NA		NA		NA		NA		NA	
Arsenic, Total	mg/kg	NA		NA		NA		NA		NA	
Barium, Total	mg/kg	NA		NA		NA		NA		NA	
Beryllium, Total	mg/kg	NA		NA		NA		NA		NA	
Cadmium, Total	mg/kg	1.3		1.2		0.882		1.5		1.59	
Chromium, Total	mg/kg	NA		NA		NA		NA		NA	
Copper, Total	mg/kg	NA		NA		NA		NA		NA	
Lead, Total	mg/kg	NA		NA		NA		NA		NA	
Mercury, Total	mg/kg	NA		NA		NA		NA		NA	
Nickel, Total	mg/kg	NA		NA		NA		NA		NA	
Selenium, Total	mg/kg	NA		NA		NA		NA		NA	
Silver, Total	mg/kg	NA		NA		NA		NA		NA	
Thallium, Total	mg/kg	NA		NA		NA		NA		NA	
Vanadium, Total	mg/kg	NA		NA		NA		NA		NA	
Zinc, Total	mg/kg	NA		NA		NA		NA		NA	

U - Not Detected
J - Estimated
NA - Not Analyzed

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-01		SD-01-Re		SD-DUP-1		SD-DUP-1-Re		SD-02		SD-02-Re	
SAMPLING DATE		02-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505996-04		L0505996-04		L0505996-05		L0505996-05		L0505937-20		L0505937-20	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.0091	UJ	0.01	UJ	0.0094	UJ	0.0093	UJ	0.004	UJ	0.004	UJ
1,1,1-Trichloroethane	mg/kg	0.0091	U	0.01	U	0.0094	U	0.0093	U	0.004	U	0.004	U
1,1,2,2-Tetrachloroethane	mg/kg	0.0091	UJ	0.01	UJ	0.0094	UJ	0.0093	UJ	0.004	U	0.004	U
1,1,2-Trichloroethane	mg/kg	0.014	U	0.016	U	0.014	U	0.014	U	0.006	U	0.006	U
1,1-Dichloroethane	mg/kg	0.037	J	0.022	J	0.014	U	0.014	U	0.006	U	0.006	U
1,1-Dichloroethene	mg/kg	0.0091	U	0.01	U	0.0094	U	0.0093	U	0.004	U	0.004	U
1,1-Dichloropropene	mg/kg	0.046	U	0.052	U	0.047	U	0.046	U	0.02	U	0.02	U
1,2,3-Trichlorobenzene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
1,2,3-Trichloropropane	mg/kg	0.091	UJ	0.1	UJ	0.094	UJ	0.093	UJ	0.04	UJ	0.04	UJ
1,2,4-Trichlorobenzene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
1,2,4-Trimethylbenzene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
1,2-Dibromo-3-chloropropane	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
1,2-Dibromoethane	mg/kg	0.036	U	0.042	U	0.038	U	0.037	U	0.016	U	0.016	U
1,2-Dichlorobenzene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
1,2-Dichloroethane	mg/kg	0.0091	U	0.01	U	0.0094	U	0.0093	U	0.004	U	0.004	U
1,2-Dichloropropane	mg/kg	0.032	U	0.036	U	0.033	U	0.032	U	0.014	U	0.014	U
1,3,5-Trimethylbenzene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
1,3-Dichlorobenzene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
1,3-Dichloropropane	mg/kg	0.046	U	0.052	U	0.047	U	0.046	U	0.02	U	0.02	U
1,4-Dichlorobenzene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	U	0.02	U
1,4-Dioxane	mg/kg	4.6	U	5.2	U	4.7	U	4.6	U	2	U	2	U
2,2-Dichloropropane	mg/kg	0.046	U	0.052	U	0.047	U	0.046	U	0.02	U	0.02	U
2-Butanone	mg/kg	0.13	J	0.1	U	0.11		0.093	U	0.09	J	0.068	J
2-Hexanone	mg/kg	0.091	U	0.1	U	0.094	U	0.093	U	0.04	U	0.04	U
4-Methyl-2-pentanone	mg/kg	0.091	U	0.1	U	0.094	U	0.093	U	0.04	U	0.04	U
Acetone	mg/kg	0.44	J	0.36	J	0.43	J	0.33	J	0.48	J	0.29	J
Benzene	mg/kg	0.0091	U	0.01	U	0.0094	U	0.0093	U	0.004	U	0.004	U
Bromobenzene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
Bromochloromethane	mg/kg	0.046	U	0.052	U	0.047	U	0.046	U	0.02	U	0.02	U
Bromodichloromethane	mg/kg	0.0091	U	0.01	U	0.0094	U	0.0093	U	0.004	U	0.004	U
Bromoform	mg/kg	0.036	UJ	0.042	UJ	0.038	UJ	0.037	UJ	0.016	UJ	0.016	UJ
Bromomethane	mg/kg	0.018	UJ	0.021	UJ	0.019	UJ	0.018	UJ	0.008	UJ	0.008	UJ
Carbon disulfide	mg/kg	0.091	U	0.1	U	0.094	U	0.093	U	0.057	J	0.04	U
Carbon tetrachloride	mg/kg	0.0091	U	0.01	U	0.0094	U	0.0093	U	0.004	U	0.004	U
Chlorobenzene	mg/kg	0.0091	UJ	0.01	UJ	0.0094	UJ	0.0093	UJ	0.004	UJ	0.004	UJ
Chloroethane	mg/kg	0.14	J	0.12	J	0.12	J	0.18	J	0.008	U	0.008	U
Chloroform	mg/kg	0.014	U	0.016	U	0.014	U	0.014	U	0.006	U	0.006	U
Chloromethane	mg/kg	0.046	U	0.052	U	0.047	U	0.046	U	0.02	U	0.02	U
Dibromochloromethane	mg/kg	0.0091	U	0.01	U	0.0094	U	0.0093	U	0.004	U	0.004	U
Dibromomethane	mg/kg	0.091	U	0.1	U	0.094	U	0.093	U	0.04	U	0.04	U
Dichlorodifluoromethane	mg/kg	0.091	U	0.1	U	0.094	U	0.093	U	0.04	U	0.04	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-01		SD-01-Re		SD-DUP-1		SD-DUP-1-Re		SD-02		SD-02-Re	
SAMPLING DATE		02-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505996-04		L0505996-04		L0505996-05		L0505996-05		L0505937-20		L0505937-20	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.046	U	0.052	U	0.047	U	0.046	U	0.02	U	0.02	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.036	U	0.042	U	0.038	U	0.037	U	0.016	U	0.016	U
Ethylbenzene	mg/kg	0.0091	UJ	0.01	UJ	0.0094	UJ	0.0093	UJ	0.004	UJ	0.004	UJ
Hexachlorobutadiene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
Isopropyl Ether	mg/kg	0.036	U	0.042	U	0.038	U	0.037	U	0.016	U	0.016	U
Isopropylbenzene	mg/kg	0.0091	UJ	0.01	UJ	0.0094	UJ	0.0093	UJ	0.004	UJ	0.004	UJ
Methyl tert butyl ether	mg/kg	0.018	U	0.021	U	0.019	U	0.018	U	0.008	U	0.008	U
Methylene chloride	mg/kg	0.091	U	0.1	U	0.094	U	0.093	U	0.04	U	0.04	U
Naphthalene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
Styrene	mg/kg	0.018	UJ	0.021	UJ	0.019	UJ	0.018	UJ	0.008	UJ	0.008	UJ
Tertiary-Amyl Methyl Ether	mg/kg	0.036	U	0.042	U	0.038	U	0.037	U	0.016	U	0.016	U
Tetrachloroethene	mg/kg	0.014	J	0.016	J	0.012	J	0.0096	J	0.016	J	0.018	J
Tetrahydrofuran	mg/kg	0.18	U	0.21	U	0.19	U	0.18	U	0.08	U	0.08	U
Toluene	mg/kg	0.015	J	0.024	J	0.014	J	0.014	U	0.0092	J	0.0074	J
Trichloroethene	mg/kg	0.011	J	0.01	U	0.013	J	0.0093	U	0.015	J	0.011	J
Trichlorofluoromethane	mg/kg	0.046	U	0.052	U	0.047	U	0.046	U	0.02	U	0.02	U
Vinyl chloride	mg/kg	0.018	U	0.021	U	0.019	U	0.018	U	0.008	U	0.008	U
cis-1,2-Dichloroethene	mg/kg	0.034	J	0.029	J	0.022	J	0.018	J	0.024	J	0.021	J
cis-1,3-Dichloropropene	mg/kg	0.0091	U	0.01	U	0.0094	U	0.0093	U	0.004	U	0.004	U
n-Butylbenzene	mg/kg	0.0091	UJ	0.01	UJ	0.0094	UJ	0.0093	UJ	0.004	UJ	0.004	UJ
n-Propylbenzene	mg/kg	0.0091	UJ	0.01	UJ	0.0094	UJ	0.0093	UJ	0.004	UJ	0.004	UJ
o-Chlorotoluene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
o-Xylene	mg/kg	0.018	UJ	0.021	UJ	0.019	UJ	0.018	UJ	0.008	UJ	0.008	UJ
p-Chlorotoluene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
p-Isopropyltoluene	mg/kg	0.0091	UJ	0.041	J	0.0094	UJ	0.0093	UJ	0.004	UJ	0.004	UJ
p/m-Xylene	mg/kg	0.018	UJ	0.021	UJ	0.019	UJ	0.018	UJ	0.008	U	0.008	U
sec-Butylbenzene	mg/kg	0.0091	UJ	0.01	UJ	0.0094	UJ	0.0093	UJ	0.004	UJ	0.004	UJ
tert-Butylbenzene	mg/kg	0.046	UJ	0.052	UJ	0.047	UJ	0.046	UJ	0.02	UJ	0.02	UJ
trans-1,2-Dichloroethene	mg/kg	0.014	U	0.016	U	0.014	U	0.014	U	0.006	U	0.006	U
trans-1,3-Dichloropropene	mg/kg	0.0091	U	0.01	U	0.0094	U	0.0093	U	0.004	U	0.004	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-03		SD-03-Re		SD-03DUP		SD-03DUP-Re		SD-04		SD-05	
SAMPLING DATE		02-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0505996-11		L0505996-11		L0505996-13		L0505996-13		L0505996-02		L0505996-20	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.004	UR	0.005	UJ	0.0069	UR	0.0065	UR	0.00067	U	0.0011	U
1,1,1-Trichloroethane	mg/kg	0.004	U	0.005	U	0.0069	U	0.0065	U	0.00067	U	0.0011	U
1,1,2,2-Tetrachloroethane	mg/kg	0.004	UR	0.005	UJ	0.0069	UR	0.0065	UR	0.00067	U	0.0011	U
1,1,2-Trichloroethane	mg/kg	0.006	UJ	0.0075	UJ	0.01	U	0.0097	U	0.001	U	0.0017	U
1,1-Dichloroethane	mg/kg	0.006	U	0.0075	U	0.01	U	0.0097	U	0.001	U	0.0017	U
1,1-Dichloroethene	mg/kg	0.004	U	0.005	U	0.0069	U	0.0065	U	0.00067	U	0.0011	U
1,1-Dichloropropene	mg/kg	0.02	U	0.025	U	0.034	U	0.032	U	0.0034	U	0.0056	U
1,2,3-Trichlorobenzene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
1,2,3-Trichloropropane	mg/kg	0.04	UR	0.05	UJ	0.069	UR	0.065	UR	0.0067	U	0.011	U
1,2,4-Trichlorobenzene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
1,2,4-Trimethylbenzene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
1,2-Dibromo-3-chloropropane	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
1,2-Dibromoethane	mg/kg	0.016	UJ	0.02	UJ	0.027	U	0.026	U	0.0027	U	0.0045	U
1,2-Dichlorobenzene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
1,2-Dichloroethane	mg/kg	0.004	U	0.005	U	0.0069	U	0.0065	U	0.00067	U	0.0011	U
1,2-Dichloropropane	mg/kg	0.014	UJ	0.017	UJ	0.024	U	0.023	U	0.0023	U	0.004	U
1,3,5-Trimethylbenzene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
1,3-Dichlorobenzene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
1,3-Dichloropropane	mg/kg	0.02	UJ	0.025	UJ	0.034	U	0.032	U	0.0034	U	0.0056	U
1,4-Dichlorobenzene	mg/kg	0.02	UR	0.025	UJ	0.034	U	0.032	U	0.0034	U	0.0056	U
1,4-Dioxane	mg/kg	2	U	2.5	U	3.4	U	3.2	U	0.34	U	0.56	U
2,2-Dichloropropane	mg/kg	0.02	U	0.025	U	0.034	U	0.032	U	0.0034	U	0.0056	U
2-Butanone	mg/kg	0.04	U	0.05	U	0.069	U	0.065	U	0.0067	U	0.011	U
2-Hexanone	mg/kg	0.04	UJ	0.05	UJ	0.069	U	0.065	U	0.0067	U	0.011	U
4-Methyl-2-pentanone	mg/kg	0.04	UJ	0.05	UJ	0.069	U	0.065	U	0.0067	U	0.011	U
Acetone	mg/kg	0.21	J	0.54	J	0.31	J	0.16	J	0.012		0.039	
Benzene	mg/kg	0.004	U	0.005	U	0.0069	U	0.0065	U	0.00067	U	0.0011	U
Bromobenzene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
Bromochloromethane	mg/kg	0.02	U	0.025	U	0.034	U	0.032	U	0.0034	U	0.0056	U
Bromodichloromethane	mg/kg	0.004	UJ	0.005	UJ	0.0069	U	0.0065	U	0.00067	U	0.0011	U
Bromoform	mg/kg	0.016	UR	0.02	UJ	0.027	UR	0.026	UR	0.0027	U	0.0045	U
Bromomethane	mg/kg	0.008	UJ	0.01	UJ	0.014	UJ	0.013	UJ	0.0013	UJ	0.0023	UJ
Carbon disulfide	mg/kg	0.04	U	0.05	U	0.069	U	0.065	U	0.0067	U	0.011	U
Carbon tetrachloride	mg/kg	0.004	U	0.005	U	0.0069	U	0.0065	U	0.00067	U	0.0011	U
Chlorobenzene	mg/kg	0.004	UR	0.005	UJ	0.0069	UR	0.0065	UR	0.00067	U	0.0011	U
Chloroethane	mg/kg	0.008	U	0.01	U	0.014	U	0.013	U	0.0013	U	0.0023	U
Chloroform	mg/kg	0.006	U	0.0075	U	0.01	U	0.0097	U	0.001	U	0.0017	U
Chloromethane	mg/kg	0.02	U	0.025	U	0.034	U	0.032	U	0.0034	U	0.0056	U
Dibromochloromethane	mg/kg	0.004	UJ	0.005	UJ	0.0069	U	0.0065	U	0.00067	U	0.0011	U
Dibromomethane	mg/kg	0.04	U	0.05	UJ	0.069	U	0.065	U	0.0067	U	0.011	U
Dichlorodifluoromethane	mg/kg	0.04	U	0.05	U	0.069	U	0.065	U	0.0067	U	0.011	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-03		SD-03-Re		SD-03DUP		SD-03DUP-Re		SD-04		SD-05	
SAMPLING DATE		02-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0505996-11		L0505996-11		L0505996-13		L0505996-13		L0505996-02		L0505996-20	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.02	U	0.025	U	0.034	U	0.032	U	0.0034	U	0.0056	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.016	U	0.02	U	0.027	U	0.026	U	0.0027	U	0.0045	U
Ethylbenzene	mg/kg	0.004	UR	0.005	U	0.0069	UR	0.0065	UR	0.00067	U	0.0011	U
Hexachlorobutadiene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
Isopropyl Ether	mg/kg	0.016	U	0.02	U	0.027	U	0.026	U	0.0027	U	0.0045	U
Isopropylbenzene	mg/kg	0.004	UR	0.005	UJ	0.0069	UR	0.0065	UR	0.00067	U	0.0011	U
Methyl tert butyl ether	mg/kg	0.008	U	0.01	U	0.014	U	0.013	U	0.0013	U	0.0023	U
Methylene chloride	mg/kg	0.04	U	0.05	U	0.069	U	0.065	U	0.0067	U	0.011	U
Naphthalene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
Styrene	mg/kg	0.008	UR	0.01	UJ	0.014	UR	0.013	UR	0.0013	U	0.0023	U
Tertiary-Amyl Methyl Ether	mg/kg	0.016	U	0.02	U	0.027	U	0.026	U	0.0027	U	0.0045	U
Tetrachloroethene	mg/kg	0.004	UJ	0.005	UJ	0.0069	U	0.0065	U	0.00067	U	0.0011	U
Tetrahydrofuran	mg/kg	0.08	U	0.1	U	0.14	U	0.13	U	0.013	U	0.023	U
Toluene	mg/kg	0.01	J	0.029	J	0.016	J	0.0097	U	0.001	U	0.0017	U
Trichloroethene	mg/kg	0.004	UJ	0.005	UJ	0.0069	U	0.0065	U	0.00067	U	0.0011	U
Trichlorofluoromethane	mg/kg	0.02	U	0.025	U	0.034	U	0.032	U	0.0034	U	0.0056	U
Vinyl chloride	mg/kg	0.008	U	0.01	U	0.014	U	0.013	U	0.0013	U	0.0023	U
cis-1,2-Dichloroethene	mg/kg	0.004	U	0.005	U	0.0069	U	0.0065	U	0.00067	U	0.0011	U
cis-1,3-Dichloropropene	mg/kg	0.004	UJ	0.005	UJ	0.0069	U	0.0065	U	0.00067	U	0.0011	U
n-Butylbenzene	mg/kg	0.004	UR	0.005	UJ	0.0069	UR	0.0065	UR	0.00067	U	0.0011	U
n-Propylbenzene	mg/kg	0.004	UR	0.005	UJ	0.0069	UR	0.0065	UR	0.00067	U	0.0011	U
o-Chlorotoluene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
o-Xylene	mg/kg	0.008	UR	0.01	UJ	0.014	UR	0.013	UR	0.0013	U	0.0023	U
p-Chlorotoluene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
p-Isopropyltoluene	mg/kg	0.012	J	0.52	J	0.0069	UR	0.0065	UR	0.00067	U	0.0011	U
p/m-Xylene	mg/kg	0.008	UR	0.01	UJ	0.014	UR	0.013	UR	0.0013	U	0.0023	U
sec-Butylbenzene	mg/kg	0.004	UR	0.005	UJ	0.0069	UR	0.0065	UR	0.00067	U	0.0011	U
tert-Butylbenzene	mg/kg	0.02	UR	0.025	UJ	0.034	UR	0.032	UR	0.0034	U	0.0056	U
trans-1,2-Dichloroethene	mg/kg	0.006	U	0.0075	U	0.01	U	0.0097	U	0.001	U	0.0017	U
trans-1,3-Dichloropropene	mg/kg	0.004	UJ	0.005	UJ	0.0069	U	0.0065	U	0.00067	U	0.0011	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-45		SD-46		SD-47		SD-47-Re		SD-48		SD-48-Re	
SAMPLING DATE		02-JUN-05		02-JUN-05		31-MAY-05		31-MAY-05		02-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0505996-08		L0505996-06		L0505867-09		L0505867-09		L0505996-15		L0505996-15	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UR	0.0038	UR
1,1,1-Trichloroethane	mg/kg	0.19	U	0.29		0.0094	U	0.0099	U	0.02	J	0.007	J
1,1,2,2-Tetrachloroethane	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UR	0.0038	UR
1,1,2-Trichloroethane	mg/kg	0.28	U	0.24	U	0.014	U	0.015	U	0.0066	UJ	0.0057	UJ
1,1-Dichloroethane	mg/kg	0.28	U	0.24	U	0.014	U	0.015	U	0.038	J	0.031	
1,1-Dichloroethene	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0061	J	0.0038	U
1,1-Dichloropropene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	U	0.019	U
1,2,3-Trichlorobenzene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
1,2,3-Trichloropropane	mg/kg	1.9	U	1.6	U	0.094	U	0.099	U	0.044	UR	0.038	UR
1,2,4-Trichlorobenzene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
1,2,4-Trimethylbenzene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
1,2-Dibromo-3-chloropropane	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
1,2-Dibromoethane	mg/kg	0.75	U	0.63	U	0.038	U	0.04	U	0.018	UJ	0.015	UJ
1,2-Dichlorobenzene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
1,2-Dichloroethane	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	U	0.0038	U
1,2-Dichloropropane	mg/kg	0.66	U	0.55	U	0.033	U	0.035	U	0.015	UJ	0.013	UJ
1,3,5-Trimethylbenzene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
1,3-Dichlorobenzene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
1,3-Dichloropropane	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	U	0.019	U
1,4-Dichlorobenzene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
1,4-Dioxane	mg/kg	94	U	78	U	4.7	U	5	U	2.2	U	1.9	U
2,2-Dichloropropane	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	U	0.019	U
2-Butanone	mg/kg	1.9	U	1.6	U	0.094	U	0.099	U	0.23	J	0.13	J
2-Hexanone	mg/kg	1.9	U	1.6	U	0.094	U	0.099	U	0.044	UJ	0.038	UJ
4-Methyl-2-pentanone	mg/kg	1.9	U	1.6	U	0.094	U	0.099	U	0.044	UJ	0.038	UJ
Acetone	mg/kg	1.9	U	1.6	U	0.26		0.42		0.49	J	0.4	J
Benzene	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	U	0.0038	U
Bromobenzene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
Bromochloromethane	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UJ	0.019	UJ
Bromodichloromethane	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	U	0.0038	U
Bromoform	mg/kg	0.75	U	0.63	U	0.038	U	0.04	U	0.018	UR	0.015	UR
Bromomethane	mg/kg	0.37	UJ	0.31	U	0.019	U	0.02	U	0.0088	UJ	0.0076	UJ
Carbon disulfide	mg/kg	1.9	U	1.6	U	0.11		0.17		0.044	U	0.038	U
Carbon tetrachloride	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	U	0.0038	U
Chlorobenzene	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UR	0.0038	UR
Chloroethane	mg/kg	0.37	U	0.31	U	0.019	U	0.02	U	0.0088	U	0.016	J
Chloroform	mg/kg	0.28	U	0.24	U	0.014	U	0.015	U	0.0066	U	0.0057	U
Chloromethane	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	U	0.019	U
Dibromochloromethane	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UJ	0.0038	UJ
Dibromomethane	mg/kg	1.9	U	1.6	U	0.094	U	0.099	U	0.044	UJ	0.038	U
Dichlorodifluoromethane	mg/kg	1.9	U	1.6	U	0.094	U	0.099	U	0.044	U	0.038	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-45		SD-46		SD-47		SD-47-Re		SD-48		SD-48-Re	
SAMPLING DATE		02-JUN-05		02-JUN-05		31-MAY-05		31-MAY-05		02-JUN-05		02-JUN-05	
LAB SAMPLE ID		L0505996-08		L0505996-06		L0505867-09		L0505867-09		L0505996-15		L0505996-15	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	U	0.019	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.75	U	0.63	U	0.038	U	0.04	U	0.018	U	0.015	U
Ethylbenzene	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UR	0.0038	UR
Hexachlorobutadiene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
Isopropyl Ether	mg/kg	0.75	U	0.63	U	0.038	U	0.04	U	0.018	U	0.015	U
Isopropylbenzene	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UR	0.0038	UR
Methyl tert butyl ether	mg/kg	0.37	U	0.31	U	0.019	U	0.02	U	0.0088	U	0.0076	U
Methylene chloride	mg/kg	1.9	U	1.6	U	0.094	U	0.099	U	0.044	U	0.038	U
Naphthalene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
Styrene	mg/kg	0.37	U	0.31	U	0.019	U	0.02	U	0.0088	UR	0.0076	UR
Tertiary-Amyl Methyl Ether	mg/kg	0.75	U	0.63	U	0.038	U	0.04	U	0.018	U	0.015	U
Tetrachloroethene	mg/kg	1.1		4.3		0.0094	U	0.0099	U	0.037	J	0.0062	J
Tetrahydrofuran	mg/kg	3.7	U	3.1	U	0.19	U	0.2	U	0.088	U	0.076	U
Toluene	mg/kg	0.28	U	0.24	U	0.16		0.17		0.0066	UJ	0.0057	U
Trichloroethene	mg/kg	0.19	U	0.43		0.0094	U	0.0099	U	0.018	J	0.0057	J
Trichlorofluoromethane	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	U	0.019	U
Vinyl chloride	mg/kg	0.37	U	0.31	U	0.019	U	0.02	U	0.0088	U	0.0076	U
cis-1,2-Dichloroethene	mg/kg	0.43		0.3		0.0094	U	0.0099	U	0.065	J	0.038	J
cis-1,3-Dichloropropene	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UJ	0.0038	UJ
n-Butylbenzene	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UR	0.0038	UR
n-Propylbenzene	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UR	0.0038	UR
o-Chlorotoluene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
o-Xylene	mg/kg	0.37	U	0.31	U	0.019	U	0.02	U	0.0088	UR	0.0076	UR
p-Chlorotoluene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
p-Isopropyltoluene	mg/kg	0.19	U	0.16	U	0.059		0.049		0.0044	UR	0.0038	UR
p/m-Xylene	mg/kg	0.37	U	0.31	U	0.019	U	0.02	U	0.0088	UR	0.0076	UR
sec-Butylbenzene	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UR	0.0038	UR
tert-Butylbenzene	mg/kg	0.94	U	0.78	U	0.047	U	0.05	U	0.022	UR	0.019	UR
trans-1,2-Dichloroethene	mg/kg	0.28	U	0.24	U	0.014	U	0.015	U	0.0066	U	0.0057	U
trans-1,3-Dichloropropene	mg/kg	0.19	U	0.16	U	0.0094	U	0.0099	U	0.0044	UJ	0.0038	UJ

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-49		SD-49-Re		SD-50		SD-50-Re		SD-51		SD-201-0-0.5	
SAMPLING DATE		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		02-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-04		L0505937-04		L0505867-08		L0505867-08		L0505996-17		L0505937-28	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.0052	UJ	0.0046	UJ	0.0082	U	0.0069	U	0.00093	U	0.0094	U
1,1,1-Trichloroethane	mg/kg	0.0052	U	0.0046	U	0.0082	U	0.0088		0.00093	U	0.2	J
1,1,2,2-Tetrachloroethane	mg/kg	0.0052	UJ	0.0046	UJ	0.0082	U	0.0069	U	0.00093	U	0.0094	U
1,1,2-Trichloroethane	mg/kg	0.0077	U	0.0069	U	0.012	U	0.01	U	0.0014	U	0.014	U
1,1-Dichloroethane	mg/kg	0.0077	U	0.0069	U	0.012	U	0.01	U	0.0014	U	0.047	J
1,1-Dichloroethene	mg/kg	0.0052	U	0.0046	U	0.0082	U	0.0069	U	0.00093	U	0.026	J
1,1-Dichloropropene	mg/kg	0.026	U	0.023	U	0.041	U	0.035	U	0.0046	U	0.047	U
1,2,3-Trichlorobenzene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
1,2,3-Trichloropropane	mg/kg	0.052	UJ	0.046	UJ	0.082	U	0.069	U	0.0093	U	0.094	U
1,2,4-Trichlorobenzene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
1,2,4-Trimethylbenzene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
1,2-Dibromo-3-chloropropane	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
1,2-Dibromoethane	mg/kg	0.021	U	0.018	U	0.033	U	0.028	U	0.0037	U	0.038	U
1,2-Dichlorobenzene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
1,2-Dichloroethane	mg/kg	0.0052	U	0.0046	U	0.0082	U	0.0069	U	0.00093	U	0.0094	U
1,2-Dichloropropane	mg/kg	0.018	U	0.016	U	0.028	U	0.024	U	0.0032	U	0.033	U
1,3,5-Trimethylbenzene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
1,3-Dichlorobenzene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
1,3-Dichloropropane	mg/kg	0.026	U	0.023	U	0.041	U	0.035	U	0.0046	U	0.047	U
1,4-Dichlorobenzene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
1,4-Dioxane	mg/kg	2.6	U	2.3	U	4.1	U	3.5	U	0.46	U	4.7	U
2,2-Dichloropropane	mg/kg	0.026	U	0.023	U	0.041	U	0.035	U	0.0046	U	0.047	U
2-Butanone	mg/kg	0.066	J	0.06	J	0.082	U	0.069	U	0.0093	U	0.094	U
2-Hexanone	mg/kg	0.052	U	0.046	U	0.082	U	0.069	U	0.0093	U	0.094	U
4-Methyl-2-pentanone	mg/kg	0.052	U	0.046	U	0.082	U	0.069	U	0.0093	U	0.094	U
Acetone	mg/kg	0.33	J	0.26	J	0.22		0.28	0	0.056		0.46	J
Benzene	mg/kg	0.0052	U	0.0056	J	0.0082	U	0.0069	U	0.00093	U	0.0094	U
Bromobenzene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
Bromochloromethane	mg/kg	0.026	U	0.023	U	0.041	U	0.035	U	0.0046	U	0.047	U
Bromodichloromethane	mg/kg	0.0052	U	0.0046	U	0.0082	U	0.0069	U	0.00093	U	0.0094	U
Bromoform	mg/kg	0.021	U	0.018	U	0.033	U	0.028	U	0.0037	U	0.038	U
Bromomethane	mg/kg	0.01	U	0.0092	U	0.016	U	0.014	U	0.0018	UJ	0.019	UJ
Carbon disulfide	mg/kg	0.052	U	0.05	J	0.082	U	0.069	U	0.03	U	0.097	J
Carbon tetrachloride	mg/kg	0.0052	U	0.0046	U	0.0082	U	0.0069	U	0.00093	U	0.0094	U
Chlorobenzene	mg/kg	0.0052	UJ	0.0046	UJ	0.0082	U	0.0069	U	0.00093	U	0.0094	U
Chloroethane	mg/kg	0.01	U	0.0092	U	0.016	U	0.014	U	0.0018	U	0.019	U
Chloroform	mg/kg	0.0077	U	0.0069	U	0.012	U	0.01	U	0.0014	U	0.014	U
Chloromethane	mg/kg	0.026	U	0.023	U	0.041	U	0.035	U	0.0046	U	0.047	U
Dibromochloromethane	mg/kg	0.0052	U	0.0046	U	0.0082	U	0.0069	U	0.00093	U	0.0094	U
Dibromomethane	mg/kg	0.052	U	0.046	U	0.082	U	0.069	U	0.0093	U	0.094	U
Dichlorodifluoromethane	mg/kg	0.052	U	0.046	U	0.082	U	0.069	U	0.0093	U	0.094	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-49		SD-49-Re		SD-50		SD-50-Re		SD-51		SD-201-0-0.5	
SAMPLING DATE		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		02-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-04		L0505937-04		L0505867-08		L0505867-08		L0505996-17		L0505937-28	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.026	U	0.023	U	0.041	U	0.035	U	0.0046	U	0.047	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.021	U	0.018	U	0.033	U	0.028	U	0.0037	U	0.038	U
Ethylbenzene	mg/kg	0.0052	UJ	0.0046	UJ	0.0082	U	0.0069	U	0.00093	U	0.0094	U
Hexachlorobutadiene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
Isopropyl Ether	mg/kg	0.021	U	0.018	U	0.033	U	0.028	U	0.0037	U	0.038	U
Isopropylbenzene	mg/kg	0.0052	UJ	0.0046	UJ	0.0082	U	0.0069	U	0.00093	U	0.0094	U
Methyl tert butyl ether	mg/kg	0.01	U	0.0092	U	0.016	U	0.014	U	0.0018	U	0.019	U
Methylene chloride	mg/kg	0.052	U	0.046	U	0.082	U	0.069	U	0.0093	U	0.094	U
Naphthalene	mg/kg	0.026	U	0.023	U	0.041	U	0.035	U	0.0046	U	0.047	U
Styrene	mg/kg	0.01	UJ	0.0092	UJ	0.016	U	0.014	U	0.0018	U	0.019	U
Tertiary-Amyl Methyl Ether	mg/kg	0.021	U	0.018	U	0.033	U	0.028	U	0.0037	U	0.038	U
Tetrachloroethene	mg/kg	0.036	J	0.03	J	0.066		0.08		0.00093	U	>1.9	J
Tetrahydrofuran	mg/kg	0.1	U	0.092	U	0.16	U	0.14	U	0.018	U	0.19	U
Toluene	mg/kg	0.035	J	0.024	J	0.022		0.022		0.0082		0.014	U
Trichloroethene	mg/kg	0.02	J	0.011	J	0.027		0.032		0.00093	U	0.41	J
Trichlorofluoromethane	mg/kg	0.026	U	0.023	U	0.041	U	0.035	U	0.0046	U	0.047	U
Vinyl chloride	mg/kg	0.01	U	0.0092	U	0.016	U	0.014	U	0.0018	U	0.019	U
cis-1,2-Dichloroethene	mg/kg	0.021	J	0.013	J	0.038		0.039		0.00093	U	0.46	J
cis-1,3-Dichloropropene	mg/kg	0.0052	U	0.0046	U	0.0082	U	0.0069	U	0.00093	U	0.0094	U
n-Butylbenzene	mg/kg	0.0052	UJ	0.0046	UJ	0.0082	U	0.0069	U	0.00093	U	0.0094	U
n-Propylbenzene	mg/kg	0.0052	UJ	0.0046	UJ	0.0082	U	0.0069	U	0.00093	U	0.0094	U
o-Chlorotoluene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
o-Xylene	mg/kg	0.01	UJ	0.0092	UJ	0.016	U	0.014	U	0.0018	U	0.019	U
p-Chlorotoluene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
p-Isopropyltoluene	mg/kg	0.024	J	0.024	J	0.0082	U	0.027		0.00093	U	0.03	J
p/m-Xylene	mg/kg	0.01	UJ	0.0092	UJ	0.016	U	0.014	U	0.0018	U	0.019	U
sec-Butylbenzene	mg/kg	0.0052	UJ	0.0046	UJ	0.0082	U	0.0069	U	0.00093	U	0.0094	U
tert-Butylbenzene	mg/kg	0.026	UJ	0.023	UJ	0.041	U	0.035	U	0.0046	U	0.047	U
trans-1,2-Dichloroethene	mg/kg	0.0077	U	0.0069	U	0.012	U	0.01	U	0.0014	U	0.014	U
trans-1,3-Dichloropropene	mg/kg	0.0052	U	0.0046	U	0.0082	U	0.0069	U	0.00093	U	0.0094	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-201-0-0.5 (high)		SD-201-1-2		SD-202-0-0.5		SD-202-1-2		SD-203-0-0.5		SD-203-0-0.5 (high)	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-28		L0505937-29		L0505937-31		L0505937-32		L0505937-25		L0505937-25	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	UJ	0.34	U
1,1,1-Trichloroethane	mg/kg	0.97	U	2		2.9		2.4		>0.7	J	1.2	
1,1,2,2-Tetrachloroethane	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	UJ	0.34	U
1,1,2-Trichloroethane	mg/kg	1.4	U	0.65	U	1.4	U	0.53	U	0.0053	U	0.51	U
1,1-Dichloroethane	mg/kg	1.4	U	0.65	U	1.4	U	0.53	U	0.14	J	0.51	U
1,1-Dichloroethene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0038	J	0.34	U
1,1-Dichloropropene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	U	1.7	U
1,2,3-Trichlorobenzene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
1,2,3-Trichloropropane	mg/kg	9.7	U	4.4	U	9.7	U	3.6	U	0.035	UJ	3.4	U
1,2,4-Trichlorobenzene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
1,2,4-Trimethylbenzene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
1,2-Dibromo-3-chloropropane	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
1,2-Dibromoethane	mg/kg	3.9	U	1.7	U	3.9	U	1.4	U	0.014	U	1.4	U
1,2-Dichlorobenzene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
1,2-Dichloroethane	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	U	0.34	U
1,2-Dichloropropane	mg/kg	3.4	U	1.5	U	3.4	U	1.2	U	0.012	U	1.2	U
1,3,5-Trimethylbenzene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
1,3-Dichlorobenzene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
1,3-Dichloropropane	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	U	1.7	U
1,4-Dichlorobenzene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
1,4-Dioxane	mg/kg	480	U	220	U	480	U	180	U	1.8	U	170	U
2,2-Dichloropropane	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	U	1.7	U
2-Butanone	mg/kg	9.7	U	4.4	U	9.7	U	3.6	U	0.039	J	3.4	U
2-Hexanone	mg/kg	9.7	U	4.4	U	9.7	U	3.6	U	0.035	U	3.4	U
4-Methyl-2-pentanone	mg/kg	9.7	U	4.4	U	9.7	U	3.6	U	0.035	U	3.4	U
Acetone	mg/kg	9.7	U	4.4	U	9.7	U	3.6	U	0.14	J	3.4	U
Benzene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	U	0.34	U
Bromobenzene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
Bromochloromethane	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	U	1.7	U
Bromodichloromethane	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	U	0.34	U
Bromoform	mg/kg	3.9	U	1.7	U	3.9	U	1.4	U	0.014	UJ	1.4	U
Bromomethane	mg/kg	1.9	UJ	0.87	U	1.9	U	0.71	U	0.007	UJ	0.68	UJ
Carbon disulfide	mg/kg	9.7	U	4.4	U	9.7	U	3.6	U	0.035	U	3.4	U
Carbon tetrachloride	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	U	0.34	U
Chlorobenzene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	UJ	0.34	U
Chloroethane	mg/kg	1.9	U	0.87	U	1.9	U	0.71	U	0.007	U	0.68	U
Chloroform	mg/kg	1.4	U	0.65	U	1.4	U	0.53	U	0.0053	U	0.51	U
Chloromethane	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	U	1.7	U
Dibromochloromethane	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	U	0.34	U
Dibromomethane	mg/kg	9.7	U	4.4	U	9.7	U	3.6	U	0.035	U	3.4	U
Dichlorodifluoromethane	mg/kg	9.7	U	4.4	U	9.7	U	3.6	U	0.035	U	3.4	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-201-0-0.5 (high)		SD-201-1-2		SD-202-0-0.5		SD-202-1-2		SD-203-0-0.5		SD-203-0-0.5 (high)	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-28		L0505937-29		L0505937-31		L0505937-32		L0505937-25		L0505937-25	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	U	1.7	U
Ethyl-Tert-Butyl-Ether	mg/kg	3.9	U	1.7	U	3.9	U	1.4	U	0.014	U	1.4	U
Ethylbenzene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	UJ	0.34	U
Hexachlorobutadiene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
Isopropyl Ether	mg/kg	3.9	U	1.7	U	3.9	U	1.4	U	0.014	U	1.4	U
Isopropylbenzene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	UJ	0.34	U
Methyl tert butyl ether	mg/kg	1.9	U	0.87	U	1.9	U	0.71	U	0.007	U	0.68	U
Methylene chloride	mg/kg	9.7	U	4.4	U	9.7	U	3.6	U	0.035	U	3.4	U
Naphthalene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
Styrene	mg/kg	1.9	U	0.87	U	1.9	U	0.71	U	0.007	UJ	0.68	U
Tertiary-Amyl Methyl Ether	mg/kg	3.9	U	1.7	U	3.9	U	1.4	U	0.014	U	1.4	U
Tetrachloroethene	mg/kg	3.4		14		19		19		0.16	J	0.34	U
Tetrahydrofuran	mg/kg	19	U	8.7	U	19	U	7.1	U	0.07	U	6.8	U
Toluene	mg/kg	1.4	U	0.65	U	1.4	U	0.53	U	0.0053	U	0.51	U
Trichloroethene	mg/kg	0.97	U	1.3		3.5		2.7		0.086		0.34	U
Trichlorofluoromethane	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	U	1.7	U
Vinyl chloride	mg/kg	1.9	U	0.87	U	1.9	U	0.71	U	0.007	U	0.68	U
cis-1,2-Dichloroethene	mg/kg	0.97	U	0.44	U	1.4		0.61		0.036	J	0.34	U
cis-1,3-Dichloropropene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	U	0.34	U
n-Butylbenzene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	UJ	0.34	U
n-Propylbenzene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	UJ	0.34	U
o-Chlorotoluene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
o-Xylene	mg/kg	1.9	U	0.87	U	1.9	U	0.71	U	0.007	UJ	0.68	U
p-Chlorotoluene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
p-Isopropyltoluene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	UJ	0.34	U
p/m-Xylene	mg/kg	1.9	U	0.87	U	1.9	U	0.71	U	0.007	UJ	0.68	U
sec-Butylbenzene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	UJ	0.34	U
tert-Butylbenzene	mg/kg	4.8	U	2.2	U	4.8	U	1.8	U	0.018	UJ	1.7	U
trans-1,2-Dichloroethene	mg/kg	1.4	U	0.65	U	1.4	U	0.53	U	0.0053	U	0.51	U
trans-1,3-Dichloropropene	mg/kg	0.97	U	0.44	U	0.97	U	0.36	U	0.0035	U	0.34	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-203-1-2		SD-204-0-0.5		SD-204-0-0.5-Re		SD-204-1-2		SD-204-1-2-Re		SD-205-0-0.5	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-26		L0505937-22		L0505937-22		L0505937-23		L0505937-23		L0505937-17	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.26	U	0.006	UJ	0.0063	UJ	0.0059	UR	0.0055	U	0.0087	UJ
1,1,1-Trichloroethane	mg/kg	1.8		0.048	J	0.069	J	0.0072	J	0.0055	J	0.0087	U
1,1,2,2-Tetrachloroethane	mg/kg	0.26	U	0.006	U	0.0063	U	0.0059	UR	0.0055	UJ	0.0087	U
1,1,2-Trichloroethane	mg/kg	0.39	U	0.0091	U	0.0094	U	0.0088	U	0.0082	U	0.013	U
1,1-Dichloroethane	mg/kg	0.39	U	0.15	J	0.1	J	0.08	J	0.074	J	0.013	U
1,1-Dichloroethene	mg/kg	0.26	U	0.012	J	0.0099	J	0.0059	U	0.0055	U	0.0087	U
1,1-Dichloropropene	mg/kg	1.3	U	0.03	U	0.031	U	0.029	U	0.027	U	0.044	U
1,2,3-Trichlorobenzene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
1,2,3-Trichloropropane	mg/kg	2.6	U	0.06	UJ	0.063	UJ	0.059	UR	0.055	UJ	0.087	UJ
1,2,4-Trichlorobenzene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
1,2,4-Trimethylbenzene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
1,2-Dibromo-3-chloropropane	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
1,2-Dibromoethane	mg/kg	1	U	0.024	U	0.025	U	0.024	U	0.022	U	0.035	U
1,2-Dichlorobenzene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
1,2-Dichloroethane	mg/kg	0.26	U	0.006	U	0.0063	U	0.0059	U	0.0055	U	0.0087	U
1,2-Dichloropropane	mg/kg	0.91	U	0.021	U	0.022	U	0.021	U	0.019	U	0.03	U
1,3,5-Trimethylbenzene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
1,3-Dichlorobenzene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
1,3-Dichloropropane	mg/kg	1.3	U	0.03	U	0.031	U	0.029	U	0.027	U	0.044	U
1,4-Dichlorobenzene	mg/kg	1.3	U	0.03	U	0.031	U	0.029	UR	0.027	UJ	0.044	U
1,4-Dioxane	mg/kg	130	U	3	U	3.1	U	2.9	U	2.7	U	4.4	U
2,2-Dichloropropane	mg/kg	1.3	U	0.03	U	0.031	U	0.029	U	0.027	U	0.044	U
2-Butanone	mg/kg	2.6	U	0.063	J	0.063	U	0.095	J	0.078	J	0.12	J
2-Hexanone	mg/kg	2.6	U	0.06	U	0.063	U	0.059	U	0.055	U	0.087	U
4-Methyl-2-pentanone	mg/kg	2.6	U	0.06	U	0.063	U	0.059	U	0.055	U	0.087	U
Acetone	mg/kg	2.6	U	0.42	J	0.063	U	0.31	J	0.055	U	0.5	J
Benzene	mg/kg	0.26	U	0.006	U	0.021	J	0.0059	U	0.0055	U	0.0087	U
Bromobenzene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
Bromochloromethane	mg/kg	1.3	U	0.03	U	0.031	U	0.029	U	0.027	U	0.044	U
Bromodichloromethane	mg/kg	0.26	U	0.006	U	0.0063	U	0.0059	U	0.0055	U	0.0087	U
Bromoform	mg/kg	1	U	0.024	UJ	0.025	UJ	0.024	UR	0.022	UJ	0.035	UJ
Bromomethane	mg/kg	0.52	UJ	0.012	UJ	0.012	UJ	0.012	UJ	0.011	UJ	0.017	UJ
Carbon disulfide	mg/kg	2.6	U	0.06	U	0.063	U	0.11	J	0.055	U	0.087	U
Carbon tetrachloride	mg/kg	0.26	U	0.006	U	0.0063	U	0.0059	U	0.0055	U	0.0087	U
Chlorobenzene	mg/kg	0.26	U	0.006	UJ	0.0063	UJ	0.0059	UR	0.0055	UJ	0.0087	UJ
Chloroethane	mg/kg	0.52	U	0.012	U	0.012	U	0.094	J	0.099	J	0.017	U
Chloroform	mg/kg	0.39	U	0.0091	U	0.0094	U	0.0088	U	0.0082	U	0.013	U
Chloromethane	mg/kg	1.3	U	0.03	U	0.031	U	0.029	U	0.027	U	0.044	U
Dibromochloromethane	mg/kg	0.26	U	0.006	U	0.0063	U	0.0059	U	0.0055	U	0.0087	U
Dibromomethane	mg/kg	2.6	U	0.06	U	0.063	U	0.059	U	0.055	U	0.087	U
Dichlorodifluoromethane	mg/kg	2.6	U	0.06	U	0.063	U	0.059	U	0.055	U	0.087	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-203-1-2		SD-204-0-0.5		SD-204-0-0.5-Re		SD-204-1-2		SD-204-1-2-Re		SD-205-0-0.5	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-26		L0505937-22		L0505937-22		L0505937-23		L0505937-23		L0505937-17	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	1.3	U	0.03	U	0.031	U	0.029	U	0.027	U	0.044	U
Ethyl-Tert-Butyl-Ether	mg/kg	1	U	0.024	U	0.025	U	0.024	U	0.022	U	0.035	U
Ethylbenzene	mg/kg	0.26	U	0.006	UJ	0.0063	UJ	0.0059	UR	0.0055	U	0.0087	UJ
Hexachlorobutadiene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
Isopropyl Ether	mg/kg	1	U	0.024	U	0.025	U	0.024	U	0.022	U	0.035	U
Isopropylbenzene	mg/kg	0.26	U	0.006	UJ	0.0063	UJ	0.0059	UR	0.0055	UJ	0.0087	UJ
Methyl tert butyl ether	mg/kg	0.52	U	0.012	U	0.012	U	0.012	U	0.011	U	0.017	U
Methylene chloride	mg/kg	2.6	U	0.06	U	0.063	U	0.059	U	0.055	U	0.087	U
Naphthalene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
Styrene	mg/kg	0.52	U	0.012	UJ	0.012	UJ	0.012	UR	0.011	UJ	0.017	UJ
Tertiary-Amyl Methyl Ether	mg/kg	1	U	0.024	U	0.025	U	0.024	U	0.022	U	0.035	U
Tetrachloroethene	mg/kg	1.4		0.49	J	0.49	J	0.038	J	0.024	J	0.016	J
Tetrahydrofuran	mg/kg	5.2	U	0.12	U	0.12	U	0.12	U	0.11	U	0.17	U
Toluene	mg/kg	0.39	U	0.015	J	0.0094	U	0.014	J	0.012	J	0.054	J
Trichloroethene	mg/kg	0.29		0.43	J	0.3	J	0.046	J	0.041	J	0.013	J
Trichlorofluoromethane	mg/kg	1.3	U	0.03	U	0.031	U	0.029	U	0.027	U	0.044	U
Vinyl chloride	mg/kg	0.52	U	0.012	U	0.012	U	0.012	U	0.011	U	0.017	U
cis-1,2-Dichloroethene	mg/kg	0.26	U	0.4	J	0.27	J	0.19	J	0.14	J	0.0088	J
cis-1,3-Dichloropropene	mg/kg	0.26	U	0.006	U	0.0063	U	0.0059	U	0.0055	U	0.0087	U
n-Butylbenzene	mg/kg	0.26	U	0.006	UJ	0.0063	UJ	0.0059	UR	0.0055	UJ	0.0087	UJ
n-Propylbenzene	mg/kg	0.26	U	0.006	UJ	0.0063	UJ	0.0059	UR	0.0055	UJ	0.0087	UJ
o-Chlorotoluene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
o-Xylene	mg/kg	0.52	U	0.012	UJ	0.012	UJ	0.012	UR	0.011	UJ	0.017	UJ
p-Chlorotoluene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
p-Isopropyltoluene	mg/kg	0.26	U	0.032	J	0.037	J	0.0059	UR	0.0055	UJ	0.083	J
p/m-Xylene	mg/kg	0.52	U	0.012	U	0.012	U	0.012	UR	0.011	UJ	0.028	J
sec-Butylbenzene	mg/kg	0.26	U	0.006	UJ	0.0063	UJ	0.0059	UR	0.0055	UJ	0.0087	UJ
tert-Butylbenzene	mg/kg	1.3	U	0.03	UJ	0.031	UJ	0.029	UR	0.027	UJ	0.044	UJ
trans-1,2-Dichloroethene	mg/kg	0.39	U	0.0091	U	0.0094	U	0.0088	U	0.0082	U	0.013	U
trans-1,3-Dichloropropene	mg/kg	0.26	U	0.006	U	0.0063	U	0.0059	U	0.0055	U	0.0087	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-205-0-0.5-Re		SD-205-1-2		SD-205-1-2-Re		SD-206-0-0.5		SD-206-0-0.5-Re		SD-206-1-2	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-17		L0505937-16		L0505937-16		L0505937-09		L0505937-09		L0505937-11	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.0089	UJ	0.0089	UR	0.0087	UR	0.0066	UJ	0.006	UR	0.006	UJ
1,1,1-Trichloroethane	mg/kg	0.0089	U	0.045	J	0.054	J	0.025	J	0.037	J	0.006	U
1,1,2,2-Tetrachloroethane	mg/kg	0.0089	U	0.0089	UR	0.0087	UR	0.0066	UJ	0.006	UR	0.006	UJ
1,1,2-Trichloroethane	mg/kg	0.013	U	0.013	U	0.013	U	0.0099	U	0.0091	UJ	0.0089	U
1,1-Dichloroethane	mg/kg	0.013	U	0.013	U	0.016	J	0.0099	U	0.0091	U	0.013	J
1,1-Dichloroethene	mg/kg	0.0089	U	0.0089	U	0.0087	U	0.0066	U	0.006	U	0.006	U
1,1-Dichloropropene	mg/kg	0.044	U	0.044	U	0.044	U	0.033	U	0.03	U	0.03	U
1,2,3-Trichlorobenzene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
1,2,3-Trichloropropane	mg/kg	0.089	UJ	0.089	UR	0.087	UR	0.066	UJ	0.06	UR	0.06	UJ
1,2,4-Trichlorobenzene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
1,2,4-Trimethylbenzene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
1,2-Dibromo-3-chloropropane	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
1,2-Dibromoethane	mg/kg	0.036	U	0.036	U	0.035	U	0.026	U	0.024	UJ	0.024	U
1,2-Dichlorobenzene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
1,2-Dichloroethane	mg/kg	0.0089	U	0.0089	U	0.0087	U	0.0066	U	0.006	U	0.006	U
1,2-Dichloropropane	mg/kg	0.031	U	0.031	U	0.03	U	0.023	U	0.021	UJ	0.021	U
1,3,5-Trimethylbenzene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
1,3-Dichlorobenzene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
1,3-Dichloropropane	mg/kg	0.044	U	0.044	U	0.044	U	0.033	U	0.03	UJ	0.03	U
1,4-Dichlorobenzene	mg/kg	0.044	U	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
1,4-Dioxane	mg/kg	4.4	U	4.4	U	4.4	U	3.3	U	3	U	3	U
2,2-Dichloropropane	mg/kg	0.044	U	0.044	U	0.044	U	0.033	U	0.03	U	0.03	U
2-Butanone	mg/kg	0.1	J	0.16	J	0.13	J	0.11	J	0.09	J	0.074	J
2-Hexanone	mg/kg	0.089	U	0.089	U	0.087	U	0.066	U	0.06	UJ	0.06	U
4-Methyl-2-pentanone	mg/kg	0.089	U	0.089	U	0.087	U	0.066	U	0.06	UJ	0.06	U
Acetone	mg/kg	0.41	J	0.43	J	0.38	J	0.49	J	0.06	U	0.2	J
Benzene	mg/kg	0.0089	U	0.0089	U	0.0087	U	0.0066	U	0.006	U	0.006	U
Bromobenzene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
Bromochloromethane	mg/kg	0.044	U	0.044	U	0.044	U	0.033	U	0.03	U	0.03	U
Bromodichloromethane	mg/kg	0.0089	U	0.0089	U	0.0087	U	0.0066	U	0.006	UJ	0.006	U
Bromoform	mg/kg	0.036	UJ	0.036	UR	0.035	UR	0.026	UJ	0.024	UR	0.024	UJ
Bromomethane	mg/kg	0.018	UJ	0.018	UJ	0.017	UJ	0.013	UJ	0.012	UJ	0.012	UJ
Carbon disulfide	mg/kg	0.089	U	0.089	U	0.087	U	0.066	U	0.06	U	0.06	U
Carbon tetrachloride	mg/kg	0.0089	U	0.0089	U	0.0087	U	0.0066	U	0.006	U	0.006	U
Chlorobenzene	mg/kg	0.0089	UJ	0.0089	UR	0.0087	UR	0.0066	UJ	0.006	UR	0.006	UJ
Chloroethane	mg/kg	0.018	U	0.018	U	0.017	U	0.013	U	0.012	U	0.012	U
Chloroform	mg/kg	0.013	U	0.013	U	0.013	U	0.0099	U	0.0091	U	0.0089	U
Chloromethane	mg/kg	0.044	U	0.044	U	0.044	U	0.033	U	0.03	U	0.03	U
Dibromochloromethane	mg/kg	0.0089	U	0.0089	U	0.0087	U	0.0066	U	0.006	UJ	0.006	U
Dibromomethane	mg/kg	0.089	U	0.089	U	0.087	U	0.066	U	0.06	UJ	0.06	U
Dichlorodifluoromethane	mg/kg	0.089	U	0.089	U	0.087	U	0.066	U	0.06	U	0.06	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-205-0-0.5-Re		SD-205-1-2		SD-205-1-2-Re		SD-206-0-0.5		SD-206-0-0.5-Re		SD-206-1-2	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-17		L0505937-16		L0505937-16		L0505937-09		L0505937-09		L0505937-11	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.044	U	0.044	U	0.044	U	0.033	U	0.03	U	0.03	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.036	U	0.036	U	0.035	U	0.026	U	0.024	U	0.024	U
Ethylbenzene	mg/kg	0.0089	UJ	0.0089	UR	0.0087	UR	0.0066	UJ	0.006	UR	0.006	UJ
Hexachlorobutadiene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	U	0.03	UR	0.03	U
Isopropyl Ether	mg/kg	0.036	U	0.036	U	0.035	U	0.026	U	0.024	U	0.024	U
Isopropylbenzene	mg/kg	0.0089	UJ	0.0089	UR	0.0087	UR	0.0066	U	0.006	UR	0.006	U
Methyl tert butyl ether	mg/kg	0.018	U	0.018	U	0.017	U	0.013	U	0.012	U	0.012	U
Methylene chloride	mg/kg	0.089	U	0.089	U	0.087	U	0.066	U	0.06	U	0.06	U
Naphthalene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	U	0.03	UR	0.03	U
Styrene	mg/kg	0.018	UJ	0.018	UR	0.017	UR	0.013	UJ	0.012	UR	0.012	UJ
Tertiary-Amyl Methyl Ether	mg/kg	0.036	U	0.036	U	0.035	U	0.026	U	0.024	U	0.024	U
Tetrachloroethene	mg/kg	0.012	J	0.12	J	0.11	J	0.046	J	0.036	JR	0.0083	J
Tetrahydrofuran	mg/kg	0.18	U	0.18	U	0.17	U	0.13	U	0.12	U	0.12	U
Toluene	mg/kg	0.064	J	0.022	J	0.018	J	0.036	J	0.035	J	0.0089	U
Trichloroethene	mg/kg	0.0098	J	0.057	J	0.057	J	0.026	J	0.012	J	0.011	J
Trichlorofluoromethane	mg/kg	0.044	U	0.044	U	0.044	U	0.033	U	0.03	U	0.03	U
Vinyl chloride	mg/kg	0.018	U	0.018	U	0.017	U	0.013	U	0.012	U	0.012	U
cis-1,2-Dichloroethene	mg/kg	0.0089	U	0.029	J	0.026	J	0.021	J	0.011	J	0.014	J
cis-1,3-Dichloropropene	mg/kg	0.0089	U	0.0089	U	0.0087	U	0.0066	U	0.006	UJ	0.006	U
n-Butylbenzene	mg/kg	0.0089	UJ	0.0089	UR	0.0087	UR	0.0066	UJ	0.006	UR	0.006	UJ
n-Propylbenzene	mg/kg	0.0089	UJ	0.0089	UR	0.0087	UR	0.0066	UJ	0.006	UR	0.006	UJ
o-Chlorotoluene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
o-Xylene	mg/kg	0.018	UJ	0.018	UR	0.017	UR	0.013	UJ	0.012	UR	0.012	UJ
p-Chlorotoluene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
p-Isopropyltoluene	mg/kg	0.043	J	0.0089	UR	0.0087	UR	0.034	J	0.023	JR	0.006	UJ
p/m-Xylene	mg/kg	0.034	J	0.018	UR	0.017	UR	0.013	UJ	0.012	UR	0.012	UJ
sec-Butylbenzene	mg/kg	0.0089	UJ	0.0089	UR	0.0087	UR	0.0066	UJ	0.006	UR	0.006	UJ
tert-Butylbenzene	mg/kg	0.044	UJ	0.044	UR	0.044	UR	0.033	UJ	0.03	UR	0.03	UJ
trans-1,2-Dichloroethene	mg/kg	0.013	U	0.013	U	0.013	U	0.0099	U	0.0091	U	0.0089	U
trans-1,3-Dichloropropene	mg/kg	0.0089	U	0.0089	U	0.0087	U	0.0066	U	0.006	UJ	0.006	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-206-1-2-Re		SD-207-0-0.5		SD-207-0-0.5-Re		SD-207-1-2		SD-207-1-2-Re		SD-208-0-0.5	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-11		L0505937-08		L0505937-08		L0505937-12		L0505937-12		L0505937-07	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.0058	UR	0.0082	UJ	0.0077	UJ	0.0066	UJ	0.0066	UR	0.0084	UJ
1,1,1-Trichloroethane	mg/kg	0.019	J	0.041	J	0.034	J	0.0066	U	0.019	J	0.01	J
1,1,2,2-Tetrachloroethane	mg/kg	0.0058	UR	0.0082	UJ	0.0077	UJ	0.0066	UJ	0.0066	UR	0.0084	UJ
1,1,2-Trichloroethane	mg/kg	0.0088	UJ	0.012	U	0.012	U	0.0099	U	0.0099	UJ	0.013	U
1,1-Dichloroethane	mg/kg	0.013	J	0.012	U	0.012	U	0.02	J	0.019	J	0.013	U
1,1-Dichloroethene	mg/kg	0.0058	U	0.0082	U	0.0077	U	0.0066	U	0.0066	U	0.0084	U
1,1-Dichloropropene	mg/kg	0.029	U	0.041	U	0.038	U	0.033	U	0.033	U	0.042	U
1,2,3-Trichlorobenzene	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	UJ	0.033	UR	0.042	UJ
1,2,3-Trichloropropane	mg/kg	0.058	UR	0.082	UJ	0.077	UJ	0.066	UJ	0.066	UR	0.084	UJ
1,2,4-Trichlorobenzene	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	UJ	0.033	UR	0.042	UJ
1,2,4-Trimethylbenzene	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	UJ	0.033	UR	0.042	UJ
1,2-Dibromo-3-chloropropane	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	UJ	0.033	UR	0.042	UJ
1,2-Dibromoethane	mg/kg	0.023	UJ	0.033	U	0.031	U	0.026	U	0.026	UJ	0.034	U
1,2-Dichlorobenzene	mg/kg	0.029	UR	0.041	U	0.038	U	0.033	UJ	0.033	UR	0.042	UJ
1,2-Dichloroethane	mg/kg	0.0058	U	0.0082	U	0.0077	U	0.0066	U	0.0066	U	0.0084	U
1,2-Dichloropropane	mg/kg	0.02	UJ	0.028	U	0.027	U	0.023	U	0.023	UJ	0.029	U
1,3,5-Trimethylbenzene	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	UJ	0.033	UR	0.042	UJ
1,3-Dichlorobenzene	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	UJ	0.033	UR	0.042	UJ
1,3-Dichloropropane	mg/kg	0.029	UJ	0.041	U	0.038	U	0.033	U	0.033	UJ	0.042	U
1,4-Dichlorobenzene	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	UJ	0.033	UR	0.042	UJ
1,4-Dioxane	mg/kg	2.9	U	4.1	U	3.8	U	3.3	U	3.3	U	4.2	U
2,2-Dichloropropane	mg/kg	0.029	U	0.041	U	0.038	U	0.033	U	0.033	U	0.042	U
2-Butanone	mg/kg	0.098	J	0.082	U	0.077	U	0.083	J	0.11	J	0.084	U
2-Hexanone	mg/kg	0.058	U	0.082	U	0.077	U	0.066	U	0.066	U	0.084	U
4-Methyl-2-pentanone	mg/kg	0.058	U	0.082	U	0.077	U	0.066	U	0.066	U	0.084	U
Acetone	mg/kg	0.058	U	0.44	J	0.38	J	0.23	J	0.64	J	0.37	J
Benzene	mg/kg	0.0058	U	0.0082	U	0.0077	U	0.0066	U	0.0066	U	0.0084	U
Bromobenzene	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	UJ	0.033	UR	0.042	UJ
Bromochloromethane	mg/kg	0.029	U	0.041	U	0.038	U	0.033	U	0.033	U	0.042	U
Bromodichloromethane	mg/kg	0.0058	UJ	0.0082	U	0.0077	U	0.0066	U	0.0066	UJ	0.0084	U
Bromoform	mg/kg	0.023	UR	0.033	U	0.031	U	0.026	UJ	0.026	UR	0.034	U
Bromomethane	mg/kg	0.012	UJ	0.016	U	0.015	U	0.013	UJ	0.013	UJ	0.017	U
Carbon disulfide	mg/kg	0.058	U	0.082	U	0.077	U	0.066	U	0.066	U	0.14	J
Carbon tetrachloride	mg/kg	0.0058	U	0.0082	U	0.0077	U	0.0066	U	0.0066	U	0.0084	U
Chlorobenzene	mg/kg	0.0058	UR	0.0082	UJ	0.0077	UJ	0.0066	UJ	0.0066	UR	0.0084	UJ
Chloroethane	mg/kg	0.012	U	0.016	U	0.015	U	0.013	U	0.013	U	0.017	U
Chloroform	mg/kg	0.0088	U	0.012	U	0.012	U	0.0099	U	0.0099	U	0.013	U
Chloromethane	mg/kg	0.029	U	0.041	U	0.038	U	0.033	U	0.033	U	0.042	U
Dibromochloromethane	mg/kg	0.0058	UJ	0.0082	U	0.0077	U	0.0066	U	0.0066	UJ	0.0084	U
Dibromomethane	mg/kg	0.058	UJ	0.082	U	0.077	U	0.066	U	0.066	UJ	0.084	U
Dichlorodifluoromethane	mg/kg	0.058	U	0.082	U	0.077	U	0.066	U	0.066	U	0.084	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-206-1-2-Re		SD-207-0-0.5		SD-207-0-0.5-Re		SD-207-1-2		SD-207-1-2-Re		SD-208-0-0.5	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-11		L0505937-08		L0505937-08		L0505937-12		L0505937-12		L0505937-07	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.029	U	0.041	U	0.038	U	0.033	U	0.033	U	0.042	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.023	U	0.033	U	0.031	U	0.026	U	0.026	U	0.034	U
Ethylbenzene	mg/kg	0.0058	UR	0.0082	UJ	0.0077	UJ	0.0066	UJ	0.0066	UR	0.0084	UJ
Hexachlorobutadiene	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	U	0.033	UR	0.042	UJ
Isopropyl Ether	mg/kg	0.023	U	0.033	U	0.031	U	0.026	U	0.026	U	0.034	U
Isopropylbenzene	mg/kg	0.0058	UR	0.0082	UJ	0.0077	UJ	0.0066	U	0.0066	UR	0.0084	UJ
Methyl tert butyl ether	mg/kg	0.012	U	0.016	U	0.015	U	0.013	U	0.013	U	0.017	U
Methylene chloride	mg/kg	0.058	U	0.082	U	0.077	U	0.066	U	0.066	U	0.084	U
Naphthalene	mg/kg	0.029	UR	0.041	U	0.038	U	0.033	U	0.033	UR	0.042	U
Styrene	mg/kg	0.012	UR	0.016	UJ	0.015	UJ	0.013	UJ	0.013	UR	0.017	UJ
Tertiary-Amyl Methyl Ether	mg/kg	0.023	U	0.033	U	0.031	U	0.026	U	0.026	U	0.034	U
Tetrachloroethene	mg/kg	0.015	J	0.29	J	0.2	J	0.0066	U	0.011	J	0.036	J
Tetrahydrofuran	mg/kg	0.12	U	0.16	U	0.15	U	0.13	U	0.13	U	0.17	U
Toluene	mg/kg	0.0088	U	0.012	J	0.017	J	0.0099	U	0.0099	U	0.039	J
Trichloroethene	mg/kg	0.01	J	0.073	J	0.058	J	0.018	J	0.011	J	0.023	J
Trichlorofluoromethane	mg/kg	0.029	U	0.041	U	0.038	U	0.033	U	0.033	U	0.042	U
Vinyl chloride	mg/kg	0.012	U	0.016	U	0.015	U	0.013	U	0.013	U	0.017	U
cis-1,2-Dichloroethene	mg/kg	0.0098	J	0.042	J	0.039	J	0.038	J	0.025	J	0.017	J
cis-1,3-Dichloropropene	mg/kg	0.0058	UJ	0.0082	U	0.0077	U	0.0066	U	0.0066	UJ	0.0084	U
n-Butylbenzene	mg/kg	0.0058	UR	0.0082	UJ	0.0077	UJ	0.0066	UJ	0.0066	UR	0.0084	UJ
n-Propylbenzene	mg/kg	0.0058	UR	0.0082	UJ	0.0077	UJ	0.0066	UJ	0.0066	UR	0.0084	UJ
o-Chlorotoluene	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	UJ	0.033	UR	0.042	UJ
o-Xylene	mg/kg	0.012	UR	0.016	U	0.015	U	0.013	UJ	0.013	UR	0.017	UJ
p-Chlorotoluene	mg/kg	0.029	UR	0.041	U	0.038	U	0.033	UJ	0.033	UR	0.042	UJ
p-Isopropyltoluene	mg/kg	0.0058	UR	0.023	J	0.34	J	0.0066	UJ	0.0066	UR	0.32	J
p/m-Xylene	mg/kg	0.012	UR	0.016	UJ	0.015	UJ	0.013	UJ	0.013	UR	0.017	UJ
sec-Butylbenzene	mg/kg	0.0058	UR	0.0082	UJ	0.0077	UJ	0.0066	UJ	0.0066	UR	0.0084	UJ
tert-Butylbenzene	mg/kg	0.029	UR	0.041	UJ	0.038	UJ	0.033	UJ	0.033	UR	0.042	UJ
trans-1,2-Dichloroethene	mg/kg	0.0088	U	0.012	U	0.012	U	0.0099	U	0.0099	U	0.013	U
trans-1,3-Dichloropropene	mg/kg	0.0058	UJ	0.0082	U	0.0077	U	0.0066	U	0.0066	UJ	0.0084	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-208-0-0.5-Re		SD-208-1-2		SD-208-1-2-Re		SD-209-0-0.5		SD-209-0-0.5-Re		SD-209-1-2	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-07		L0505937-13		L0505937-13		L0505937-06		L0505937-06		L0505937-14	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.0086	UJ	0.0066	UR	0.007	UR	0.0045	UJ	0.0046	UJ	0.0059	UJ
1,1,1-Trichloroethane	mg/kg	0.0086	U	0.021	J	0.046	J	0.0045	U	0.0046	U	0.0059	U
1,1,2,2-Tetrachloroethane	mg/kg	0.0086	UJ	0.0066	UR	0.007	UR	0.0045	UJ	0.0046	UJ	0.0059	UJ
1,1,2-Trichloroethane	mg/kg	0.013	U	0.0099	U	0.01	UJ	0.0067	U	0.0069	U	0.0088	U
1,1-Dichloroethane	mg/kg	0.013	U	0.014	J	0.029	J	0.0067	U	0.0069	U	0.0088	U
1,1-Dichloroethene	mg/kg	0.0086	U	0.0066	U	0.007	U	0.0045	U	0.0046	U	0.0059	U
1,1-Dichloropropene	mg/kg	0.043	U	0.033	U	0.035	U	0.022	U	0.023	U	0.029	U
1,2,3-Trichlorobenzene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
1,2,3-Trichloropropane	mg/kg	0.086	UJ	0.066	UR	0.07	UR	0.045	UJ	0.046	UJ	0.059	UJ
1,2,4-Trichlorobenzene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
1,2,4-Trimethylbenzene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	U
1,2-Dibromo-3-chloropropane	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
1,2-Dibromoethane	mg/kg	0.034	U	0.026	U	0.028	UJ	0.018	U	0.018	U	0.024	U
1,2-Dichlorobenzene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
1,2-Dichloroethane	mg/kg	0.0086	U	0.0066	U	0.007	U	0.0045	U	0.0046	U	0.0059	U
1,2-Dichloropropane	mg/kg	0.03	U	0.023	U	0.024	UJ	0.016	U	0.016	U	0.021	U
1,3,5-Trimethylbenzene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
1,3-Dichlorobenzene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
1,3-Dichloropropane	mg/kg	0.043	U	0.033	U	0.035	UJ	0.022	U	0.023	U	0.029	U
1,4-Dichlorobenzene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
1,4-Dioxane	mg/kg	4.3	U	3.3	U	3.5	U	2.2	U	2.3	U	2.9	U
2,2-Dichloropropane	mg/kg	0.043	U	0.033	U	0.035	U	0.022	U	0.023	U	0.029	U
2-Butanone	mg/kg	0.086	U	0.16	J	0.27	J	0.09	J	0.064	J	0.068	J
2-Hexanone	mg/kg	0.086	U	0.066	U	0.07	UJ	0.045	U	0.046	U	0.059	U
4-Methyl-2-pentanone	mg/kg	0.086	U	0.066	U	0.07	UJ	0.045	U	0.046	U	0.059	U
Acetone	mg/kg	0.32	J	0.45	J	0.07	U	0.57	J	0.4	J	0.31	J
Benzene	mg/kg	0.0086	U	0.0066	U	0.007	U	0.0045	U	0.0047	J	0.0059	U
Bromobenzene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
Bromochloromethane	mg/kg	0.043	U	0.033	U	0.035	U	0.022	U	0.023	U	0.029	U
Bromodichloromethane	mg/kg	0.0086	U	0.0066	U	0.007	UJ	0.0045	U	0.0046	U	0.0059	U
Bromoform	mg/kg	0.034	U	0.026	UR	0.028	UR	0.018	U	0.018	U	0.024	UJ
Bromomethane	mg/kg	0.017	U	0.013	U	0.014	U	0.009	U	0.0092	U	0.012	UJ
Carbon disulfide	mg/kg	0.2	J	0.066	U	0.07	U	0.045	U	0.096	J	0.068	J
Carbon tetrachloride	mg/kg	0.0086	U	0.0066	U	0.007	U	0.0045	U	0.0046	U	0.0059	U
Chlorobenzene	mg/kg	0.0086	UJ	0.0066	UR	0.007	UR	0.0045	UJ	0.0046	UJ	0.0059	UJ
Chloroethane	mg/kg	0.017	U	0.013	U	0.014	U	0.009	U	0.0092	U	0.012	U
Chloroform	mg/kg	0.013	U	0.0099	U	0.01	U	0.0067	U	0.0069	U	0.0088	U
Chloromethane	mg/kg	0.043	U	0.033	U	0.035	U	0.022	U	0.023	U	0.029	U
Dibromochloromethane	mg/kg	0.0086	U	0.0066	U	0.007	UJ	0.0045	U	0.0046	U	0.0059	U
Dibromomethane	mg/kg	0.086	U	0.066	U	0.07	UJ	0.045	U	0.046	U	0.059	U
Dichlorodifluoromethane	mg/kg	0.086	U	0.066	U	0.07	U	0.045	U	0.046	U	0.059	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-208-0-0.5-Re		SD-208-1-2		SD-208-1-2-Re		SD-209-0-0.5		SD-209-0-0.5-Re		SD-209-1-2	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505937-07		L0505937-13		L0505937-13		L0505937-06		L0505937-06		L0505937-14	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.043	U	0.033	U	0.035	U	0.022	U	0.023	U	0.029	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.034	U	0.026	U	0.028	U	0.018	U	0.018	U	0.024	U
Ethylbenzene	mg/kg	0.0086	UJ	0.0066	UR	0.007	UR	0.0045	UJ	0.0046	UJ	0.0059	UJ
Hexachlorobutadiene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
Isopropyl Ether	mg/kg	0.034	U	0.026	U	0.028	U	0.018	U	0.018	U	0.024	U
Isopropylbenzene	mg/kg	0.0086	UJ	0.0066	UR	0.007	UR	0.0045	UJ	0.0046	UJ	0.0059	UJ
Methyl tert butyl ether	mg/kg	0.017	U	0.013	U	0.014	U	0.009	U	0.0092	U	0.012	U
Methylene chloride	mg/kg	0.086	U	0.066	U	0.07	U	0.045	U	0.046	U	0.059	U
Naphthalene	mg/kg	0.043	U	0.033	UR	0.035	UR	0.022	U	0.023	U	0.029	UJ
Styrene	mg/kg	0.017	UJ	0.013	UR	0.014	UR	0.009	UJ	0.0092	UJ	0.012	UJ
Tertiary-Amyl Methyl Ether	mg/kg	0.034	U	0.026	U	0.028	U	0.018	U	0.018	U	0.024	U
Tetrachloroethene	mg/kg	0.051	J	0.0081	J	0.014	J	0.023	J	0.017	J	0.027	J
Tetrahydrofuran	mg/kg	0.17	U	0.13	U	0.14	U	0.09	U	0.092	U	0.12	U
Toluene	mg/kg	0.036	J	0.0099	U	0.01	UJ	0.0067	U	0.0069	U	0.0088	U
Trichloroethene	mg/kg	0.02	J	0.022	J	0.027	J	0.0081	J	0.0051	J	0.015	J
Trichlorofluoromethane	mg/kg	0.043	U	0.033	U	0.035	U	0.022	U	0.023	U	0.029	U
Vinyl chloride	mg/kg	0.017	U	0.013	U	0.014	U	0.009	U	0.0092	U	0.012	U
cis-1,2-Dichloroethene	mg/kg	0.017	J	0.016	J	0.023	J	0.0045	U	0.0046	U	0.013	J
cis-1,3-Dichloropropene	mg/kg	0.0086	U	0.0066	U	0.007	UJ	0.0045	U	0.0046	U	0.0059	U
n-Butylbenzene	mg/kg	0.0086	UJ	0.0066	UR	0.007	UR	0.0045	UJ	0.0046	UJ	0.0059	UJ
n-Propylbenzene	mg/kg	0.0086	UJ	0.0066	UR	0.007	UR	0.0045	UJ	0.0046	UJ	0.0059	UJ
o-Chlorotoluene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
o-Xylene	mg/kg	0.017	UJ	0.013	UR	0.014	UR	0.009	UJ	0.0092	UJ	0.012	UJ
p-Chlorotoluene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
p-Isopropyltoluene	mg/kg	0.3	J	0.0066	UR	0.007	UR	0.0045	UJ	0.0046	UJ	0.0059	UJ
p/m-Xylene	mg/kg	0.017	UJ	0.013	UR	0.014	UR	0.009	UJ	0.0092	UJ	0.012	UJ
sec-Butylbenzene	mg/kg	0.0086	UJ	0.0066	UR	0.007	UR	0.0045	UJ	0.0046	UJ	0.0059	UJ
tert-Butylbenzene	mg/kg	0.043	UJ	0.033	UR	0.035	UR	0.022	UJ	0.023	UJ	0.029	UJ
trans-1,2-Dichloroethene	mg/kg	0.013	U	0.0099	U	0.01	U	0.0067	U	0.0069	U	0.0088	U
trans-1,3-Dichloropropene	mg/kg	0.0086	U	0.0066	U	0.007	UJ	0.0045	U	0.0046	U	0.0059	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-209-1-2-Re		SD-210-0-0.5		SD-210-0-0.5-Re		SD-210-1-2		SD-210-1-2-Re		SD-211-0-0.5	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		31-MAY-05	
LAB SAMPLE ID		L0505937-14		L0505937-05		L0505937-05		L0505937-15		L0505937-15		L0505937-01	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.0059	UJ	0.0039	UJ	0.0038	UJ	0.0051	UR	0.0048	UR	0.0087	UJ
1,1,1-Trichloroethane	mg/kg	0.0059	U	0.0039	U	0.0038	U	0.0051	U	0.0048	U	0.036	J
1,1,2,2-Tetrachloroethane	mg/kg	0.0059	UJ	0.0039	UJ	0.0038	UJ	0.0051	UR	0.0048	UR	0.0087	UJ
1,1,2-Trichloroethane	mg/kg	0.0088	U	0.0059	U	0.0058	U	0.0076	U	0.0073	U	0.013	U
1,1-Dichloroethane	mg/kg	0.0088	U	0.015	J	0.012	J	0.024	J	0.035	J	0.078	J
1,1-Dichloroethene	mg/kg	0.0059	U	0.0039	U	0.0038	U	0.0051	U	0.0048	U	0.0087	U
1,1-Dichloropropene	mg/kg	0.029	U	0.02	U	0.019	U	0.025	U	0.024	U	0.043	U
1,2,3-Trichlorobenzene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
1,2,3-Trichloropropane	mg/kg	0.059	UJ	0.039	UJ	0.038	UJ	0.051	UR	0.048	UR	0.087	UJ
1,2,4-Trichlorobenzene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
1,2,4-Trimethylbenzene	mg/kg	0.029	U	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
1,2-Dibromo-3-chloropropane	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
1,2-Dibromoethane	mg/kg	0.024	U	0.016	U	0.015	U	0.02	U	0.019	U	0.035	U
1,2-Dichlorobenzene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
1,2-Dichloroethane	mg/kg	0.0059	U	0.0039	U	0.0038	U	0.0051	U	0.0048	U	0.0087	U
1,2-Dichloropropane	mg/kg	0.021	U	0.014	U	0.014	U	0.018	U	0.017	U	0.03	U
1,3,5-Trimethylbenzene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
1,3-Dichlorobenzene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
1,3-Dichloropropane	mg/kg	0.029	U	0.02	U	0.019	U	0.025	U	0.024	U	0.043	U
1,4-Dichlorobenzene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
1,4-Dioxane	mg/kg	2.9	U	2	U	1.9	U	2.5	U	2.4	U	4.3	U
2,2-Dichloropropane	mg/kg	0.029	U	0.02	U	0.019	U	0.025	U	0.024	U	0.043	U
2-Butanone	mg/kg	0.059	U	0.064	J	0.066	J	0.21	J	0.14	J	0.087	U
2-Hexanone	mg/kg	0.059	U	0.039	U	0.038	U	0.051	U	0.048	U	0.087	U
4-Methyl-2-pentanone	mg/kg	0.059	U	0.039	U	0.038	U	0.051	U	0.048	U	0.087	U
Acetone	mg/kg	0.23	J	0.23	J	0.21	J	0.61	J	0.42	J	0.46	J
Benzene	mg/kg	0.0059	U	0.0039	U	0.0041	J	0.0051	U	0.0048	U	0.0087	U
Bromobenzene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
Bromochloromethane	mg/kg	0.029	U	0.02	U	0.019	U	0.025	U	0.024	U	0.043	U
Bromodichloromethane	mg/kg	0.0059	U	0.0039	U	0.0038	U	0.0051	U	0.0048	U	0.0087	U
Bromoform	mg/kg	0.024	UJ	0.016	U	0.015	U	0.02	UR	0.019	UR	0.035	U
Bromomethane	mg/kg	0.012	UJ	0.0079	U	0.0077	U	0.01	UJ	0.0097	UJ	0.017	U
Carbon disulfide	mg/kg	0.059	U	0.05	J	0.059	J	0.12	J	0.091	J	0.11	J
Carbon tetrachloride	mg/kg	0.0059	U	0.0039	U	0.0038	U	0.0051	U	0.0048	U	0.0087	U
Chlorobenzene	mg/kg	0.0059	UJ	0.0039	UJ	0.0038	UJ	0.0051	UR	0.0048	UR	0.0087	UJ
Chloroethane	mg/kg	0.012	U	0.0079	U	0.0077	U	0.01	U	0.0097	U	0.017	U
Chloroform	mg/kg	0.0088	U	0.0059	U	0.0058	U	0.0076	U	0.0073	U	0.013	U
Chloromethane	mg/kg	0.029	U	0.02	U	0.019	U	0.025	U	0.024	U	0.043	U
Dibromochloromethane	mg/kg	0.0059	U	0.0039	U	0.0038	U	0.0051	U	0.0048	U	0.0087	U
Dibromomethane	mg/kg	0.059	U	0.039	U	0.038	U	0.051	U	0.048	U	0.087	U
Dichlorodifluoromethane	mg/kg	0.059	U	0.039	U	0.038	U	0.051	U	0.048	U	0.087	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SD-209-1-2-Re		SD-210-0-0.5		SD-210-0-0.5-Re		SD-210-1-2		SD-210-1-2-Re		SD-211-0-0.5	
SAMPLING DATE		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		01-JUN-05		31-MAY-05	
LAB SAMPLE ID		L0505937-14		L0505937-05		L0505937-05		L0505937-15		L0505937-15		L0505937-01	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.029	U	0.02	U	0.019	U	0.025	U	0.024	U	0.043	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.024	U	0.016	U	0.015	U	0.02	U	0.019	U	0.035	U
Ethylbenzene	mg/kg	0.0059	UJ	0.0039	UJ	0.0038	UJ	0.0051	UR	0.0048	UR	0.0087	UJ
Hexachlorobutadiene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
Isopropyl Ether	mg/kg	0.024	U	0.016	U	0.015	U	0.02	U	0.019	U	0.035	U
Isopropylbenzene	mg/kg	0.0059	UJ	0.0039	UJ	0.0038	UJ	0.0051	UR	0.0048	UR	0.0087	UJ
Methyl tert butyl ether	mg/kg	0.012	U	0.0079	U	0.0077	U	0.01	U	0.0097	U	0.017	U
Methylene chloride	mg/kg	0.059	U	0.039	U	0.038	U	0.051	U	0.048	U	0.087	U
Naphthalene	mg/kg	0.029	UJ	0.02	U	0.019	U	0.025	UR	0.024	UR	0.043	U
Styrene	mg/kg	0.012	UJ	0.0079	UJ	0.0077	UJ	0.01	UR	0.0097	UR	0.017	UJ
Tertiary-Amyl Methyl Ether	mg/kg	0.024	U	0.016	U	0.015	U	0.02	U	0.019	U	0.035	U
Tetrachloroethene	mg/kg	0.024	J	0.0039	U	0.0038	U	0.0051	U	0.0048	U	0.1	J
Tetrahydrofuran	mg/kg	0.12	U	0.079	U	0.077	U	0.1	U	0.097	U	0.17	U
Toluene	mg/kg	0.0088	U	0.0059	U	0.0058	U	0.013	J	0.013	J	0.038	J
Trichloroethene	mg/kg	0.014	J	0.0088	J	0.009	J	0.012	J	0.016	J	0.042	J
Trichlorofluoromethane	mg/kg	0.029	U	0.02	U	0.019	U	0.025	U	0.024	U	0.043	U
Vinyl chloride	mg/kg	0.012	U	0.0079	U	0.0077	U	0.01	U	0.018	0	0.017	U
cis-1,2-Dichloroethene	mg/kg	0.016	J	0.019	J	0.016	J	0.079	J	0.084	J	0.064	J
cis-1,3-Dichloropropene	mg/kg	0.0059	U	0.0039	U	0.0038	U	0.0051	U	0.0048	U	0.0087	U
n-Butylbenzene	mg/kg	0.0059	UJ	0.0039	UJ	0.0038	UJ	0.0051	UR	0.0048	UR	0.0087	UJ
n-Propylbenzene	mg/kg	0.0059	UJ	0.0039	UJ	0.0038	UJ	0.0051	UR	0.0048	UR	0.0087	UJ
o-Chlorotoluene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
o-Xylene	mg/kg	0.012	UJ	0.0079	UJ	0.0077	UJ	0.01	UR	0.0097	UR	0.017	UJ
p-Chlorotoluene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
p-Isopropyltoluene	mg/kg	0.0059	UJ	0.0039	UJ	0.0038	UJ	0.0051	UR	0.0048	UR	0.14	J
p/m-Xylene	mg/kg	0.012	UJ	0.0079	UJ	0.0077	UJ	0.01	UR	0.0097	UR	0.017	UJ
sec-Butylbenzene	mg/kg	0.0059	UJ	0.0039	UJ	0.0038	UJ	0.0051	UR	0.0048	UR	0.0087	UJ
tert-Butylbenzene	mg/kg	0.029	UJ	0.02	UJ	0.019	UJ	0.025	UR	0.024	UR	0.043	UJ
trans-1,2-Dichloroethene	mg/kg	0.0088	U	0.0059	U	0.0058	U	0.0076	U	0.0073	U	0.013	U
trans-1,3-Dichloropropene	mg/kg	0.0059	U	0.0039	U	0.0038	U	0.0051	U	0.0048	U	0.0087	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-211-0-0.5-Re		SD-211-1-2		SD-211-1-2-Re		SD-212-0-0.5		SD-212-0-0.5-Re		SD-212-1-2	
SAMPLING DATE		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05	
LAB SAMPLE ID		L0505937-01		L0505937-02		L0505937-02		L0505867-01		L0505867-01		L0505867-02	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.0069	UJ	0.008	UJ	0.0072	UJ	0.0062	U	0.0065	U	0.0029	U
1,1,1-Trichloroethane	mg/kg	0.04	J	0.12	J	0.074	J	0.0062	U	0.0065	U	0.0029	U
1,1,2,2-Tetrachloroethane	mg/kg	0.0069	UJ	0.008	UJ	0.0072	UJ	0.0062	U	0.0065	U	0.0029	U
1,1,2-Trichloroethane	mg/kg	0.01	U	0.012	U	0.011	U	0.0092	U	0.0098	U	0.0043	U
1,1-Dichloroethane	mg/kg	0.03	J	0.15	J	0.15	J	0.0092	U	0.0098	U	0.0043	U
1,1-Dichloroethene	mg/kg	0.0069	U	0.008	U	0.0072	U	0.0062	U	0.0065	U	0.0029	U
1,1-Dichloropropene	mg/kg	0.035	U	0.04	U	0.036	U	0.031	U	0.033	U	0.014	U
1,2,3-Trichlorobenzene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
1,2,3-Trichloropropane	mg/kg	0.069	UJ	0.08	UJ	0.072	UJ	0.062	U	0.065	U	0.029	U
1,2,4-Trichlorobenzene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
1,2,4-Trimethylbenzene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
1,2-Dibromo-3-chloropropane	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
1,2-Dibromoethane	mg/kg	0.028	U	0.032	U	0.029	U	0.025	U	0.026	U	0.012	U
1,2-Dichlorobenzene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
1,2-Dichloroethane	mg/kg	0.0069	U	0.008	U	0.0072	U	0.0062	U	0.0065	U	0.0029	U
1,2-Dichloropropane	mg/kg	0.024	U	0.028	U	0.025	U	0.022	U	0.023	U	0.01	U
1,3,5-Trimethylbenzene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
1,3-Dichlorobenzene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
1,3-Dichloropropane	mg/kg	0.035	U	0.04	U	0.036	U	0.031	U	0.033	U	0.014	U
1,4-Dichlorobenzene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
1,4-Dioxane	mg/kg	3.5	U	4	U	3.6	U	3.1	U	3.3	U	1.4	U
2,2-Dichloropropane	mg/kg	0.035	U	0.04	U	0.036	U	0.031	U	0.033	U	0.014	U
2-Butanone	mg/kg	0.069	U	0.08	U	0.072	U	0.064		0.065	U	0.03	
2-Hexanone	mg/kg	0.069	U	0.08	U	0.072	U	0.062	U	0.065	U	0.029	U
4-Methyl-2-pentanone	mg/kg	0.069	U	0.08	U	0.072	U	0.062	U	0.065	U	0.029	U
Acetone	mg/kg	0.069	UJ	0.28	J	0.22	J	0.21		0.19		0.098	
Benzene	mg/kg	0.0069	U	0.008	U	0.0082	J	0.0062	U	0.0065	U	0.0029	U
Bromobenzene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
Bromochloromethane	mg/kg	0.035	U	0.04	U	0.036	U	0.031	U	0.033	U	0.014	U
Bromodichloromethane	mg/kg	0.0069	U	0.008	U	0.0072	U	0.0062	U	0.0065	U	0.0029	U
Bromoform	mg/kg	0.028	U	0.032	U	0.029	U	0.025	U	0.026	U	0.012	U
Bromomethane	mg/kg	0.014	U	0.016	U	0.014	U	0.012	U	0.013	U	0.0058	U
Carbon disulfide	mg/kg	0.069	UJ	0.083	J	0.15	J	0.062	U	0.065	U	0.029	U
Carbon tetrachloride	mg/kg	0.0069	U	0.008	U	0.0072	U	0.0062	U	0.0065	U	0.0029	U
Chlorobenzene	mg/kg	0.0069	UJ	0.008	UJ	0.0072	UJ	0.0062	U	0.0065	U	0.0029	U
Chloroethane	mg/kg	0.014	U	0.033	J	0.08	J	0.012	U	0.013	U	0.0058	U
Chloroform	mg/kg	0.01	U	0.012	U	0.011	U	0.0092	U	0.0098	U	0.0043	U
Chloromethane	mg/kg	0.035	U	0.04	U	0.036	U	0.031	U	0.033	U	0.014	U
Dibromochloromethane	mg/kg	0.0069	U	0.008	U	0.0072	U	0.0062	U	0.0065	U	0.0029	U
Dibromomethane	mg/kg	0.069	U	0.08	U	0.072	U	0.062	U	0.065	U	0.029	U
Dichlorodifluoromethane	mg/kg	0.069	U	0.08	U	0.072	U	0.062	U	0.065	U	0.029	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-211-0-0.5-Re		SD-211-1-2		SD-211-1-2-Re		SD-212-0-0.5		SD-212-0-0.5-Re		SD-212-1-2	
SAMPLING DATE		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05	
LAB SAMPLE ID		L0505937-01		L0505937-02		L0505937-02		L0505867-01		L0505867-01		L0505867-02	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.035	U	0.04	U	0.036	U	0.031	U	0.033	U	0.014	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.028	U	0.032	U	0.029	U	0.025	U	0.026	U	0.012	U
Ethylbenzene	mg/kg	0.0069	UJ	0.008	UJ	0.0072	UJ	0.0062	U	0.0065	U	0.0029	U
Hexachlorobutadiene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
Isopropyl Ether	mg/kg	0.028	U	0.032	U	0.029	U	0.025	U	0.026	U	0.012	U
Isopropylbenzene	mg/kg	0.0069	UJ	0.008	UJ	0.0072	UJ	0.0062	U	0.0065	U	0.0029	U
Methyl tert butyl ether	mg/kg	0.014	U	0.016	U	0.014	U	0.012	U	0.013	U	0.0058	U
Methylene chloride	mg/kg	0.069	U	0.08	U	0.072	U	0.062	U	0.065	U	0.029	U
Naphthalene	mg/kg	0.035	U	0.04	U	0.036	U	0.031	U	0.033	U	0.014	U
Styrene	mg/kg	0.014	UJ	0.016	UJ	0.014	UJ	0.012	U	0.013	U	0.0058	U
Tertiary-Amyl Methyl Ether	mg/kg	0.028	U	0.032	U	0.029	U	0.025	U	0.026	U	0.012	U
Tetrachloroethene	mg/kg	0.21	J	0.032	J	0.032	J	0.015		0.03		0.012	
Tetrahydrofuran	mg/kg	0.14	U	0.16	U	0.14	U	0.12	U	0.13	U	0.058	U
Toluene	mg/kg	0.029	J	0.035	J	0.041	J	0.011		0.0098	U	0.0043	U
Trichloroethene	mg/kg	0.069	J	0.026	J	0.025	J	0.0083		0.01		0.0043	
Trichlorofluoromethane	mg/kg	0.035	U	0.04	U	0.036	U	0.031	U	0.033	U	0.014	U
Vinyl chloride	mg/kg	0.014	U	0.03	J	0.054	J	0.012	U	0.013	U	0.0058	U
cis-1,2-Dichloroethene	mg/kg	0.037	J	0.12	J	0.1	J	0.0062	U	0.0065	U	0.0051	
cis-1,3-Dichloropropene	mg/kg	0.0069	U	0.008	U	0.0072	U	0.0062	U	0.0065	U	0.0029	U
n-Butylbenzene	mg/kg	0.0069	UJ	0.008	UJ	0.0072	UJ	0.0062	U	0.0065	U	0.0029	U
n-Propylbenzene	mg/kg	0.0069	UJ	0.008	UJ	0.0072	UJ	0.0062	U	0.0065	U	0.0029	U
o-Chlorotoluene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
o-Xylene	mg/kg	0.014	UJ	0.016	UJ	0.014	UJ	0.012	U	0.013	U	0.0058	U
p-Chlorotoluene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
p-Isopropyltoluene	mg/kg	0.049	J	0.047	J	0.12	J	0.0062	U	0.0065	U	0.0029	U
p/m-Xylene	mg/kg	0.014	UJ	0.016	UJ	0.014	UJ	0.012	U	0.013	U	0.0058	U
sec-Butylbenzene	mg/kg	0.0069	UJ	0.008	UJ	0.0072	UJ	0.0062	U	0.0065	U	0.0029	U
tert-Butylbenzene	mg/kg	0.035	UJ	0.04	UJ	0.036	UJ	0.031	U	0.033	U	0.014	U
trans-1,2-Dichloroethene	mg/kg	0.01	U	0.012	U	0.011	U	0.0092	U	0.0098	U	0.0043	U
trans-1,3-Dichloropropene	mg/kg	0.0069	U	0.008	U	0.0072	U	0.0062	U	0.0065	U	0.0029	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-212-1-2-Re		SD-213-0-0.5		SD-213-0-0.5-Re		SD-213-1-2		SD-213-1-2-Re		SD-214-0-0.5	
SAMPLING DATE		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05	
LAB SAMPLE ID		L0505867-02		L0505867-03		L0505867-03		L0505867-04		L0505867-04		L0505867-05	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
1,1,1-Trichloroethane	mg/kg	0.0037	U	0.014		0.0058	U	0.0054	U	0.0062	U	0.0058	U
1,1,2,2-Tetrachloroethane	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
1,1,2-Trichloroethane	mg/kg	0.0056	U	0.01	U	0.0087	U	0.0082	U	0.0094	U	0.0088	U
1,1-Dichloroethane	mg/kg	0.0056	U	0.01	U	0.0087	U	0.0082	U	0.015		0.2	
1,1-Dichloroethene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0062	
1,1-Dichloropropene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
1,2,3-Trichlorobenzene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
1,2,3-Trichloropropane	mg/kg	0.037	U	0.066	U	0.058	U	0.054	U	0.062	U	0.058	U
1,2,4-Trichlorobenzene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
1,2,4-Trimethylbenzene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
1,2-Dibromo-3-chloropropane	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
1,2-Dibromoethane	mg/kg	0.015	U	0.026	U	0.023	U	0.022	U	0.025	U	0.023	U
1,2-Dichlorobenzene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
1,2-Dichloroethane	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
1,2-Dichloropropane	mg/kg	0.013	U	0.023	U	0.02	U	0.019	U	0.022	U	0.02	U
1,3,5-Trimethylbenzene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
1,3-Dichlorobenzene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
1,3-Dichloropropane	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
1,4-Dichlorobenzene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
1,4-Dioxane	mg/kg	1.8	U	3.3	U	2.9	U	2.7	U	3.1	U	2.9	U
2,2-Dichloropropane	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
2-Butanone	mg/kg	0.037	U	0.096		0.098		0.19		0.086		0.069	
2-Hexanone	mg/kg	0.037	U	0.066	U	0.058	U	0.054	U	0.062	U	0.058	U
4-Methyl-2-pentanone	mg/kg	0.037	U	0.066	U	0.058	U	0.054	U	0.062	U	0.058	U
Acetone	mg/kg	0.073		0.32		0.28		0.38		0.23		0.18	
Benzene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
Bromobenzene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
Bromochloromethane	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
Bromodichloromethane	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
Bromoform	mg/kg	0.015	U	0.026	U	0.023	U	0.022	U	0.025	U	0.023	U
Bromomethane	mg/kg	0.0074	U	0.013	U	0.012	U	0.011	U	0.012	U	0.012	U
Carbon disulfide	mg/kg	0.037	U	0.12		0.1		0.054	U	0.062	U	0.058	U
Carbon tetrachloride	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
Chlorobenzene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
Chloroethane	mg/kg	0.0074	U	0.013	U	0.012	U	0.011	U	0.012	U	0.047	
Chloroform	mg/kg	0.0056	U	0.01	U	0.0087	U	0.0082	U	0.0094	U	0.0088	U
Chloromethane	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
Dibromochloromethane	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
Dibromomethane	mg/kg	0.037	U	0.066	U	0.058	U	0.054	U	0.062	U	0.058	U
Dichlorodifluoromethane	mg/kg	0.037	U	0.066	U	0.058	U	0.054	U	0.062	U	0.058	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-212-1-2-Re		SD-213-0-0.5		SD-213-0-0.5-Re		SD-213-1-2		SD-213-1-2-Re		SD-214-0-0.5	
SAMPLING DATE		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05		31-MAY-05	
LAB SAMPLE ID		L0505867-02		L0505867-03		L0505867-03		L0505867-04		L0505867-04		L0505867-05	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.015	U	0.026	U	0.023	U	0.022	U	0.025	U	0.023	U
Ethylbenzene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
Hexachlorobutadiene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
Isopropyl Ether	mg/kg	0.015	U	0.026	U	0.023	U	0.022	U	0.025	U	0.023	U
Isopropylbenzene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
Methyl tert butyl ether	mg/kg	0.0074	U	0.013	U	0.012	U	0.011	U	0.012	U	0.012	U
Methylene chloride	mg/kg	0.037	U	0.066	U	0.058	U	0.054	U	0.062	U	0.058	U
Naphthalene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
Styrene	mg/kg	0.0074	U	0.013	U	0.012	U	0.011	U	0.012	U	0.012	U
Tertiary-Amyl Methyl Ether	mg/kg	0.015	U	0.026	U	0.023	U	0.022	U	0.025	U	0.023	U
Tetrachloroethene	mg/kg	0.0037	U	0.056		0.011		0.0054	U	0.0062	U	0.012	
Tetrahydrofuran	mg/kg	0.074	U	0.13	U	0.12	U	0.11	U	0.12	U	0.12	U
Toluene	mg/kg	0.0056	U	0.02		0.014		0.0082	U	0.0094	U	0.0088	U
Trichloroethene	mg/kg	0.0037	U	0.038		0.0096		0.0054	U	0.0062	U	0.012	
Trichlorofluoromethane	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
Vinyl chloride	mg/kg	0.0074	U	0.013	U	0.012	U	0.011	U	0.012	U	0.072	
cis-1,2-Dichloroethene	mg/kg	0.0044		0.024		0.012		0.018		0.018		0.17	
cis-1,3-Dichloropropene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
n-Butylbenzene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
n-Propylbenzene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
o-Chlorotoluene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
o-Xylene	mg/kg	0.0074	U	0.013	U	0.012	U	0.011	U	0.012	U	0.012	U
p-Chlorotoluene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
p-Isopropyltoluene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
p/m-Xylene	mg/kg	0.0074	U	0.013	U	0.012	U	0.011	U	0.012	U	0.012	U
sec-Butylbenzene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U
tert-Butylbenzene	mg/kg	0.018	U	0.033	U	0.029	U	0.027	U	0.031	U	0.029	U
trans-1,2-Dichloroethene	mg/kg	0.0056	U	0.01	U	0.0087	U	0.0082	U	0.0094	U	0.0088	U
trans-1,3-Dichloropropene	mg/kg	0.0037	U	0.0066	U	0.0058	U	0.0054	U	0.0062	U	0.0058	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-214-0-0.5-Re		SD-214-1-2		SD-214-1-2-Re		TRIP BLANK (LOW)		TRIP BLANK (HIGH)		TRIP BLANK (HIGH)	
SAMPLING DATE		31-MAY-05		31-MAY-05		31-MAY-05		02-JUN-05		02-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505867-05		L0505867-06		L0505867-06		L0505996-22		L0505996-23		L0505937-33	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
1,1,1-Trichloroethane	mg/kg	0.008		0.085		0.018		0.001	U	0.05	U	0.05	U
1,1,2,2-Tetrachloroethane	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
1,1,2-Trichloroethane	mg/kg	0.0076	U	0.018	U	0.017	U	0.0015	U	0.075	U	0.075	U
1,1-Dichloroethane	mg/kg	0.1		0.74		0.68		0.0015	U	0.075	U	0.075	U
1,1-Dichloroethene	mg/kg	0.005	U	0.13		0.1		0.001	U	0.05	U	0.05	U
1,1-Dichloropropene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
1,2,3-Trichlorobenzene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
1,2,3-Trichloropropane	mg/kg	0.05	U	0.12	U	0.12	U	0.01	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
1,2,4-Trimethylbenzene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
1,2-Dibromo-3-chloropropane	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
1,2-Dibromoethane	mg/kg	0.02	U	0.048	U	0.046	U	0.004	U	0.2	U	0.2	U
1,2-Dichlorobenzene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
1,2-Dichloroethane	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
1,2-Dichloropropane	mg/kg	0.018	U	0.042	U	0.041	U	0.0035	U	0.18	U	0.18	U
1,3,5-Trimethylbenzene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
1,3-Dichlorobenzene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
1,3-Dichloropropane	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
1,4-Dichlorobenzene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
1,4-Dioxane	mg/kg	2.5	U	6	U	5.8	U	0.5	U	25	U	25	U
2,2-Dichloropropane	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
2-Butanone	mg/kg	0.053		0.18		0.27		0.01	U	0.5	U	0.5	U
2-Hexanone	mg/kg	0.05	U	0.12	U	0.12	U	0.01	U	0.5	U	0.5	U
4-Methyl-2-pentanone	mg/kg	0.05	U	0.12	U	0.12	U	0.01	U	0.5	U	0.5	U
Acetone	mg/kg	0.14		0.48		0.81		0.01	U	0.5	U	0.5	U
Benzene	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
Bromobenzene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
Bromochloromethane	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
Bromodichloromethane	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
Bromoform	mg/kg	0.02	U	0.048	U	0.046	U	0.004	U	0.2	U	0.2	U
Bromomethane	mg/kg	0.01	U	0.024	U	0.023	U	0.002	UJ	0.1	UJ	0.1	UJ
Carbon disulfide	mg/kg	0.072		0.14		0.2		0.026		0.5	U	0.5	U
Carbon tetrachloride	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
Chlorobenzene	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
Chloroethane	mg/kg	0.032	0	0.024	U	0.023	U	0.002	U	0.1	U	0.1	U
Chloroform	mg/kg	0.0076	U	0.018	U	0.017	U	0.0015	U	0.075	U	0.075	U
Chloromethane	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
Dibromochloromethane	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
Dibromomethane	mg/kg	0.05	U	0.12	U	0.12	U	0.01	U	0.5	U	0.5	U
Dichlorodifluoromethane	mg/kg	0.05	U	0.12	U	0.12	U	0.01	U	0.5	U	0.5	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		SD-214-0-0.5-Re		SD-214-1-2		SD-214-1-2-Re		TRIP BLANK (LOW)		TRIP BLANK (HIGH)		TRIP BLANK (HIGH)	
SAMPLING DATE		31-MAY-05		31-MAY-05		31-MAY-05		02-JUN-05		02-JUN-05		01-JUN-05	
LAB SAMPLE ID		L0505867-05		L0505867-06		L0505867-06		L0505996-22		L0505996-23		L0505937-33	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.02	U	0.048	U	0.046	U	0.004	U	0.2	U	0.2	U
Ethylbenzene	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
Hexachlorobutadiene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
Isopropyl Ether	mg/kg	0.02	U	0.048	U	0.046	U	0.004	U	0.2	U	0.2	U
Isopropylbenzene	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
Methyl tert butyl ether	mg/kg	0.01	U	0.024	U	0.023	U	0.002	U	0.1	U	0.1	U
Methylene chloride	mg/kg	0.05	U	0.12	U	0.12	U	0.01	U	0.5	U	0.5	U
Naphthalene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
Styrene	mg/kg	0.01	U	0.024	U	0.023	U	0.002	U	0.1	U	0.1	U
Tertiary-Amyl Methyl Ether	mg/kg	0.02	U	0.048	U	0.046	U	0.004	U	0.2	U	0.2	U
Tetrachloroethene	mg/kg	0.043		0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
Tetrahydrofuran	mg/kg	0.1	U	0.24	U	0.23	U	0.02	U	1	U	1	U
Toluene	mg/kg	0.0076	U	0.018	U	0.017	U	0.0015	U	0.075	U	0.075	U
Trichloroethene	mg/kg	0.022		0.092		0.07		0.001	U	0.05	U	0.05	U
Trichlorofluoromethane	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
Vinyl chloride	mg/kg	0.01	U	0.063		0.044		0.002	U	0.1	U	0.1	U
cis-1,2-Dichloroethene	mg/kg	0.077		1		0.9		0.001	U	0.05	U	0.05	U
cis-1,3-Dichloropropene	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
n-Butylbenzene	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
n-Propylbenzene	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
o-Chlorotoluene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
o-Xylene	mg/kg	0.01	U	0.024	U	0.023	U	0.002	U	0.1	U	0.1	U
p-Chlorotoluene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
p-Isopropyltoluene	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
p/m-Xylene	mg/kg	0.01	U	0.024	U	0.023	U	0.002	U	0.1	U	0.1	U
sec-Butylbenzene	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U
tert-Butylbenzene	mg/kg	0.025	U	0.06	U	0.058	U	0.005	U	0.25	U	0.25	U
trans-1,2-Dichloroethene	mg/kg	0.0076	U	0.018	U	0.017	U	0.0015	U	0.075	U	0.075	U
trans-1,3-Dichloropropene	mg/kg	0.005	U	0.012	U	0.012	U	0.001	U	0.05	U	0.05	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		TRIP BLANK (LOW)		SD-43		SD-44		SD-09A		SD-46		SD-TRIB	
SAMPLING DATE		01-JUN-05		02-JUN-10		02-JUN-10		02-JUN-10		03-JUN-10		03-JUN-10	
LAB SAMPLE ID		L0505937-34		L1008325-01		L1008325-02		L1008325-03		L1008325-13		L1008325-15	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
1,1,1,2-Tetrachloroethane	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
1,1,1-Trichloroethane	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.029		0.018	U
1,1,2,2-Tetrachloroethane	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
1,1,2-Trichloroethane	mg/kg	0.0015	U	0.041	U	0.018	U	0.03	U	0.012	U	0.027	U
1,1-Dichloroethane	mg/kg	0.0015	U	0.041	U	0.018	U	0.03	U	0.012	U	0.027	U
1,1-Dichloroethene	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.035		0.018	U
1,1-Dichloropropene	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
1,2,3-Trichlorobenzene	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
1,2,3-Trichloropropane	mg/kg	0.01	U	0.27	U	0.12	U	0.2	U	0.078	U	0.18	U
1,2,4-Trichlorobenzene	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
1,2,4-Trimethylbenzene	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
1,2-Dibromo-3-chloropropane	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
1,2-Dibromoethane	mg/kg	0.004	U	0.11	U	0.049	U	0.082	U	0.031	U	0.073	U
1,2-Dichlorobenzene	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
1,2-Dichloroethane	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
1,2-Dichloropropane	mg/kg	0.0035	U	0.095	U	0.043	U	0.071	U	0.027	U	0.064	U
1,3,5-Trimethylbenzene	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
1,3-Dichlorobenzene	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
1,3-Dichloropropane	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
1,4-Dichlorobenzene	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
1,4-Dioxane	mg/kg	0.5	U	14	R	6.1	R	10	RJ	3.9	R	9.1	R
2,2-Dichloropropane	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
2-Butanone	mg/kg	0.01	U	0.28		0.36		0.2	U	0.15		0.31	
2-Hexanone	mg/kg	0.01	U	0.27	U	0.12	U	0.2	U	0.078	U	0.18	U
4-Methyl-2-pentanone	mg/kg	0.01	U	0.27	U	0.12	U	0.2	U	0.078	U	0.18	U
Acetone	mg/kg	0.01	U	1.7	J	1.8	J	0.73	UJ	0.62	J	1.3	UJ
Benzene	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
Bromobenzene	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
Bromochloromethane	mg/kg	0.005	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
Bromodichloromethane	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
Bromoform	mg/kg	0.004	U	0.11	U	0.049	U	0.082	U	0.031	U	0.073	U
Bromomethane	mg/kg	0.002	UJ	0.054	U	0.024	U	0.041	U	0.016	U	0.036	U
Carbon disulfide	mg/kg	0.016		1.4	UJ	0.61	UJ	1	U	0.39	UJ	0.91	UJ
Carbon tetrachloride	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
Chlorobenzene	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
Chloroethane	mg/kg	0.002	U	0.054	U	0.024	U	0.041	U	0.016	U	0.036	U
Chloroform	mg/kg	0.0015	U	0.041	U	0.018	U	0.03	U	0.012	U	0.027	U
Chloromethane	mg/kg	0.005	U	0.14	U	0.061	U	0.1	UJ	0.039	U	0.091	U
Dibromochloromethane	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.17		0.018	U
Dibromomethane	mg/kg	0.01	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
Dichlorodifluoromethane	mg/kg	0.01	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		TRIP BLANK (LOW)		SD-43		SD-44		SD-09A		SD-46		SD-TRIB	
SAMPLING DATE		01-JUN-05		02-JUN-10		02-JUN-10		02-JUN-10		03-JUN-10		03-JUN-10	
LAB SAMPLE ID		L0505937-34		L1008325-01		L1008325-02		L1008325-03		L1008325-13		L1008325-15	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035													
Ethyl ether	mg/kg	0.005	U	0.27	U	0.12	U	0.2	UJ	0.078	U	0.18	U
Ethyl-Tert-Butyl-Ether	mg/kg	0.004	U	0.27	U	0.12	U	0.2	UJ	0.078	U	0.18	U
Ethylbenzene	mg/kg	0.001	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
Hexachlorobutadiene	mg/kg	0.005	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
Isopropyl Ether	mg/kg	0.004	U	0.11	U	0.049	U	0.082	U	0.031	U	0.073	U
Isopropylbenzene	mg/kg	0.001	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
Methyl tert butyl ether	mg/kg	0.002	U	0.11	U	0.049	U	0.082	U	0.031	U	0.073	U
Methylene chloride	mg/kg	0.01	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
Naphthalene	mg/kg	0.005	U	0.054	U	0.024	U	0.041	UJ	0.016	U	0.036	U
Styrene	mg/kg	0.002	U	0.27	U	0.12	U	0.2	U	0.078	U	0.18	U
Tertiary-Amyl Methyl Ether	mg/kg	0.004	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
Tetrachloroethene	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
Tetrahydrofuran	mg/kg	0.02	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
Toluene	mg/kg	0.0015	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
Trichloroethene	mg/kg	0.001	U	0.054	U	0.024	U	0.041	U	0.016	U	0.036	U
Trichlorofluoromethane	mg/kg	0.005	U	0.054	U	0.024	U	0.041	U	0.016	U	0.036	U
Vinyl chloride	mg/kg	0.002	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
cis-1,2-Dichloroethene	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0082		0.018	U
cis-1,3-Dichloropropene	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
n-Butylbenzene	mg/kg	0.001	U	0.054	U	0.024	U	0.041	U	0.016	U	0.036	U
n-Propylbenzene	mg/kg	0.001	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
o-Chlorotoluene	mg/kg	0.005	U	0.11	U	0.049	U	0.082	U	0.031	U	0.073	U
o-Xylene	mg/kg	0.002	U	0.027	U	0.012	U	0.02	U	0.1		0.018	U
p-Chlorotoluene	mg/kg	0.005	U	0.54	U	0.24	U	0.41	UJ	0.16	U	0.36	U
p-Isopropyltoluene	mg/kg	0.001	U	0.041	U	0.018	U	0.03	U	0.015		0.027	U
p/m-Xylene	mg/kg	0.002	U	0.041	U	0.018	U	0.03	U	0.012	U	0.027	U
sec-Butylbenzene	mg/kg	0.001	U	0.027	U	0.012	U	0.02	U	0.0078	U	0.018	U
tert-Butylbenzene	mg/kg	0.005	U	0.027	U	0.012	U	0.02	U	0.065		0.018	U
trans-1,2-Dichloroethene	mg/kg	0.0015	U	0.14	U	0.061	U	0.1	U	0.039	U	0.091	U
trans-1,3-Dichloropropene	mg/kg	0.001	U	0.054	U	0.024	U	0.041	U	0.067		0.036	U

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-202		Trip Blank		Trip Blank		Trip Blank	
SAMPLING DATE		02-JUN-10		02-JUN-10		03-JUN-10		04-JUN-10	
LAB SAMPLE ID		L1008325-23		L1008325-04		L1008325-22		L1008325-25	
	Units		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035									
1,1,1,2-Tetrachloroethane	mg/kg	0.0052	U	0.5	U	0.5	U	0.014	U
1,1,1-Trichloroethane	mg/kg	0.44		0.075	U	0.075	U	0.0021	U
1,1,2,2-Tetrachloroethane	mg/kg	0.0052	U	0.075	U	0.075	U	0.0021	U
1,1,2-Trichloroethane	mg/kg	0.0078	U	0.05	U	0.05	U	0.0014	U
1,1-Dichloroethane	mg/kg	0.042		0.18	U	0.18	U	0.0049	U
1,1-Dichloroethene	mg/kg	0.036		0.05	U	0.05	U	0.0014	U
1,1-Dichloropropene	mg/kg	0.026	U	0.075	U	0.075	U	0.0021	U
1,2,3-Trichlorobenzene	mg/kg	0.026	U	0.05	U	0.05	U	0.0014	U
1,2,3-Trichloropropane	mg/kg	0.052	U	0.05	U	0.05	U	0.0014	U
1,2,4-Trichlorobenzene	mg/kg	0.026	U	0.25	U	0.2	U	0.0069	U
1,2,4-Trimethylbenzene	mg/kg	0.026	U	0.05	U	0.05	U	0.0014	U
1,2-Dibromo-3-chloropropane	mg/kg	0.026	U	0.05	U	0.05	U	0.0014	U
1,2-Dibromoethane	mg/kg	0.021	U	0.05	U	0.05	U	0.0014	U
1,2-Dichlorobenzene	mg/kg	0.026	U	0.05	U	0.05	U	0.0014	U
1,2-Dichloroethane	mg/kg	0.0052	U	0.05	U	0.05	U	0.0014	U
1,2-Dichloropropane	mg/kg	0.018	U	0.25	U	0.2	U	0.0069	U
1,3,5-Trimethylbenzene	mg/kg	0.026	U	0.2	U	0.2	U	0.0056	U
1,3-Dichlorobenzene	mg/kg	0.026	U	0.05	U	0.05	U	0.0014	U
1,3-Dichloropropane	mg/kg	0.026	U	0.05	U	0.05	U	0.0014	U
1,4-Dichlorobenzene	mg/kg	0.026	U	0.075	U	0.075	U	0.0021	U
1,4-Dioxane	mg/kg	2.6	RJ	0.05	U	0.05	U	0.0014	U
2,2-Dichloropropane	mg/kg	0.026	U	0.25	U	0.2	UJ	0.0069	U
2-Butanone	mg/kg	0.086		0.1	U	0.1	U	0.0028	U
2-Hexanone	mg/kg	0.052	U	0.1	U	0.1	U	0.0028	U
4-Methyl-2-pentanone	mg/kg	0.052	U	0.1	U	0.1	U	0.0028	U
Acetone	mg/kg	0.28	J	0.05	U	0.05	U	0.0014	U
Benzene	mg/kg	0.0052	U	0.075	U	0.075	U	0.0021	U
Bromobenzene	mg/kg	0.026	U	0.05	U	0.05	U	0.0014	U
Bromochloromethane	mg/kg	0.026	U	0.25	U	0.2	U	0.0069	U
Bromodichloromethane	mg/kg	0.0052	U	0.25	U	0.2	U	0.0069	U
Bromoform	mg/kg	0.021	U	0.25	U	0.2	U	0.0069	U
Bromomethane	mg/kg	0.01	U	0.1	U	0.1	UJ	0.0028	U
Carbon disulfide	mg/kg	0.26	UJ	0.1	U	0.1	U	0.0028	U
Carbon tetrachloride	mg/kg	0.0052	U	0.1	U	0.1	U	0.0028	U
Chlorobenzene	mg/kg	0.0052	U	0.05	U	0.05	U	0.0014	U
Chloroethane	mg/kg	0.01	U	0.5	U	0.2	UJ	0.014	U
Chloroform	mg/kg	0.025		0.5	U	0.2	U	0.014	U
Chloromethane	mg/kg	0.026	U	0.1	U	0.1	U	0.0028	U
Dibromochloromethane	mg/kg	0.2		0.5	U	0.5	UJ	0.014	U
Dibromomethane	mg/kg	0.0052	U	1.8	UJ	1.8	UJ	0.26	J
Dichlorodifluoromethane	mg/kg	0.0052	U	2.5	UJ	0.2	U	0.069	UJ

Table 6.5.3: Supplemental RFI Sediment Sampling Results - VOCs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SD-202		Trip Blank		Trip Blank		Trip Blank	
SAMPLING DATE		02-JUN-10		02-JUN-10		03-JUN-10		04-JUN-10	
LAB SAMPLE ID		L1008325-23		L1008325-04		L1008325-22		L1008325-25	
	Units		Qual		Qual		Qual		Qual
Volatile Organics by MCP 8260B/5035									
Ethyl ether	mg/kg	0.052	U	0.5	U	0.5	U	0.072	
Ethyl-Tert-Butyl-Ether	mg/kg	0.052	U	0.5	U	0.5	U	0.014	U
Ethylbenzene	mg/kg	0.026	U	0.5	U	0.5	U	0.014	U
Hexachlorobutadiene	mg/kg	0.0052	U	0.25	U	0.2	U	0.0069	U
Isopropyl Ether	mg/kg	0.021	U	1	U	0.2	UJ	0.028	U
Isopropylbenzene	mg/kg	0.026	U	0.25	U	0.25	U	0.0069	U
Methyl tert butyl ether	mg/kg	0.021	U	0.2	U	0.2	U	0.0056	U
Methylene chloride	mg/kg	0.0052	U	0.25	U	0.2	U	0.0069	U
Naphthalene	mg/kg	0.01	U	0.05	U	0.05	U	0.0014	U
Styrene	mg/kg	0.052	U	0.25	U	0.25	U	0.0069	U
Tertiary-Amyl Methyl Ether	mg/kg	0.026	U	0.05	U	0.05	U	0.0014	U
Tetrachloroethene	mg/kg	0.0052	U	0.05	U	0.05	U	0.0014	U
Tetrahydrofuran	mg/kg	0.0052	U	0.25	U	0.2	U	0.0069	U
Toluene	mg/kg	0.026	U	0.25	U	0.2	U	0.0069	U
Trichloroethene	mg/kg	0.01	U	0.25	U	0.2	U	0.0069	U
Trichlorofluoromethane	mg/kg	0.01	U	0.25	U	0.2	U	0.0069	U
Vinyl chloride	mg/kg	0.026	U	0.25	U	0.2	U	0.0069	U
cis-1,2-Dichloroethene	mg/kg	0.067		0.05	U	0.05	U	0.0014	U
cis-1,3-Dichloropropene	mg/kg	0.0052	U	0.05	U	0.05	U	0.0014	U
n-Butylbenzene	mg/kg	0.01	U	0.25	U	0.2	U	0.0069	U
n-Propylbenzene	mg/kg	0.026	U	0.05	U	0.05	U	0.0014	U
o-Chlorotoluene	mg/kg	0.021	U	0.25	U	0.2	U	0.0069	U
o-Xylene	mg/kg	1.8		0.25	U	0.2	U	0.0069	U
p-Chlorotoluene	mg/kg	0.1	U	0.25	U	0.2	U	0.0069	U
p-Isopropyltoluene	mg/kg	0.0078	U	0.25	U	0.2	U	0.0069	U
p/m-Xylene	mg/kg	0.0078	U	0.25	U	0.25	U	0.0069	U
sec-Butylbenzene	mg/kg	0.0052	U	0.2	U	0.2	U	0.0056	U
tert-Butylbenzene	mg/kg	0.92		0.2	U	0.2	U	0.0056	U
trans-1,2-Dichloroethene	mg/kg	0.026	U	0.2	U	0.2	U	0.0056	U
trans-1,3-Dichloropropene	mg/kg	0.01	U	25	RJ	25	RJ	0.69	R

U - Not Detected
J - Estimated value
R - Data Unusable
Loc. ID with "-Re" indicates a re-analysis by the lab

Table 6.5.4: Supplemental RFI Sediment Sampling Results - PCBs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-01		SD-02		SD-03		SD-04		SD-05		SD-09A
SAMPLING DATE		02-JUN-05		01-JUN-05		02-JUN-05		02-JUN-05		02-JUN-05		03-JUN-05
LAB SAMPLE ID		L0505996-04		L0505937-20		L0505996-11		L0505996-02		L0505996-20		L0506096-03
	Units		Qual		Qual		Qual		Qual		Qual	
Polychlorinated Biphenyls by MCP 8082												
Aroclor 1221	mg/kg	0.34	U	0.152	U	0.196	U	0.0412	U	0.0513	U	0.585
Aroclor 1232	mg/kg	0.34	U	0.152	U	0.196	U	0.0412	U	0.0513	U	0.585
Aroclor 1242/1016	mg/kg	0.34	U	0.152	U	0.196	U	0.0412	U	0.0513	U	0.585
Aroclor 1248	mg/kg	0.34	U	0.152	U	0.196	U	0.0412	U	0.0513	U	0.585
Aroclor 1254	mg/kg	0.34	U	0.152	U	0.196	U	0.0412	U	0.0513	U	0.585
Aroclor 1260	mg/kg	0.34	U	0.152	U	0.196	U	0.0412	U	0.0513	U	0.585
Aroclor 1262	mg/kg	0.34	U	0.152	U	0.196	U	0.0412	U	0.0513	U	0.585
Aroclor 1268	mg/kg	0.34	U	0.152	U	0.196	U	0.0412	U	0.0513	U	0.585

U - Not Detected
J - Estimated Value
Loc. ID with "-Re" - lab re-analysis.

Table 6.5.4: Supplemental RFI Sediment Sampling Results - PCBs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION			SD-10A		SD-41		SD-41DUP		SD-42		SD-43	
SAMPLING DATE			03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05	
LAB SAMPLE ID			L0506096-04		L0506096-05		L0506096-06		L0506096-07		L0506096-08	
	Units	Qual		Qual		Qual		Qual		Qual		Qual
Polychlorinated Biphenyls by MCP 8082												
Aroclor 1221	mg/kg	U	0.358	U	0.427	U	0.427	U	0.469	U	1.45	U
Aroclor 1232	mg/kg	U	0.358	U	0.427	U	0.427	U	0.469	U	1.45	U
Aroclor 1242/1016	mg/kg	U	0.358	U	0.427	U	0.427	U	0.469	U	1.45	U
Aroclor 1248	mg/kg	U	0.358	U	0.427	U	0.427	U	0.469	U	27.1	
Aroclor 1254	mg/kg	U	0.358	U	0.427	U	0.427	U	0.49		20	
Aroclor 1260	mg/kg	U	0.358	U	0.427	U	0.427	U	0.469	U	1.45	U
Aroclor 1262	mg/kg	U	0.358	U	0.427	U	0.427	U	0.469	U	1.45	U
Aroclor 1268	mg/kg	U	0.358	U	0.427	U	0.427	U	0.469	U	1.45	U

U - Not Detected
J - Estimated Value
Loc. ID with "-Re" - lab re-analysis.

Table 6.5.4: Supplemental RFI Sediment Sampling Results - PCBs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-44		SD-45		SD-46		SD-47		SD-47-Re	
SAMPLING DATE		03-JUN-05		02-JUN-05		02-JUN-05		31-MAY-05		31-MAY-05	
LAB SAMPLE ID		L0506096-19		L0506632-02		L0505996-06		L0505867-09		L0505867-09	
	Units		Qual	L0505996-08	Qual		Qual		Qual		Qual
Polychlorinated Biphenyls by MCP 8082											
Aroclor 1221	mg/kg	0.625	U	0.0833	U	0.0775	U	0.351	U	0.351	U
Aroclor 1232	mg/kg	0.625	U	0.0833	U	0.0775	U	0.351	U	0.351	U
Aroclor 1242/1016	mg/kg	0.625	U	0.0833	U	0.0775	U	0.351	U	0.351	U
Aroclor 1248	mg/kg	0.625	U	0.0833	U	0.0775	U	0.351	U	0.351	U
Aroclor 1254	mg/kg	0.625	U	0.0833	U	0.0775	U	0.351	U	0.351	U
Aroclor 1260	mg/kg	0.625	U	0.0833	U	0.0775	U	0.351	U	0.351	U
Aroclor 1262	mg/kg	0.625	U	0.0833	U	0.0775	U	0.351	U	0.351	U
Aroclor 1268	mg/kg	0.625	U	0.0833	U	0.0775	U	0.351	U	0.351	U

U - Not Detected
J - Estimated Value
Loc. ID with "-Re" - lab re-analysis.

Table 6.5.4: Supplemental RFI Sediment Sampling Results - PCBs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-48		SD-49		SD-49-Re		SD-50		SD-51		SD-EB3
SAMPLING DATE		02-JUN-05		31-MAY-05		31-MAY-05		31-MAY-05		02-JUN-05		03-JUN-05
LAB SAMPLE ID		L0505996-15		L0505937-04		L0505937-04		L0505867-08		L0505996-17		L0506096-1
	Units		Qual		Qual		Qual		Qual		Qual	
Polychlorinated Biphenyls by MCP 8082												
Aroclor 1221	mg/kg	0.877	U	0.196	UJ	0.196	UJ	0.278	U	0.0513	U	0.255
Aroclor 1232	mg/kg	0.877	U	0.196	UJ	0.196	UJ	0.278	U	0.0513	U	0.255
Aroclor 1242/1016	mg/kg	0.877	U	0.196	UJ	0.196	UJ	0.278	U	0.0513	U	0.255
Aroclor 1248	mg/kg	0.877	U	0.196	UJ	0.196	UJ	0.278	U	0.0513	U	0.255
Aroclor 1254	mg/kg	0.877	U	0.196	UJ	0.196	UJ	0.278	U	0.0513	U	0.255
Aroclor 1260	mg/kg	0.877	U	0.196	UJ	0.196	UJ	0.278	U	0.0513	U	0.255
Aroclor 1262	mg/kg	0.877	U	0.196	UJ	0.196	UJ	0.278	U	0.0513	U	0.255
Aroclor 1268	mg/kg	0.877	U	0.196	UJ	0.196	UJ	0.278	U	0.0513	U	0.255

U - Not Detected
J - Estimated Value
Loc. ID with "-Re" - lab re-analysis.

Table 6.5.4: Supplemental RFI Sediment Sampling Results - PCBs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

			S-319		S-324		S-320		S-321		S-322	
LOCATION			SD-319		SD-319 DUP		SD-320		SD-321		SD-322	
SAMPLING DATE			28-OCT-10		28-OCT-10		28-OCT-10		28-OCT-10		28-OCT-10	
LAB SAMPLE ID		?	L1017193-09		L1017193-13		L1017193-10		L1017193-11		L1017193-12	
	Units	Qual		Qual		Qual		Qual		Qual		Qual
Polychlorinated Biphenyls by MCP 8082												
Aroclor 1221	mg/kg	U	0.0682	U	0.0642	U	0.101	U	0.29	U	0.164	U
Aroclor 1232	mg/kg	U	0.0682	U	0.0642	U	0.101	U	0.29	U	0.164	U
Aroclor 1242/1016	mg/kg	U	0.0682	U	0.0642	U	0.101	U	0.29	U	0.164	U
Aroclor 1248	mg/kg	U	0.0682	U	0.0642	U	0.101	U	0.29	U	0.164	U
Aroclor 1254	mg/kg	U	0.0719		0.0642	U	0.101	U	0.29	U	0.164	U
Aroclor 1260	mg/kg	U	0.0682	U	0.0642	U	0.101	U	0.29	U	0.164	U
Aroclor 1262	mg/kg	U	0.0682	U	0.0642	U	0.101	U	0.29	U	0.164	U
Aroclor 1268	mg/kg	U	0.0682	U	0.0642	U	0.101	U	0.29	U	0.164	U

U - Not Detected
J - Estimated Value
Loc. ID with "-Re" - lab re-analysis.

Table 6.5.5: Supplemental RFI Sediment Sampling Results - SEM/AVS
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		**SD-01**		**SD-02**		**SD-03**		**SD-04**		**SD-05**	
SAMPLING DATE		**02-JUN-05**		**01-JUN-05**		**02-JUN-05**		**02-JUN-05**		**02-JUN-05**	
LAB SAMPLE ID		**L0505995-02**		**L0505936-02**		**L0505995-04**		**L0505995-01**		**L0505995-07**	
	Units		**Qual**		**Qual**		**Qual**		**Qual**		**Qual**
Solids, Total	%	9.8		22		17		81		65	
Sulfide, Acid Volatile	umoles/gm	36.7		20.8		0.294	U	0.0617	U	0.312	
Simultaneously Extracted Metals											
Antimony, Total	umoles/gm	0.205	U	0.088	U	0.113	U	0.0246	U	0.0292	U
Cadmium, Total	**umoles/gm**	**0.705**		**0.328**		**0.015**		**0.013**		**0.094**	
Chromium, Total	umoles/gm	0.06		0.087		0.057		0.024		0.026	
Copper, Total	**umoles/gm**	**0.251**		**0.588**		**0.313**		**0.031**		**0.109**	
Lead, Total	**umoles/gm**	**0.614**		**0.847**		**0.189**		**0.043**		**0.117**	
Mercury, Total	umoles/gm	0.0012468	U	0.00053444	U	0.00068517	U	0.00014938	U	0.00017754	U
Nickel, Total	**umoles/gm**	**0.238**		**0.187**		**0.177**		**0.0204**	**U**	**0.0243**	**U**
Silver, Total	**umoles/gm**	**NA**		**NA**		**NA**		**NA**		**NA**	
Zinc, Total	**umoles/gm**	**2.34**		**1.56**		**0.273**	**U**	**0.171**	**U**	**0.273**	**U**
SEM/AVS Ratio *		**0.11**		**0.17**		**2.82**		**2.96**		**1.50**	

U - Not Detected
J - Estimated Value
NA - Not analayzed
*** - only includes metals in bold**

Table 6.5.5: Supplemental RFI Sediment Sampling Results - SEM/AVS
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		**SD-09A**		**SD-10A**		**SD-41**		**SD-41DUP**		**SD-42**	
SAMPLING DATE		**03-JUN-05**		**03-JUN-05**		**03-JUN-05**		**03-JUN-05**		**03-JUN-05**	
LAB SAMPLE ID		**L0506094-01**		**L0506094-02**		**L0506094-03**		**L0506094-04**		**L0506094-05**	
	Units		**Qual**		**Qual**		**Qual**		**Qual**		**Qual**
Solids, Total	%	5.7		9.3		7.8		7.8		7.1	
Sulfide, Acid Volatile	umoles/gm	11.7		2.05		7.76		8.49		10.7	
Simultaneously Extracted Metals											
Antimony, Total	umoles/gm	0.353	U	0.206	U	0.244	U	0.261	U	0.281	U
Cadmium, Total	**umoles/gm**	**0.148**		**0.021**		**0.719**		**0.738**		**2.05**	
Chromium, Total	umoles/gm	0.0827	U	0.14		0.067	J	0.102	J	0.329	
Copper, Total	**umoles/gm**	**0.61**		**0.51**		**0.584**		**0.673**		**2.07**	
Lead, Total	**umoles/gm**	**1.84**		**1.06**		**0.879**		**0.92**		**1.3**	
Mercury, Total	umoles/gm	0.0021436	U	0.0012525	U	0.0014795	U	0.001582	U	0.0017042	U
Nickel, Total	**umoles/gm**	**0.293**	**U**	**0.171**	**U**	**0.202**	**U**	**0.216**	**U**	**0.233**	**U**
Silver, Total	**umoles/gm**	**NA**		**NA**		**NA**		**NA**		**NA**	
Zinc, Total	**umoles/gm**	**6.12**		**1.62**		**3.7**		**3.87**		**5.56**	
SEM/AVS Ratio *		**0.76**		**1.61**		**0.77**		**0.74**		**1.04**	

U - Not Detected
J - Estimated Value
NA - Not analayzed
*** - only includes metals in bold**

Table 6.5.5: Supplemental RFI Sediment Sampling Results - SEM/AVS
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		**SD-43**		**SD-44**		**SD-45**		**SD-46**		**SD-47**	
SAMPLING DATE		**03-JUN-05**		**03-JUN-05**		**02-JUN-05**		**02-JUN-05**		**31-MAY-05**	
LAB SAMPLE ID		**L0506094-06**		**L0506094-07**		**L0506636-01**		**L0505995-03**		**L0505871-02**	
	Units		**Qual**		**Qual**		**Qual**		**Qual**		**Qual**
Solids, Total	%	6.9		16		40		43		9.6	
Sulfide, Acid Volatile	umoles/gm	10.5		2.04		0.92		0.116	U	5.97	
Simultaneously Extracted Metals											
Antimony, Total	umoles/gm	0.289	U	0.119	U	0.0503	U	0.0455	U	0.206	U
Cadmium, Total	**umoles/gm**	**3.19**		**0.586**		**0.018**		**0.02**		**0.176**	
Chromium, Total	umoles/gm	0.203		0.102		0.032		0.028		0.13	
Copper, Total	**umoles/gm**	**1.5**		**0.437**		**0.13**		**0.097**		**0.549**	
Lead, Total	**umoles/gm**	**0.924**		**0.33**		**0.049**		**0.094**		**0.784**	
Mercury, Total	umoles/gm	0.0017536	U	0.00072125	U	0.00030547	U	0.00027604	U	0.0012483	U
Nickel, Total	**umoles/gm**	**0.24**	**U**	**0.0986**	**U**	**0.0418**	**U**	**0.061**		**0.26**	
Silver, Total	**umoles/gm**	**NA**		**NA**		**NA**		**NA**		**NA**	
Zinc, Total	**umoles/gm**	**4.44**		**1.12**		**0.202**		**1.06**		**1.79**	
SEM/AVS Ratio *		**0.97**		**1.24**		**0.46**		**11.48**		**0.60**	

U - Not Detected
J - Estimated Value
NA - Not analayzed
*** - only includes metals in bold**

Table 6.5.5: Supplemental RFI Sediment Sampling Results - SEM/AVS
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		**SD-48**		**SD-49**		**SD-50**		**SD-51**		**SD-43**	
SAMPLING DATE		**02-JUN-05**		**31-MAY-05**		**31-MAY-05**		**02-JUN-05**		**03-JUN-10**	
LAB SAMPLE ID		**L0505995-05**		**L0505936-01**		**L0505871-01**		**L0505995-06**		**L1008325-01**	
	Units		**Qual**		**Qual**		**Qual**		**Qual**		**Qual**
Solids, Total	%	19		17		11		65		7	
Sulfide, Acid Volatile	umoles/gm	0.263	U	21.8		10.1		8.94		5.84	U
Simultaneously Extracted Metals											
Antimony, Total	umoles/gm	0.1	U	0.117	U	0.183	U	0.0301	U	NA	
Cadmium, Total	**umoles/gm**	**0.012**		**0.396**		**1.02**		**0.059**		**3.85**	
Chromium, Total	umoles/gm	0.0234	U	0.116		0.118		0.163		NA	
Copper, Total	**umoles/gm**	**0.069**		**0.44**		**0.66**		**0.163**		**1.72**	
Lead, Total	**umoles/gm**	**0.059**		**0.545**		**0.84**		**0.125**		**0.882**	
Mercury, Total	umoles/gm	0.00060737	U	0.00071178	U	0.0011108	U	0.00018261	U	NA	
Nickel, Total	**umoles/gm**	**0.103**		**0.265**		**0.397**		**0.027**		**0.319**	**U**
Silver, Total	**umoles/gm**	**NA**		**NA**		**NA**		**NA**		**0.262**	
Zinc, Total	**umoles/gm**	**0.0932**	**U**	**1.54**		**2.78**		**0.464**	**U**	**4.61**	
SEM/AVS Ratio *		**1.10**		**0.15**		**0.56**		**0.07**		**>1**	

U - Not Detected
J - Estimated Value
NA - Not analayzed
*** - only includes metals in bold**

Table 6.5.5: Supplemental RFI Sediment Sampling Results - SEM/AVS
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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LOCATION		**SD-44**		**SD-09A**		**SD-48**		**SD-47**		**SD-48 + 200' DS SD-61**		**SD-48 + 200' US SD-60**	
SAMPLING DATE		**02-JUN-10**		**02-JUN-10**		**03-JUN-10**		**03-JUN-10**		**03-JUN-10**		**03-JUN-10**	
LAB SAMPLE ID		**L1008325-02**		**L1008325-03**		**L1008325-05**		**L1008325-07**		**L1008325-01**		**L1008325-11**	
	Units		**Qual**		**Qual**		**Qual**		**Qual**		**Qual**		**Qual**
Solids, Total	%	8		7		11		10		16		12	
Sulfide, Acid Volatile	umoles/gm	6.12		5.15	U	31		3.68	U	29.7		3.1	
Simultaneously Extracted Metals													
Antimony, Total	umoles/gm	NA		NA		NA		NA		NA		NA	
Cadmium, Total	**umoles/gm**	**1.34**		**0.194**		**0.351**		**0.356**		**0.293**		**0.402**	
Chromium, Total	umoles/gm	NA		NA		NA		NA		NA		NA	
Copper, Total	**umoles/gm**	**0.891**		**0.813**		**0.368**		**0.389**		**0.229**		**0.424**	
Lead, Total	**umoles/gm**	**0.614**		**1.05**		**0.435**		**0.451**		**0.365**		**0.417**	
Mercury, Total	umoles/gm	NA		NA		NA		NA		NA		NA	
Nickel, Total	**umoles/gm**	**0.195**	**U**	**0.281**	**U**	**0.346**		**0.435**		**0.315**		**0.442**	
Silver, Total	**umoles/gm**	**0.0508**		**0.0077**	**U**	**0.0107**		**0.0232**		**0.0054**		**0.0177**	
Zinc, Total	**umoles/gm**	**3.46**		**4.43**		**1.72**		**2.18**		**1.58**		**1.66**	
SEM/AVS Ratio *		**1.04**		**> 1**		**0.104**		**> 1**		**0.094**		**1.09**	

U - Not Detected
J - Estimated Value
NA - Not analayzed
*** - only includes metals in bold**

Table 6.5.5: Supplemental RFI Sediment Sampling Results - SEM/AVS
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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						Trib to Sawmill Brk Bkgd						
LOCATION		**SD-46**		**SD-46 DUP**		**SD-TRIB**		**SD-202**		**SD-214**		**SD-50**
SAMPLING DATE		**03-JUN-10**		**03-JUN-10**		**03-JUN-10**		**04-JUN-10**		**04-JUN-10**		**04-JUN-10**
LAB SAMPLE ID		**L1008325-13**		**L1008325-28**		**L1008325-15**		**L1008325-23**		**L1008325-24**		**L1013390-01**
	Units		**Qual**		**Qual**		**Qual**		**Qual**		**Qual**		**Qual**
Solids, Total	%	21		21		10		23		17		19.2	
Sulfide, Acid Volatile	umoles/gm	1.74		1.79		3.27	U	1.37		5.39		5.75	
Simultaneously Extracted Metals													
Antimony, Total	umoles/gm	NA		NA		NA		NA		NA		NA	
Cadmium, Total	**umoles/gm**	**0.132**		**0.144**		**0.2**		**0.137**		**0.0281**		**0.253**	
Chromium, Total	umoles/gm	NA		NA		NA		NA		NA		NA	
Copper, Total	**umoles/gm**	**0.192**		**0.181**		**0.33**	**U**	**0.188**		**0.191**	**U**	**0.281**	**U**
Lead, Total	**umoles/gm**	**0.207**		**0.235**		**0.352**		**0.256**		**0.319**		**0.369**	
Mercury, Total	umoles/gm	NA		NA		NA		NA		NA		NA	
Nickel, Total	**umoles/gm**	**0.202**		**0.168**		**0.642**		**0.146**		**0.152**		**0.236**	
Silver, Total	**umoles/gm**	**0.0082**		**0.0071**		**0.0149**		**0.0191**		**0.0028**		**0.0187**	
Zinc, Total	**umoles/gm**	**0.922**		**0.0704**		**1.28**		**0.791**		**1.66**		**1.3**	
SEM/AVS Ratio *		**0.955**		**0.987**		**NC**		**1.12**		**0.401**		**0.427**	

U - Not Detected
J - Estimated Value
NA - Not analayzed
*** - only includes metals in bold**

Table 6.5.6: Supplemental RFI Sediment Sampling Results - VPH/EPH
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

LOCATION		SD-09A		SD-09A-Re		SD-10A		SD-41		SD-41DUP		SD-42	
SAMPLING DATE		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05	
LAB SAMPLE ID		L0506096-03		L0506096-03		L0506096-04		L0506096-05		L0506096-06		L0506096-07	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Petroleum Hydrocarbons													
Benzene	mg/kg	3.66	UJ	3.66	UJ	2.47	U	2.65	U	2.58	U	2.8	UJ
C5-C8 Aliphatics	mg/kg	91.5	UJ	91.5	UJ	61.8	U	66.2	U	64.4	U	70	UJ
C5-C8 Aliphatics, Adjusted	mg/kg	91.5	UJ	91.5	UJ	61.8	U	66.2	U	64.4	U	70	U
C9-C10 Aromatics	mg/kg	91.5	UJ	91.5	UJ	61.8	U	66.2	U	64.4	U	70	UJ
C9-C12 Aliphatics	mg/kg	91.5	UJ	91.5	UJ	61.8	U	66.2	U	64.4	U	70	UJ
C9-C12 Aliphatics, Adjusted	mg/kg	91.5	UJ	91.5	UJ	61.8	U	66.2	U	64.4	U	70	U
Ethylbenzene	mg/kg	3.66	UJ	3.66	UJ	2.47	U	2.65	U	2.58	U	2.8	UJ
Methyl tert butyl ether	mg/kg	5.49	UJ	5.49	UJ	3.71	U	3.97	U	3.87	U	4.2	U
Naphthalene	mg/kg	18.3	UJ	18.3	UJ	12.4	U	13.2	U	12.9	U	14	U
Toluene	mg/kg	3.66	UJ	3.66	UJ	2.47	U	2.65	U	2.58	U	2.8	UJ
o-Xylene	mg/kg	3.66	UJ	3.66	UJ	2.47	U	2.65	U	2.58	U	2.8	UJ
p/m-Xylene	mg/kg	3.66	UJ	3.66	UJ	2.47	U	2.65	U	2.58	U	2.8	UJ
EPH with MS Targets													
2-Methylnaphthalene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Acenaphthene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Acenaphthylene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Anthracene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Benzo(a)anthracene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Benzo(a)pyrene	mg/kg	0.234	U			0.287	U	0.342	U	0.342	U	0.376	U
Benzo(b)fluoranthene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Benzo(ghi)perylene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Benzo(k)fluoranthene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
C11-C22 Aromatics	mg/kg	117	U			202		121		122		165	
C11-C22 Aromatics, Adjusted	mg/kg	117	U			200		120		120		163	
C19-C36 Aliphatics	mg/kg	117	U			373		140		171		316	
C9-C18 Aliphatics	mg/kg	117	U			71.7	U	85.5	U	85.5	U	113	
Chrysene	mg/kg	0.468	U			0.475		0.342	U	0.342	U	0.376	U
Dibenzo(a,h)anthracene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Fluoranthene	mg/kg	0.468	U			0.859		0.638		0.682		0.698	
Fluorene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Indeno(1,2,3-cd)Pyrene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Naphthalene	mg/kg	0.468	U			0.287	U	0.342	U	0.342	U	0.376	U
Phenanthrene	mg/kg	0.468	U			0.32		0.342	U	0.342	U	0.376	U
Pyrene	mg/kg	0.468	U			0.619		0.476		0.533		0.527	

U - Not Detected
J - Estimated Value
Loc. ID with "-Re" suffix - Lab re-analysis.
Equipment blank SD-EB3 reported in units of µg/l.

Table 6.5.6: Supplemental RFI Sediment Sampling Results - VPH/EPH
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

LOCATION		SD-42-Re		SD-43		SD-43-Re		SD-44		SD-44-Re		SD-EB3	
SAMPLING DATE		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05		03-JUN-05	
LAB SAMPLE ID		L0506096-07		L0506096-08		L0506096-08		L0506096-19		L0506096-19		L0506096-12	
	Units		Qual		Qual		Qual		Qual		Qual		Qual
Volatile Petroleum Hydrocarbons													
Benzene	mg/kg	2.8	UJ	2.92	UJ	2.92	UJ	1.13	UJ	1.13	UJ		
C5-C8 Aliphatics	mg/kg	70	UJ	72.9	UJ	72.9	UJ	28.4	UJ	28.4	UJ		
C5-C8 Aliphatics, Adjusted	mg/kg	70	U	72.9	UJ	72.9	UJ	28.4	UJ	28.4	UJ		
C9-C10 Aromatics	mg/kg	70	UJ	72.9	UJ	72.9	UJ	28.4	UJ	28.4	UJ		
C9-C12 Aliphatics	mg/kg	70	UJ	72.9	UJ	72.9	UJ	28.4	UJ	28.4	UJ		
C9-C12 Aliphatics, Adjusted	mg/kg	70	U	72.9	UJ	72.9	UJ	28.4	UJ	28.4	UJ		
Ethylbenzene	mg/kg	2.8	UJ	2.92	UJ	2.92	UJ	1.13		1.13	UJ		
Methyl tert butyl ether	mg/kg	4.2	U	4.37	UJ	4.37	UJ	1.7	UJ	1.7	UJ		
Naphthalene	mg/kg	14	U	14.6	UJ	14.6	UJ	5.67	UJ	5.67	UJ		
Toluene	mg/kg	2.8	UJ	2.92	UJ	2.92	UJ	1.13	UJ	1.13	UJ		
o-Xylene	mg/kg	2.8	UJ	2.92	UJ	2.92	UJ	1.13	UJ	1.13	UJ		
p/m-Xylene	mg/kg	2.8	UJ	2.92	UJ	2.92	UJ	1.13	UJ	1.13	UJ		
EPH with MS Targets													
2-Methylnaphthalene	mg/kg			0.386	U			0.167	U			0.408	U
Acenaphthene	mg/kg			0.386	U			0.167	U			0.408	U
Acenaphthylene	mg/kg			0.386	U			0.167	U			0.408	U
Anthracene	mg/kg			0.386	U			0.167	U			0.408	U
Benzo(a)anthracene	mg/kg			0.878				0.187				0.408	U
Benzo(a)pyrene	mg/kg			1.06				0.197				0.2	U
Benzo(b)fluoranthene	mg/kg			1.2				0.203				0.408	U
Benzo(ghi)perylene	mg/kg			0.944				0.167	U			0.408	U
Benzo(k)fluoranthene	mg/kg			1.45				0.268				0.408	U
C11-C22 Aromatics	mg/kg			276				115				102	U
C11-C22 Aromatics, Adjusted	mg/kg			262				113				102	U
C19-C36 Aliphatics	mg/kg			274				98.6				102	U
C9-C18 Aliphatics	mg/kg			96.6	U			41.7	U			102	U
Chrysene	mg/kg			1.58				0.304				0.408	U
Dibenzo(a,h)anthracene	mg/kg			0.386	U			0.167	U			0.408	U
Fluoranthene	mg/kg			2.68				0.585				0.408	U
Fluorene	mg/kg			0.386	U			0.167	U			0.408	U
Indeno(1,2,3-cd)Pyrene	mg/kg			0.784				0.167	U			0.408	U
Naphthalene	mg/kg			0.386	U			0.167	U			0.408	U
Phenanthrene	mg/kg			0.813				0.167	U			0.408	U
Pyrene	mg/kg			2.22				0.415				0.408	U

U - Not Detected
J - Estimated Value
Loc. ID with "-Re" suffix - Lab re-analysis.
Equipment blank SD-EB3 reported in units of µg/l.

Table 6.5.7: Supplemental RFI Sediment Sampling Results - Grain Size Analysis
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Draft

									SD-48 + 200' DS	SD-48 + 200' US	Trib to Sawmill Brk Bkgd
LOCATION		**SD-09A**	**SD-202**	**SD-214**	**SD-43**	**SD-44**	**SD-47**	**SD-48**	**SD-61**	**SD-60**	**SD-TRIB**
SAMPLING DATE		**02-JUN-10**	**04-JUN-10**	**04-JUN-10**	**03-JUN-10**	**02-JUN-10**	**03-JUN-10**	**03-JUN-10**	**03-JUN-10**	**03-JUN-10**	**03-JUN-10**
LAB SAMPLE ID		**L1008325-03**	**L1008325-23**	**L1008325-24**	**L1008325-01**	**L1008325-02**	**L1008325-07**	**L1008325-05**	**L1008325-01**	**L1008325-11**	**L1008325-15**
Solids, Total	**%**	**6.81**	**23.4**	**16.7**	**7.07**	**8.21**	**10.4**	**11.1**	**15.7**	**11.6**	**10.2**
Sieve, #4	**%**	**100**	**97.6**	**99.2**	**98.6**	**100**	**99.3**	**99.1**	**98**	**99.6**	**99.5**
Sieve, #10	**%**	**99.9**	**94.6**	**97.1**	**96.6**	**99.9**	**97.5**	**98.1**	**94.4**	**98.1**	**99.2**
Sieve, #20	**%**	**99.5**	**91.4**	**94.5**	**94**	**99.7**	**95.1**	**96.3**	**91.5**	**95.8**	**98**
Sieve, #40	**%**	**99.1**	**88.9**	**93.3**	**92**	**99.5**	**93.6**	**94.9**	**90.4**	**94.2**	**96.7**
Sieve, #60	**%**	**98.6**	**86.6**	**92.5**	**90.9**	**99.3**	**92.9**	**94.1**	**89.9**	**93.6**	**95.7**
Sieve, #140	**%**	**98.1**	**78.6**	**88.9**	**89.9**	**99**	**92.3**	**93.2**	**88.5**	**93**	**94.8**
Sieve, #200	**%**	**98**	**77.3**	**87.5**	**89.6**	**98.9**	**92.2**	**92.8**	**88.1**	**92.9**	**94.6**

Table 6.5.8: Supplemental RFI Sediment Sampling Results - Uranium
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Draft

											labelled as SD-323	
LOCATION		**SD-301**	**SD-302**	**SD-303**	**SD-304**	**SD-305**	**SD-306**	**SD-307**	**SD-308**	**SD-309**	**SD-309DUP**	**SD-310**
SAMPLING DATE		**27-OCT-10**	**27-OCT-10**	**27-OCT-10**	**27-OCT-10**	**27-OCT-10**	**27-OCT-10**	**27-OCT-10**	**27-OCT-10**	**27-OCT-10**	**27-OCT-10**	**27-OCT-10**
LAB SAMPLE ID		**266197001**	**266197002**	**266197003**	**266197004**	**266197005**	**266197006**	**266197007**	**266197008**	**266197009**	**266197023**	**266197010**
	Units											
Uranium-233/234	**pCi/g**	**0.94**	**0.73**	**< 0.405**	**1.22**	**1.57**	**< 0.393**	**0.773**	**0.952**	**1.49**	**1.25**	**0.712**
Uranium-235/236	**pCi/g**	**< 0.226**	**< 0.496**	**< 0.271**	**< 0.572**	**< 0.748**	**< 0.220**	**< 0.290**	**<0.426**	**<0.148**	**<0.271**	**<0.258**
Uranium-238	**pCi/g**	**0.366**	**0.335**	**< 0.350**	**0.679**	**0.848**	**0.761**	**0.703**	**0.846**	**0.995**	**1.32**	**0.773**
Total	**pCi/g**	**1.306**	**1.065**	**ND**	**1.899**	**2.418**	**0.761**	**1.476**	**2.485**	**2.485**	**2.57**	**1.485**

Notes: < not detected, detection limit reported

Table 6.8.1: Percent Completeness Achieved for Supplemental RFI Analytical Data **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Medium and Chemical Category	Percent Completeness Achieved
Soil	
Volatile Organic Compounds	100%
Metals	100%
Polychlorinated Biphenyls	100%
Ground Water	
Volatile Organic Compounds	100%
Metals	100%
MNA Parameters	100%
Surface Water	
Volatile Organic Compounds	100%
Metals	100%
Sediments	
Volatile Organic Compounds	92%
Metals	100%
Pesticides	100%

Table 7.3.1: Comparison of Stream Flow Rates and Permissible Velocities
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Station	Sampling Round	Date Measured	Maximum [1] Measured Stream Depth, ft	Maximum [1] Measured Stream Flow Rate, fps	Permissible [2] Velocity for US Sieve No. 200, fps	Erode/Deposit [3]	Permissible [2] Velocity for US Sieve No. 20, fps	Erode/Deposit [3]
SW-01	1	Mar-95	1.19	0.68	0.61	Erode	1.30	Deposit
SW-01	2	May-95	1.42	0.73	0.64	Erode	1.36	Deposit
SW-02	1	Apr-95	1.57	0.84	0.65	Erode	1.39	Deposit
SW-02	2	May-95	1.83	0.71	0.68	Erode	1.44	Deposit
SW-02	3	May-97	1.5	0.37	0.65	Deposit	1.38	Deposit
SW-02	4	Sep-97	0.3	0.11	0.60	Deposit	1.28	Deposit
SW-03	1	Apr-95	0.2	0.13	0.60	Deposit	1.28	Deposit
SW-03	2	May-95	0.34	0.09	0.60	Deposit	1.28	Deposit
SW-03	3	May-97	0.44	0.44	0.60	Deposit	1.28	Deposit
SW-03	4	Sep-97	Insuff. Water	No Flow	na	na	na	na
SW-04	1	Apr-95	0.75	1.73	0.60	Erode	1.28	Erode
SW-04	2	May-95	0.78	1.66	0.60	Erode	1.28	Erode
SW-04	3	May-97	0.5	2.38	0.60	Erode	1.28	Erode
SW-04	4	Sep-97	Insuff. Water	No Flow	na	na	na	na
SW-05	1	Apr-95	0.73	2.31	0.60	Erode	1.28	Erode
SW-05	2	May-95	0.7	2.63	0.60	Erode	1.28	Erode
SW-05	3	May-97	Insuff. Water	No Flow	na	na	na	na
SW-05	4	Sep-97	Insuff. Water	No Flow	na	na	na	na

Based on: The Maximum permissible mean velocity in open channels, Figures 7-3 and 7-4 pp. 166-167
Open Channel Hydraulics , Chow, 1959

Table 7.3.1: Comparison of Stream Flow Rates and Permissible Velocities
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Notes:

(1) Maximum depth and flow rate measured are the maximum values recorded during stream profile measurements made during indicated sampling round.
Stream flow rate measurements were made at 0.6 times the depth of the water in the stream, and not at the bottom of the stream as given by Chow.
Depth corrections given by Chow are for streams with at least one foot of water; correction factor for depth of one foot used for flow rates measured in less than one foot of water.
Maximum depth measurements and maximum flow rates for a given location and sampling round are not necessarily from the same stream profile location.

(2) Permissible velocities from Chow; corrected for depth.

(3) Measured velocity greater than permissible velocity indicates material of given size will be eroded, and less than permissible velocity indicates material will be deposited.

(4) Stream depth and flow rate data for SW01 during Rounds 3 and 4 were collected in the culvert, and thus were not included in this analysis.

Table 7.4.1: Calculation of Porosity for Monitoring Well Soil Samples
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

		Grain Size Distribution					
Sample No.	Soil Type [1]	% Gravel	% Sand	% Passing No. 200 Sieve [2]	Dry Density (pcf)	Dry Density (g/cm^3)	Porosity (n)
MW25A	SW-SM	31	56	13	131.7	2.11	0.21
MW26	SP-SM	12	77	11	124.0	1.98	0.25
MW28	SW-SM	16	77	7	118.4	1.89	0.29
MW30A	SP-SM	0	94	6	104.9	1.68	0.37
MW31A	SW-SM	19	48	33	135.8	2.17	0.18
MW32A	SW-SM	28	64	8	117.2	1.87	0.29
MW33A	SP-SM	41	41	18	131.8	2.11	0.20
				Conversion Factor for pcf to g/cm^3		0.02	

Notes

(1) Unified Soil Classification System Group
(2) Fines passing the No. 200 sieve consist of silt and clay sized particles.
(3) No Atterburg Limits were measured because less than 50% of the soil passed through the No. 200 sieve.
(4) Porosity (n) = 1-(dry mass density of sample)/2.65; where 2.65 is the dry mass density of quartz in g/cm^3.

Table 7.4.2: Estimated Hydraulic Conductivities **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

	Monitoring Well	Test Type	Hydraulic Conductivity (cm/s)	Monitoring Well	Test Type	Hydraulic Conductivity (cm/s)
	Overburden Wells			**Shallow Bedrock Wells**		
Phase I and II (1987-1988)	MW01	slug	3.80E-04			
	MW03	slug	2.00E-04			
	MW04	slug	3.50E-04			
	MW07	slug	4.80E-04			
	MW08	slug	3.30E-04			
	MW09	slug	2.10E-03	MW13	slug	2.20E-03
Phase III (1989)	MW03	bail	1.50E-03	MW14	bail	1.20E-03
	MW05	bail	3.60E-05	MW15	bail	7.70E-04
	MW20A	bail	1.70E-03	MW14	slug	1.30E-03
	MW21A	bail	2.20E-02	MW15	slug	9.20E-04
	MW22A	bail	3.70E-03	MW16	slug	6.60E-03
	MW23A	bail	1.30E-03	MW17	slug	2.40E-04
	MW24A	bail	7.90E-03	MW18	slug	6.70E-03
				MW19	slug	1.80E-03
				MW20B	bail	2.80E-02
				MW21B	bail	1.20E-03
				MW22B	bail	9.50E-03
				MW23B	bail	2.70E-02
				MW24B	bail	1.40E-03
SDI (2004)	MW101	slug	2.10E-02			
	MW102	slug	5.90E-03			
	MW103	slug	7.90E-02			
	MW104	slug	9.90E-03			
GSM Upgrade Report (2004)	P1	slug	3.40E-05	P1a	slug	1.90E-03
	P11	slug	1.90E-05	P11a	slug	5.40E-05
	P12	slug	4.60E-06	P12a	slug	2.10E-04
				P14a	slug	1.10E-04
Foster Wheeler Packer Tests [(a)] (1995-1996)				EW01		3.10E+04
				EW02		1.60E-03
				EW03 [(b)]		6.10E-04
				EW04		1.20E-02
				EW05		1.50E-03
				EW06		6.90E-02
Median			1.40E-03			1.40E-03
Geometric Mean			9.20E-04			1.70E-03

(a) Includes uppermost bedrock layer (~20 to 60 feet bgs)
(b) Listed value is the geometric mean of two measurements

Table 7.4.2a: Hydraulic Conductivity Testing Results - P16C
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Interval	Bottom Depth (ft bgs)	Top Depth (ft bgs)	b (ft)	Test 1 T (ft^2/sec)	Test 1 K (ft/sec)	Test 2 T (ft^2/sec)	Test 2 K (ft/sec)	Average K (ft/sec)	Average K (cm/sec)
11	55	35.3	23.8	**1.38E-03**	5.80E-05	**6.16E-04**	2.59E-05	4.20E-05	1.28E-03
10	78.8	55	23.8	6.75E-02	**2.84E-03**	2.74E-02	**1.15E-03**	2.00E-03	6.08E-02
9	102.6	78.8	23.8	**9.32E-04**	3.91E-05	**5.24E-04**	2.20E-05	3.06E-05	9.32E-04
8	126.4	102.6	23.8	**2.56E-04**	1.07E-05	**1.15E-03**	4.83E-05	2.95E-05	9.00E-04
7	150.2	126.4	23.8	**8.61E-05**	3.62E-06	**9.96E-05**	4.19E-06	3.90E-06	1.19E-04
6	174	150.2	23.8	**2.08E-04**	8.76E-06	**8.73E-05**	3.67E-06	6.21E-06	1.89E-04
5	197.8	174	23.8	**1.35E-04**	5.68E-06	**2.72E-05**	1.14E-06	3.41E-06	1.04E-04
4	221.6	197.8	23.8	**4.40E-05**	1.85E-06	**5.27E-05**	2.21E-06	2.03E-06	6.19E-05
3	245.4	221.6	23.8	**7.02E-05**	2.95E-06	**6.37E-05**	2.68E-06	2.81E-06	8.58E-05
2	269.2	245.4	23.8	5.64E-05	**2.37E-06**	9.72E-05	**4.08E-06**	3.23E-06	9.83E-05
1	293	269.2	23.8	1.07E-04	**4.48E-06**	9.48E-05	**3.98E-06**	4.23E-06	1.29E-04

Notes:
1. Slug test water level recovery data collected using Level Troll pressure transducers.
2. Slug consisted of a 5' length of 1x1/4" diameter solid PVC.
3. Data analyzed using AQTESOLVE Pro software.
4. Bold values reported by AQTESOLVE Pro software.
5. b = saturated thickness = packer interval.
6. T = transmissivity; K = hydraulic conductivity

Table 7.4.3: Estimated Hydraulic Gradients East and Northeast of the Facility **Draft**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

	Overburden Zone - East			Overburden Zone - Northeast		
	Water Table Elevation (ft amsl)		Gradient	Water Table Elevation (ft amsl)		Gradient
Date	MW04	MW21A	(ft/ft)	MW03	MW20A	(ft/ft)
Sep-89	179.2	173.2	0.009	181.2	169.8	0.009
Nov-89	179.7	173.1	0.010	181.4	170.4	0.009
Jun-90	182.4	174.2	0.013	183.9	171.6	0.010
Mar-91	183.6	175.7	0.012	186.4	171.6	0.012
Nov-91	183.9	175.2	0.013	185.4	171.6	0.011
Dec-92	186.4	175.8	0.016	186.4	172.6	0.011
Jan-95	181.2	173.6	0.012	181.9	170.2	0.009
Feb-95	180.4	173.4	0.011	181.2	169.9	0.009
Apr-95	180.2	173.3	0.011	181.0	169.7	0.009
Apr-97	183.5	173.4	0.015	182.1	170.1	0.010
Aug-97	180.5	172.0	0.013	180.3	169.1	0.009
	Median Estimate		0.012	**Median Estimate**		0.009
Post Installation of GSM						
Mar-00	178.7	173.2	0.008	NM	170.1	NA
Dec-01	dry	172.3	NA	dry	169.1	NA
Nov-02	178.0	173.0	0.008	175.86	169.7	0.005
Sep-03	177.0	172.3	0.007	dry	169.0	NA
Oct-04	177.2	172.7	0.007	dry	169.3	NA
Feb-06	178.2	173.2	0.008	181.35	169.6	0.009
	Median Estimate		0.008	**Median Estimate**		0.007

	Shallow Bedrock Zone - East			Shallow Bedrock Zone - Northeast		
	Water Table Elevation (ft amsl)		Gradient	Water Table Elevation (ft amsl)		Gradient
Date	MW15	MW21B	(ft/ft)	MW14	MW20B	(ft/ft)
Sep-89	181.5	173.3	0.013	180.9	170.7	0.008
Nov-89	181.9	173.5	0.013	181.1	171.1	0.008
Jun-90	187.5	175.9	0.018	184.1	168.7	0.012
Mar-91	186.5	174.9	0.018	183.8	167.2	0.013
Nov-91	189.5	173.9	0.024	183.1	166.7	0.013
Dec-92	188.8	174.9	0.021	183.9	167.4	0.013
Jan-95	182.2	173.7	0.013	181.6	171.2	0.008
Feb-95	181.6	173.6	0.012	180.9	170.7	0.008
Apr-95	181.1	173.3	0.012	180.7	170.5	0.008
Apr-97	183.1	173.6	0.015	182.1	170.9	0.009
Aug-97	180.0	172.0	0.012	180.5	169.8	0.009
	Median Estimate		0.013	**Median Estimate**		0.009
Post Installation of GSM						
Mar-00	179.5	172.7	0.011	175.6	170.9	0.004
Dec-01	175.0	172.3	0.004	168.4	169.6	-0.001
Nov-02	179.3	173.1	0.010	175.5	170.5	0.004
Sep-03	177.5	172.4	0.008	168.8	169.6	-0.001
Oct-04	178.0	172.8	0.008	171.7	170.0	0.001
Feb-06	178.0	172.8	0.008	179.5	170.2	0.007
	Median Estimate		0.008	**Median Estimate**		0.003

Notes: NM = Not measured
NA = No estimate possible
dry = No measurement possible because well was dry

TABLE 7.4.4: Private Drinking Water Wells Located Within One Mile of the Facility
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

Well Number on Figure 7.4.11	Address of Residence	Well Number on Figure 7.4.11	Address of Residence
1	2 Mirimichi Street	47	6 Branch Avenue
2	4 Mirimichi Street	48	43 Hillside Street
3	5 Mirimichi Street	49	3 Hillside Street
4	1 Mirimichi Street	50	11 Hillside Street
5	21 Mirimichi Street	51	10 Hillside Street
6	54 Mirimichi Street	52	39 Hillside Street
7	44 Treasure Island Road	53	84 Messenger Street
8	10 Haynes Road	54	41 Hillside Street
9	4 Haynes Road	55	88 Messenger Street
10	22 Mirimichi Street	56	9 Branch Avenue
11	2 Apple Tree Drive	70	17 Hillside Street
12	1/2 Pine Tree Drive	71	21 Hillside Street
13	48 Mirimichi Street	72	26 Hillside Street
14	6 Mirimichi Street	73	33 Hillside Street
15	17 Mirimichi Street	74	115 Messenger Street
16	76 Mirimichi Street	75	101 Messenger Street
17	74 Mirimichi Street	76	100 Messenger Street
18	8 Haynes Road	77	98 Messenger Street
19	39 Mirimichi Street	78	94 Messenger Street
20	23 Treasure Island Road	79	92 Messenger Street
21	3 Treasure Island Road	80	59 Taunton Street
22	20 Treasure Island Road	81	19 Hillside Street
23	26 Treasure Island Road	82	11 Hillside Street
24	25 Treasure Island Road	83	8 Branch Avenue
25	70 Mirimichi Street	84	16 Hillside Street
26	28 Treasure Island Road	85	104 Messenger Street
30	7 Branch Avenue	86	29 Hillside Street
31	5 Hillside Road	87	106 Messenger Street
32	6 Hillside Road	88	61 Taunton Street
33	7 Hillside Road	89	31 Hillside Street
34	10 Hillside Road	90	7 Haynes Road
35	9 Hillside Road	91	72 Mirimichi Street
36	12 Hillside Road	92	101 Messenger Street
37	4 Hillside Road	93	50 Mirimichi Street
38	2 Hillside Road	94	57 Mirimichi Street
39	18 Hillside Road	W-009	3 Mirimichi Street
40	24 Hillside Road	W-060	125 Messenger Street
41	28 Hillside Road	W-098	11 Lakeside Street
42	16 Hillside Road	W-103	42 Mirimichi Lot 23
43	82 Messenger Street	W-107	44 Mirimichi Street
44	86 Messenger Street	W-121	48 Mirimichi Street
45	90 Messenger Street	W-133	29 Taunton Street
46	14 Hillside Street	W-136	2 Treasure Island Road

Table 7.4.5: Municipal Drinking Water Wells Located Near the Facility
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Well	Type	Depth (ft-bgs)	Screen Interval (ft-bgs)	Pumping Schedule [1] (Hours/Day)
Muni1	Gravel Pack	52	42 - 52	18
Muni2	Gravel Pack	48	38 - 48	22
Muni5	Gravel Pack	30	21 - 30	7

Notes:

(1) Pumping schedule is based on a yearly average; during peak demand, these wells may be pumped 24 hours/day. Total safe yield of these wells is approximately 1 million gallons per day.

Table 7.4.6: Water Mass Balance, Plainville Massachusetts (Norfolk County)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual (mm)	Annual (inches)
P (1)	(inches)	4.06	3.72	4.29	3.95	3.48	2.79	3.01	4.04	3.54	3.75	4.22	4.47		
T (1)	(°F)	28.2	29.3	37.4	47.9	57.6	66.8	72.5	71.1	63.5	53.2	43.4	32.3		
PET (2)	(inches)	0.48	0.46	1.07	1.81	3.31	4.43	5.61	4.64	2.7	1.62	0.82	0.52		
PET	(mm)	12	12	27	46	84	112	142	118	68	41	21	13	697	27.4
P	(mm)	103	94	109	100	88	71	76	103	90	95	107	114	**1151**	**45.3**
$C_{R/O}$		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
R/O	(mm)	21	19	22	20	18	14	15	21	18	19	21	23	230	9.1
I	(mm)	82	76	87	80	71	57	61	82	72	76	86	91	921	36.3
I-PET	(mm)	70	64	60	34	-13	-56	-81	-36	3	35	65	78	224	8.8
ΣNEG (I-PET)	(mm)				0	-13	-69	-151	-186						
ST (3)	(mm)	125	125	125	125	113	71	37	28	31	67	125	125		
ΔST	(mm)	0	0	0	0	-12	-42	-34	-9	3	35	58	0		
AET	(mm)	12	12	27	46	83	99	95	91	68	41	21	13	608	23.9
PERC	(mm)	70	64	60	34	0	0	0	0	0	0	7	78	**313**	**12.3**

Notes:
(1) Average monthly precipitation and temperature data from a 30 year record prior to January 1993 from Providence, Rhode Island weather station (National Climatic Data Center)
(2) PET calculated using the Hamon Water Budget spreadsheet
(3) Field capacity = 200mm/m, root zone depth = 0.6 m, soil moisture storage - field capacity x root zone depth. ST determined from Table 10 of USEPA (1975).
P = Precipitation
T = Temperature
PET = Potential Evapotranspiration
$C_{R/O}$ = Storage Runoff Coefficient
I = Infiltration
ST = Soil Moisture Storage
ΔST = Change in Storage
AET = Actual Evapotranspiration
PERC = Percolation

TABLE 7.4.7: Groundwater Elevation Data and Vertical Gradients
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

Well Type	Well ID	Historical Well Top of Casing Elevation	Well Top of Casing Elevation	Ground Elevation	Depth To Groundwater[1]	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation
					Jul-99		Mar-00		12/4/2001		11/20/2002		9/29/2003		10/18/2004		2/24/2006		11/9/2006		11/26/2007		10/24/2008		10/22/2009		11/10/2010	
OB	MW01	202.79	202.79	203.38	NC		NC		12.86	189.93	7.48	195.31	9.49	193.30	8.02	194.77	7.07	195.72	6.01	196.78	NC		7.53	195.26	7.70	195.09	7.74	195.05
BR	MW13	205.12	205.12	203.38	NC		NC		17.07	188.05	12.96	192.16	14.83	190.29	13.67	191.45	13.91	191.21	13.81	191.31	NC		14.23	190.89	13.79	191.33	15.85	189.27
OB	MW02	203.20	203.20	202.04	NC		NC		23.84	179.36	19.07	184.13	21.81	181.39	20.52	182.68	16.95	186.25	18.07	185.13	22.28	180.92	19.26	183.94	19.46	183.74	19.72	183.48
BR	MW29	205.25	205.23	203.13	NC		NC		26.37	178.88	22.84	182.41	25.46	179.79	23.00	182.25	18.90	186.35	20.73	184.52	NC		20.60	184.65	22.99	182.24	23.26	181.97
OB	MW03	196.59	196.59	195.53	NC		NC		Dry	NA	21.03	175.56	Dry	NA	Dry	NA	15.24	181.35	16.22	180.37	Dry	NA	Dry	NA	19.62	176.97	17.54	179.05
BR	MW14	197.27	197.27	195.49	NC		21.96	175.31	29.16	168.11	22.06	175.21	28.77	168.50	25.83	171.44	15.97	181.30	16.99	180.28	28.39	168.88	21.14	176.13	23.03	174.24	18.31	178.96
DBR	MW16	197.84	197.84	195.54	31.92	165.92	24.04	173.80	35.02	162.82	26.64	171.20	31.10	166.74	27.38	170.46	18.06	179.78	20.02	177.82	30.22	167.62	24.40	173.44	25.75	172.09	20.95	176.89
OB	MW04	200.99	200.99	199.05	NC		22.64	178.35	Dry	NA	23.32	177.67	24.31	176.68	24.10	176.89	22.83	178.16	24.82	176.17	Dry	NA	24.51	176.48	24.28	176.71	Dry @ 24.72	
BR	MW15	200.84	200.84	198.83	23.55	177.29	21.60	179.24	26.17	174.67	21.80	179.04	23.60	177.24	23.14	177.70	22.86	177.98	24.72	176.12	31.76	169.08	24.33	176.51	24.61	176.23	26.51	174.33
DBR	MW17	201.29	201.29	199.02	24.69	176.60	22.77	178.52	26.78	174.51	23.23	178.06	24.50	176.79	24.14	177.15	23.20	178.09	24.93	176.36	30.81	170.48	24.85	176.44	decommissioned		decommissioned	
DBR	MW17R	200.86	200.86	NM	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		40.88	159.98	32.65	168.21
OB	MW05	199.80	199.80	200.08	7.63	192.17	NC		19.17	180.63	7.31	192.49	NC		7.77	192.03	7.25	192.55	7.18	192.62	9.00	190.80	7.70	192.10	7.69	192.11	7.85	191.95
BR	MW18	199.31	199.31	199.99	9.07	190.24	NC		19.17	180.14	8.24	191.07	NC		8.85	190.46	8.25	191.06	8.27	191.04	10.22	189.09	8.68	190.63	8.70	190.61	7.98	191.33
OB	MW06	198.59	198.59	199.20	NC		NC		7.55	191.04	3.78	194.81	5.36	193.23	4.31	194.28	3.22	195.37	2.80	195.79	6.30	192.29	4.08	194.51	4.11	194.48	4.15	194.44
BR	MW27	198.83	198.83	199.11	NC		NC		9.04	189.79	4.82	194.01	6.64	192.19	5.89	192.94	5.36	193.47	6.22	192.61	9.39	189.44	5.29	193.54	6.20	192.63	8.83	190.00
OB	MW07	208.18	209.11	206.14	13.34	194.84	13.21	194.97	15.82	192.36	13.28	194.90	14.60	193.58	14.08	195.03	12.86	196.25	12.92	196.19	15.09	194.02	13.55	195.56	13.46	195.65	13.62	195.49
BR	MW37	208.48	208.48	206.14	14.37	194.11	12.83	195.65	15.90	192.58	13.01	195.47	14.37	194.11	13.55	194.93	12.32	196.16	12.35	196.13	14.55	193.93	13.05	195.43	12.93	195.55	13.16	195.32
OB	MW08	181.09	181.09	178.26	9.18	171.91	6.26	174.83	9.52	171.57	6.97	174.12	8.72	172.37	8.20	172.89	6.95	174.14	6.25	174.84	8.75	172.34	7.72	173.37	7.23	173.86	6.67	174.42
BR	MW19	180.15	180.15	178.64	NC		5.68	174.47	8.67	171.48	6.32	173.83	8.07	172.08	7.30	172.85	6.09	174.06	5.61	174.54	7.95	172.20	7.03	173.12	7.10	173.05	6.18	173.97
DBR	MW38	181.17	181.17	178.38	11.19	169.98	9.27	171.90	10.98	170.19	6.42	174.75	10.66	170.51	10.13	171.04	9.47	171.70	9.20	171.97	10.57	170.60	10.07	171.10	9.97	171.20	9.39	171.78
OB	MW09A	176.67	176.67	174.68	NC		NC		7.13	169.54	6.00	170.67	6.88	169.79	6.54	170.13	6.38	170.29	5.85	170.82	6.89	169.78	6.65	170.02	6.52	170.15	6.26	170.41
BR	MW09B	176.14	176.14	174.60	DNE		DNE		DNE		DNE		DNE		DNE		5.27	170.87	4.69	171.45	6.12	170.02	5.76	170.38	5.58	170.56	5.15	170.99
DBR	MW09C	175.27	175.27	174.31	DNE		DNE		DNE		DNE		DNE		DNE		4.00	171.27	3.33	171.94	4.92	170.35	4.50	170.77	4.41	170.86	3.20	172.07
OB	MW12	200.69[2]	200.69[2]	NM	NC		NC		Dry	NA	23.27	177.42	24.45	176.24	23.75	176.94	decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned	
OB	MW12A	197.70	197.70	NM	DNE		DNE		DNE		DNE		DNE		DNE		13.40	184.30	15.64	182.06	Dry	NA	14.15	183.55	18.20	179.50	13.09	184.61
BR	MW12B	197.79	197.79	NM	DNE		DNE		DNE		DNE		DNE		DNE		15.84	181.95	17.62	180.17	23.89	173.90	20.75	177.04	23.61	174.18	20.08	177.71
OB	MW20A	175.53	175.53	172.51	6.82	168.71	5.61	169.92	6.59	168.94	5.95	169.58	6.66	168.87	6.32	169.21	5.97	169.56	5.85	169.68	6.60	168.93	6.36	169.17	6.29	169.24	6.31	169.22
BR	MW20B	174.40	174.40	172.50	5.35	169.05	3.75	170.65	5.10	169.30	4.19	170.21	5.06	169.34	4.63	169.77	4.23	170.17	3.75	170.65	4.90	169.50	4.63	169.77	4.47	169.93	4.25	170.15
DBR	MW20C	174.71	174.71	172.44	DNE		DNE		DNE		DNE		DNE		DNE		4.15	170.56	3.74	170.97	4.82	169.89	4.63	170.08	4.39	170.32	4.14	170.57
OB	MW21A	179.02	179.02	173.24	7.01	172.01	6.01	173.01	6.90	172.12	6.22	172.80	6.87	172.15	6.52	172.50	5.78	173.24	5.73	173.29	6.64	172.38	6.45	172.57	6.44	172.58	6.24	172.78
BR	MW21B	179.27	179.27	173.24	8.61	170.66	6.99	172.28	7.35	171.92	6.52	172.75	7.28	171.99	6.87	172.40	6.50	172.77	6.19	173.08	7.10	172.17	6.80	172.47	6.75	172.52	6.57	172.70
DBR	MW21C	178.18	178.75	176.45	DNE		DNE		DNE		DNE		DNE		DNE		6.24	171.94	5.50	172.68	6.47	171.71	6.14	172.04	6.07	172.68	5.92	172.83
OB	MW22A	179.72	179.72	176.73	NC		5.15	174.57	7.20	172.52	5.62	174.10	6.90	172.82	6.26	173.46	5.98	173.74	4.70	175.02	6.70	173.02	6.38	173.34	5.95	173.77	5.17	174.55
BR	MW22B	178.99	178.18	176.45	5.83	173.16	4.61	174.38	5.66	173.33	4.59	174.40	5.51	173.48	4.95	173.23	4.41	173.77	3.86	174.32	5.05	173.13	4.71	173.47	4.53	173.65	4.30	173.88
DBR	MW22C	176.50	176.10	176.40	3.43	173.07	2.91	173.59	3.80	172.70	NC		3.34	173.16	2.97	173.13	3.18	172.92	5.04	171.06	4.42	171.68	4.11	171.99	2.44	173.66	2.79	173.31
OB	MW23A	177.00	177.00	173.82	5.20	171.80	4.36	172.64	5.30	171.70	4.70	172.30	5.15	171.85	5.02	171.98	4.48	172.52	4.52	172.48	5.06	171.94	4.97	172.03	4.97	172.03	4.76	172.24
BR	MW23B	176.24	176.24	173.24	4.85	171.39	2.92	173.32	4.04	172.20	3.41	172.83	3.85	172.39	3.67	172.57	2.91	173.33	3.23	173.01	3.77	172.47	3.59	172.65	3.59	172.65	3.13	173.11
OB	MW24A	181.74	181.74	NM	NC		NC		12.92	168.82	decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned	
BR	MW24B	180.98	180.98	NM	NC		NC		10.50	170.48	decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned	
DBR	MW24C	181.22	181.22	NM	NC		NC		11.99	169.23	decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned		decommissioned	
OB	MW25A	202.89	202.89	200.37	19.40	183.49	NC		22.73	180.16	19.04	183.85	21.10	181.79	20.10	182.79	18.93	183.96	19.45	183.44	21.16	181.73	19.21	183.68	19.79	183.10	21.25	181.64
BR	MW25B	202.41	202.41	200.30	24.57	177.84	NC		26.63	175.78	23.71	178.70	26.19	176.22	25.57	176.84	25.31	177.10	27.69	174.72	28.51	173.90	25.84	176.57	25.66	176.75	27.38	175.03
DBR	MW25C	200.00	200.00	200.07	DNE		DNE		DNE		DNE		23.89	176.11	23.27	176.73	23.07	176.93	24.46	175.54	26.27	173.73	23.56	176.44	23.34	176.66	25.09	174.91
OB	MW26	204.83	204.83	202.26	NC		NC		12.70	192.13	9.57	195.26	11.23	193.60	10.27	194.56	9.60	195.23	9.20	195.63	16.62	188.21	10.22	194.61	9.90	194.93	9.62	195.21
OB	MW28	206.58	202.53	202.69	NC		NC		15.96	190.62	12.19	194.39	13.77	192.81	8.51	194.02	7.43	195.10	7.35	195.18	decommissioned		decommissioned		decommissioned		decommissioned	
OB	MW30A	186.14	185.61	185.76	NC		NC		10.32	175.82	8.70	177.44	10.37	175.77	10.10	175.51	8.93	176.68	8.75	176.86	9.63	175.98	9.06	176.55	9.00	176.61	9.15	176.46
BR	MW30B	185.52	185.52	185.49	NC		NC		10.73	174.79	8.34	177.18	9.83	175.69	9.47	176.05	8.65	176.87	8.56	176.96	9.43	176.09	8.81	176.71	8.77	176.75	8.79	176.73
OB	MW31A	183.60	183.60	181.71	NC		NC		10.10	173.50	6.97	176.63	9.27	174.33	8.45	175.15	7.38	176.22	6.75	176.85	9.15	174.45	8.48	175.12	8.81	174.79	6.93	176.67
BR	MW31B	183.30	183.30	180.97	NC		NC		9.20	174.10	7.55	175.75	7.55	175.75	7.81	175.49	6.35	176.95	6.81	176.49	NC		6.95	176.35	7.76	175.54	7.45	175.85
OB	MW32A	193.32	193.32	193.70	NC		NC		14.03	179.29	9.67	183.65	12.51	180.81	11.39	181.93	8.06	185.26	9.02	184.30	11.09	182.23	10.39	182.93	10.35	182.97	13.31	180.01
BR	MW32B	192.98	192.98	193.36	NC		NC		12.47	180.51	8.36	184.62	10.96	182.02	9.70	183.28	6.58	186.40	7.45	185.53	12.45	180.53	8.93	184.05	9.07	183.91	9.10	183.88
OB	MW33A	172.67	172.67	170.65	3.61	169.06	2.12	170.55	3.16	169.51	2.00	170.67	3.12	169.55	3.78	168.89	2.42	170.25	1.88	170.79	3.08	169.59	3.04	169.63	2.79	169.88	2.40	170.27
BR	MW33B	173.03	173.03	170.65	5.92	167.11	2.69	170.34	3.89	169.14	2.87	170.16	3.78	169.25	3.38	169.65	3.00	170.03	2.58	170.45	3.59	169.44	3.47	169.56	3.17	169.86	2.95	170.08
DBR	MW33C	174.06	174.06	171.51	7.78	166.28	4.37	169.69	5.47	168.59	4.80	169.26	5.45	168.61	5.22	168.84	4.56	169.50	4.56	169.50	5.27	168.79	4.98	169.08	4.92	169.14	4.84	169.22
DBR	MW33D		172.53	171.28	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		3.41	169.12
OB	MW34	173.12	173.12	169.94	NC		NC		3.67	169.45	2.70	170.42	4.08	169.04	3.23	169.89	2.85	170.27	2.91	170.21	3.50	169.62	3.42	169.70	3.23	169.89	3.12	170.00
OB	MW35	173.09	173.09	170.59	NC		NC		3.02	170.07	2.40	170.69	3.97	169.12	3.26	169.83	2.50	170.59	2.35	170.74	2.80	170.29	2.79	170.30	2.71	170.38	2.58	170.51
OB	MW36	173.42	173.42	171.01	NC		2.71	170.71	3.05	170.37	2.53	170.89	3.13	170.29	2.97	170.45	2.92	170.50	2.74	170.68	3.14	170.28	3.10	170.32	3.07	170.35	2.98	170.44
OB	MW40A	194.81	194.81	192.53	DNE		DNE		22.23	172.58	18.72	176.09	20.90	173.91	20.30	174.51	18.66	176.15	18.95	175.86	NC		19.68	175.13	19.72	175.09	19.52	175.29
BR	MW40B	194.54	194.54	192.31	DNE		DNE		21.40	173.14	20.41	174.13	21.88	172.66	21.21	173.33	20.30	174.24	20.34	174.20	21.90	172.64	21.26	173.28	21.01	173.53	21.06	173.48
OB	MW41A	185.37	185.37	182.82	DNE		DNE		12.24	173.13	10.00	175.37	11.80	173.57	11.25	174.12	9.86	175.51	9.84	175.53	11.57	173.80	10.68	174.69	10.41	174.96	10.44	174.93
BR	MW41B	185.65	185.65	183.00	DNE		DNE		13.56	172.09	11.84	173.81	13.23	172.42	12.52	173.13	11.88	173.77	11.78	173.87	13.13	172.52	12.60	173.05	12.45	173.20	12.30	173.35
OB	MW43A	NA	180.43	177.47	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		7.45	172.98
BR	MW43B	181.46	181.46	178.83	DNE		DNE		DNE		DNE		DNE		DNE		6.25	175.21	6.11	175.35	6.58	174.88	6.43	175.03	6.47	174.99	6.60	174.86
DBR	MW43C	180.41	180.41	178.59	DNE		DNE		DNE		DNE		DNE		DNE		6.29	174.12	5.94	174.47	6.72	173.69	6.50	173.91	6.45	173.96	6.16	174.25
DBR	MW43D	NA	179.58	177.45	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		214.00	-34.42
OB	MW45A	203.90	203.90	204.13	DNE		DNE		DNE		DNE		DNE		DNE		9.59	194.31	9.35	194.55	11.81	192.09	10.11	193.79	10.04	193.86	9.93	193.97
BR	MW45B	203.87	203.87	204.16	DNE		DNE		DNE		DNE		DNE		DNE		23.69	180.18	28.49	175.38	23.10	180.77	14.94	188.93	13.33	190.54	17.00	186.87
DBR	MW45C	203.26	203.26	204.16	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		27.45	175.81	48.54	154.72

TABLE 7.4.7: Groundwater Elevation Data and Vertical Gradients
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Well Type	Well ID	Historical Well Top of Casing	Well Top of Casing Elevation	Ground Elevation	Depth To Groundwater[1]	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation	Depth To Groundwater	Groundwater Elevation
OB	MW48A	203.78	203.78	204.01	DNE		DNE		DNE		DNE		DNE		DNE		14.48	189.30	12.48	191.30	17.99	185.79	12.56	191.22	12.18	191.60	12.43	191.35
BR	MW48B	203.81	203.81	204.06	DNE		DNE		DNE		DNE		DNE		DNE		15.11	188.70	15.21	188.60	19.08	184.73	16.06	187.75	16.03	187.78	16.71	187.10
OB	MW51A	183.05	183.05	NM	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		8.25	174.80	6.36	176.69	7.04	176.01	5.56	177.49
BR	MW51B	182.20	182.20	NM	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		8.18	174.02	5.81	176.39	6.75	175.45	4.81	177.39
OB	MW53A	203.82	203.82	NM	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		9.62	194.20	9.64	194.18
BR	MW53B	203.75	203.75	NM	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		24.91	178.84	39.84	163.91
DBR	MW53C	203.63	203.63	NM	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		27.89	175.74	50.32	153.31
OB	MW54A	NA	202.79	200.21	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		9.99	192.80
BR	MW54B	NA	202.64	200.18	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		10.82	191.82
OB	P01	203.94	203.94	204.15	NC		NC		NC		NC		NC		NC		13.07	190.87	12.66	191.28	15.22	188.72	17.14	186.80	13.11	190.83	13.13	190.81
BR	P01A	203.89	203.89	204.14	NC		NC		NC		NC		NC		NC		24.53	179.36	29.40	174.49	37.92	165.97	37.55	166.34	26.49	177.40	39.05	164.84
OB	P02	204.57	204.57	200.64	NC		NC		NC		NC		NC		NC		20.80	183.77	18.81	185.76	21.81	182.76	19.64	184.93	20.24	184.33	20.27	184.30
BR	P02A	204.28	204.28	202.39	NC		NC		NC		NC		NC		NC		24.54	179.74	28.20	176.08	35.90	168.38	27.25	177.03	27.35	176.93	33.72	170.56
OB	P03	200.64	200.64	200.76	NC		NC		NC		NC		NC		NC		18.74	181.90	19.71	180.93	23.64	177.00	21.47	179.17	20.11	180.53	21.55	179.09
BR	P03A	200.62	200.62	200.59	NC		NC		NC		NC		NC		NC		21.29	179.33	25.61	175.01	34.01	166.61	23.33	177.29	22.96	177.66	Dry @ 28.32	
OB	P04	201.84	201.84	199.69	NC		NC		NC		NC		NC		NC		23.46	178.38	25.21	176.63	27.05	174.79	24.62	177.22	25.79	176.05	26.30	175.54
BR	P04A	201.43	201.43	199.05	NC		NC		NC		NC		NC		NC		23.21	178.22	27.91	173.52	36.61	164.82	25.99	175.44	25.21	176.22	34.62	166.81
OB	P05	199.10	199.10	197.19	NC		NC		NC		NC		NC		NC		17.08	182.02	18.58	180.52	25.45	173.65	21.42	177.68	22.66	176.44	19.74	179.36
BR	P05A	196.75	196.75	196.97	NC		NC		NC		NC		NC		NC		17.81	178.94	21.09	175.66	29.43	167.32	26.56	170.19	27.04	169.71	25.23	171.52
OB	P06	199.30	199.30	196.97	NC		NC		NC		NC		NC		NC		17.42	181.88	18.89	180.41	25.57	173.73	22.08	177.22	23.54	175.76	20.03	179.27
BR	P06A	198.78	198.78	196.72	NC		NC		NC		NC		NC		NC		20.78	178.00	22.43	176.35	30.64	168.14	26.89	171.89	28.08	170.70	22.99	175.79
OB	P07	198.69	198.69	196.59	NC		NC		NC		NC		NC		NC		17.64	181.05	18.81	179.88	25.62	173.07	22.48	176.21	24.14	174.55	19.93	178.76
BR	P07A	198.11	198.11	196.43	NC		NC		NC		NC		NC		NC		19.68	178.43	22.33	175.78	30.74	167.37	27.41	170.70	28.08	170.03	22.68	175.43
OB	P08	198.51	198.51	196.31	NC		NC		NC		NC		NC		NC		18.03	180.48	18.80	179.71	25.43	173.08	22.31	176.20	23.94	174.57	19.82	178.69
BR	P08A	198.10	198.10	196.23	NC		NC		NC		NC		NC		NC		18.57	179.53	20.15	177.95	28.38	169.72	24.64	173.46	25.60	172.50	20.95	177.15
OB	P09	199.04	199.04	199.24	NC		NC		NC		NC		NC		NC		13.38	185.66	14.30	184.74	15.97	183.07	13.29	185.75	14.56	184.48	16.16	182.88
BR	P09A	198.85	198.85	192.22	NC		NC		NC		NC		NC		NC		14.64	184.21	15.52	183.33	17.02	181.83	14.54	184.31	16.36	182.49	18.15	180.70
OB	P10	193.89	193.89	194.22	NC		NC		NC		NC		NC		NC		12.72	181.17	14.68	179.21	Dry	NA	17.81	176.08	19.14	174.75	15.02	178.87
BR	P10A	194.01	194.01	194.24	NC		NC		NC		NC		NC		NC		13.21	180.80	14.22	179.79	23.28	170.73	18.04	175.97	19.82	174.19	15.63	178.38
OB	P11	203.80	203.80	204.18	DNE		DNE		DNE		DNE		NC		NC		10.00	193.80	9.92	193.88	12.96	190.84	10.44	193.36	10.24	193.56	10.82	192.98
BR	P11A	203.93	203.93	204.17	DNE		DNE		DNE		DNE		NC		NC		32.90	171.03	10.52	193.41	13.39	190.54	10.02	193.91	10.44	193.49	11.46	192.47
OB	P12	203.49	203.49	204.17	DNE		DNE		DNE		DNE		NC		NC		9.89	193.60	10.88	192.61	12.78	190.71	10.34	193.15	10.01	193.48	10.66	192.83
BR	P12A	203.83	203.83	204.18	DNE		DNE		DNE		DNE		NC		NC		30.53	173.30	37.75	166.08	42.25	161.58	30.25	173.58	27.33	176.50	47.67	156.16
DBR	P12B	203.92	203.92	204.18	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		27.07	176.85	50.59	153.33
OB	P13	199.18	199.18	NM	DNE		DNE		DNE		DNE		NC	19.13	180.05		18.86	180.32	20.12	179.06	21.50	177.68	19.29	179.89	20.02	179.16	22.90	176.28
BR	P13A	199.43	199.43	NM	DNE		DNE		DNE		DNE		NC	20.75	178.68		26.11	173.32	32.20	167.23	35.87	163.56	25.98	173.45	23.43	176.00	40.89	158.54
OB	P14	204.01	204.01	204.16	DNE		DNE		DNE		DNE		NC		NC		21.21	182.80	22.81	181.20	Dry	NA	25.05	178.96	24.99	179.02	23.11	180.90
BR	P14A	203.90	203.90	204.18	DNE		DNE		DNE		DNE		NC		NC		25.04	178.86	30.40	173.50	38.12	165.78	42.46	161.44	42.09	161.81	34.33	169.57
OB	P15	197.30	197.30	197.53	DNE		DNE		DNE		DNE		NC		NC		16.85	180.45	18.27	179.03	23.27	174.03	20.39	176.91	21.36	175.94	18.91	178.39
BR	P15A	197.44	197.44	197.73	DNE		DNE		DNE		DNE		NC		NC		19.16	178.28	23.37	174.07	31.10	166.34	33.38	164.06	33.03	164.41	26.61	170.83
OB	P16	201.70	201.70	199.12	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		25.03	176.67	26.37	175.33
BR	P16A		201.12	198.88	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		26.52	174.60
DBR	P16C	201.37	201.37	199.20	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		27.12	174.25	31.71	169.66
OB	P18	199.06	199.06	196.29	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		24.09	174.97	21.05	178.01
BR	MW50	179.82	179.82	NM	DNE		DNE		DNE		DNE		DNE		DNE		DNE		DNE		8.33	171.49	7.71	172.11	7.47	172.35	6.21	173.61

Notes:
This data table reflects the most recent survey data compiled between March 20, 2006 and September 28, 2010.
[1]Feet below Measuring Point
[2]Inner Rim Elevation noted on original Environ boring log is 200.69' msl. This well was not decommissioned prior to the 2006 survey event.
All Elevations in Feet MSL
NM - Not Measured
OB = Overburden
BR = Bedrock
DBR = Deep Bedrock

NC = Not collected
NA = Not analyzed
Well did not exist (DNE) or was decommissioned

Indicates an overall downward vertical hydraulic gradient between the adjacent monitoring intervals (>0.10' difference).
Indicates an overall upward vertical hydraulic gradient between the adjacent monitoring intervals (>0.10' difference).

Table 8.2.1: Chemicals Detected at the BASF Site
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Chemical	Number of Detections (Detects/Total Number of Samples)*					
	Ground Water	Surface Water	Sediment	Surface Soil	Subsurface Soil	Fish
Volatile Organic Compounds (VOCs)						
1,1,1-Trichloroethane	599/1020	33/64	22/57	7/23	43/145	
1,1-Dichloroethane	419/1020	11/64	21/57	2/23	6/145	
1,1-Dichloroethene	419/1020	8/63	7/57	1/23	2/145	
1,4-Dioxane	19/234					
Acetone	27/568		39/46	2/6	39/77	
Benzene	2/845		1/59	13/19	3/136	
Carbon Disulfide	5/567		12/46		1/77	
Chloromethane	11/1017	1/64		3/23	2/145	
Cis-1,2-dichloroethene	331/625	11/19	35/51		7/77	
Ethane	84/146					
Ethene	88/146					
Ethylbenzene				1/19	2/136	
Methane	134/146					
Methyl Ethyl Ketone (2-butanone)	4/568		28/46	1/6	2/77	
Methylene Chloride	41/845	2/41	1/53	3/19		
p-Cymene (p-Isopropyltoluene)			13/41			
Tetrachloroethene	567/1020	35/64	33/57	16/23	101/144	
Toluene	17/847	3/64	21/63	6/23	28/145	
Trans-1,2-Dichloroethene	83/1013	14/64				
Trichlorothene	534/1020	29/64	37/57	3/23	36/145	
Vinyl Chloride	55/1018		5/53			
Xylenes, total	2/387			1/13	2/59	
Metals						
Aluminum	16/16	20/45	41/41		10/10	37/60
Antimony	99/409	27/116	17/128	9/17	1/85	36/60
Arsenic	119/460	14/110	87/110	34/34	100/108	2/60
Barium	9/9	10/10	12/12	6/6	23/23	47/60
Beryllium	13/451		55/110	30/34	10/85	
Cadmium	104/460	72/149	120/140	82/82	101/141	21/60
Chromium	246/460	32/116	124/128	71/71	130/134	49/60
Cobalt						3/60
Copper	258/451	59/106	123/128	65/65	101/111	47/60
Iron	107/119	43/45	50/50	23/23	10/10	60/60
Lead	142/460	71/116	129/140	68/71	121/134	33/60
Magnesium	16/16	34/45	41/41		10/10	60/60
Manganese	70/79	45/45			10/10	60/60
Mercury	8/456	12/116	20/128	24/34	7/108	60/60
Nickel	272/451	59/116	114/140	34/34	85/85	22/60
Selenium	49/458	6/110	35/110	31/34	8/108	43/60
Silver	35/419	12/116	69/122	68/71	77/133	13/60
Thallium	8/451		2/110	6/34	1/85	
Vanadium						38/60
Zinc	238/451	87/147	96/140	71/71	107/111	58/60
Polycyclic Aromatic Hydrocarbons (PAHs)						
Acenaphthylene			1/9			
Benzo(a)anthracene			3/9			
Benzo(a)pyrene			3/9			
Benzo(b)fluoranthene			3/9			
Benzo(g,h,i)perylene			1/9			
Benzo(k)fluoranthene			3/9			
Chrysene			4/9			
Fluoranthene			7/9		1/11	
Fluorene			1/9			
Indeno(1,2,3-c,d)pyrene			1/9			
Phenanthrene			3/9		1/11	
Pyrene			7/9		1/10	

Chemical	Number of Detections (Detects/Total Number of Samples)*					
	Ground Water	Surface Water	Sediment	Surface Soil	Subsurface Soil	Fish
Polychlorinated Biphenyls (PCBs)						
PCB-1242 (AROCHLOR 1242)	4/51		1/3			20/60
PCB-1248 (AROCHLOR 1248)	12/58		2/21	1/16	99/158	
PCB-1254 (AROCHLOR 1254)	5/58		5/21	11/16	80/158	54/60
PCB-1260 (AROCHLOR 1260)				6/16	4/158	48/60
Radionuclides						
URANIUM-234			22/25	71/115	215/361	
URANIUM-235			22/25	70/115	215/361	
URANIUM-238			21/25	70/115	208/361	
Other Chemicals						
Benzoic Acid			3/3		2/7	
Bis(2-ethylhexyl)phthalate			1/3		1/10	
C11-C22 Aromatic Hydrocarbons			5/6		16/24	
C19-C36 Aliphatic Hydrocarbons			5/6		17/24	
C9-C18 Aliphatic Hydrocarbons			1/6		4/24	
Cyanide	2/44	1/26		1/2	3/25	
Di-n-butylphthalate					1/11	
Di-n-octylphthalate			1/3			
Nitrate	93/145	13/45			5/10	
Nitrite	18/104					

*Does not include rejected values and duplicates. Chemicals detected in fewer than five percent of the samples are not included in this table.

Table 8.2.2: Physical and Chemical Characteristics **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Chemical	Molecular Weight (g/mol)	Density * (g/cm^3)		Boiling Point (^oC)		Viscosity * (cp)		Water Solubility* (mg/L)		Vapor Pressure * (mm Hg)	
Volatile Organic Compounds (VOCs)											
1,1,1-Trichloroethane	133.42	1.35	7	74.1	1	0.858	7	347	1	123.7	1
1,1-Dichloroethane	98.96	1.174	2	57.3	1	0.38	7	5060	1	227	1
1,1-Dichloroethene	96.94	1.218	2	31.9	2	0.3302	7	2500	7	591	2
2-Chloroethyl vinyl ether	106.55	1.05 (20 °C)	7	110	7	NA		429	7	26.8 (20 °C)	7
Chloroethane	64.52	0.9214	7	12.3	7	0.279 (10^oC)	7	5740	7	1,010 (20^oC)	7
cis-1,2-Dichloroethene	96.4	1.2837	7	60.3	7	0.48	7	3500	7	273 (30^oC)	7
Tetrachloroethene	165.82	1.626	2	121	1	0.839	7	150	1	18.49	1
trans-1,2-Dichloroethene	96.94	1.25 (20 °C)	10	48.7	7	0.41 (20 °C)	7	6300	10	324	10
Trichloroethene	131.4	1.46	2	87.2	7	0.55	7	1100	1	69	1
Vinyl Chloride	62.5	0.9106	7	-13.37	7	0.28 (20^oC)	7	2700	7	2660	7
Acetone	58.1	0.79 (20 °C)	10	56.0	7	0.32 (20 °C)	7	miscible	10	270	10
Benzene	78.11	0.8786	2	80.1	1	0.6468	7	1791	1	95.19	1
Carbon disulfide	76.1	1.26 (20 °C)	10	46.0	7	0.36 (20 °C)	7	2,940	10	360	10
methyl ethyl ketone	72.1	0.80 (20 °C)	10	79.6	7	0.41 mPa s (20 °C)	7	268,000	10	77.5	10
p-Isopropyl toluene	134.2	0.86 (20 °C)	7	177.1	7	NA		23.4	7	1.5	7
Toluene	92.13	0.867	2	110.6	1	0.59	7	534.8	1	28.4	1
Polychlorinated Biphenyls (PCBs)											
Aroclor-1242	261	1.35	9	325-366	9	82-92 saybolt sec	7	0.1-0.75	9	50	7
Aroclor-1248	288	1.41	9	340-375	9	36-37 saybolt sec	7	0.1-0.5	9	4.94E-04	7
Aroclor-1254	327	1.5	9	365-390	9	1800-2500 saybolt sec	7	0.01-0.30	9	7.70E-05	7
Aroclor-1260	372	1.58	9	385-420	9	3200-45000 saybolt sec	7	0.003-0.080	9	4.05E-05	7
Polycyclic Aromatic Hydrocarbons (PAHs)											
Acenaphthylene	152.2	0.8988 @16^oC	7	265-275	7	solid	7	16.1	7	9.12E-04	7
Benzo(a)anthracene	228.29	NA	7	437.6	7	solid	7	0.01	2	5.00E-09 (20^oC)	7
Benzo(a)pyrene	252.32	1.351	7	>360	7	solid	7	0.0038	7	>1 (20^oC)	7
Benzo(b)fluoranthene	252.32	NA		NA		solid	7	0.0012	7	5.00E-07	7
Benzo(g,h,i)perylene	276.34	NA		NA		solid	7	0.0007	1	1.03E-10	1
Benzo(k)fluoranthene	252.32	NA	7	480	7	solid	7	Insoluble	7	9.59E-11 torr	7
Chrysene	228.29	1.274	2	488	2	solid	7	0.006	2	6.30E-07	7
Fluoranthene	202	NA		250	2	solid	7	0.265	2	NA	7
Fluorene	166.21	1.2 (0 °C)	7	295	7	solid	7	1.69	1	7.10E-04	1
Indeno(1,2,3-c,d)pyrene	276.34	NA		536	7	solid	7	0.00053	1	1.00E-10	1
Phenanthrene	178.22	1.025	2	340	2	solid	7	0.816 (21^oC)	2	1 (118.2^oC)	7
Pyrene	202.26	1.271 @ 23^oC	7	393	7	solid	7	0.16 (26^oC)	2	6.85E-07 (20^oC)	7
Other Constituents											
Benzoic acid	122.1	1.27	2	249	2	NA	7	2900	2	7.00E-04	7

Table 8.2.2: Physical and Chemical Characteristics **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Chemical	Molecular Weight (g/mol)	Density * (g/cm^3)		Boiling Point (^oC)		Viscosity * (cp)		Water Solubility* (mg/L)		Vapor Pressure * (mm Hg)	
bis (2-Ethylhexyl) phthalate	390.54	0.9861	7	230 @ 5 mmHG	7	81.4	7	0.34	7	9.75E-06	7
Di-n-butyl phthalate	278.34	1.049	7	340	7	0.203 poise	7	13	7	9.70E-03	7
Di-n-octyl phthalate	390.56	0.978	7	220 @ 4 mmHg	7	NA	7	3	7	<0.2 (150^oC)	7
Cyanide (as hydrogen cyanide)	27.03	0.901	7	26.5	7	NA	7	1,000,000	7	742	7

Notes:

(1) Howard, P. 1990. Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Volume II - Solvents. Lewis Publishers.
(2) Verschueren, K. 1983. Handbook of Environmental Data on Organic Chemicals 2nd Edition., Van Nostrand Reinhold Company Inc.
(3) Howard, P. et al. 1991. Handbook of Environmental Degradation Rates, Lewis Publishers.
(4) USEPA. 1996. Superfund Chemical Data Matrix. USEPA/540/R-96/028.
(5) Howard, P. 1989. Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Volume I - Large Production and Priority. Pollutants. Lewis Publishers.
(6) Budavari, S (Ed.) 1996. Merck Index, Merck & Company, Whitehouse Station, New Jersey
(7) Hazardous Substance Data Base (HSDB). 2006. On-line data base maintained by the National Institute of Health, Bethesda, MD
(8) Weast, R.C. 1988 CRC Handbook of Chemistry. CRC Press Inc. Boca Raton, FL.
(9) MacKay et.al. 1992. Illustrated Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals. Lewis Publishers. Boca Raton, FL.
(10) USEPA. 1990. Basics of Pump-and-Treat Ground-Water Remediation Technology. Environmental Research Lab, Ada OK. EPA-600/8-90/003.

* @ 25^oC unless otherwise noted.

"NA" No information available based on source reviewed.

Table 8.2.3: Migration and Dispersal Characteristics **DRAFT**
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Chemical	Octanol-Water Partition Coefficient (Log K_{ow})		Organic Carbon/Water Partition Coefficent (Log Koc) *		Potential for Significant Degradation: Biodegradation		Potential for Significant Degradation: Photolysis		Potential for Significant Degradation: Hydrolysis		Henry's Law Constants (atm-m^3/mole)		Bioconcentration Factor	
Volatile Organic Compounds (VOCs)														
1,1,1-Trichloroethane	2.48	1	2.13	1	Yes	3	No	3	Slow	3	1.72E-02	1	Low	3
1,1-Dichloroethane	1.79	1	1.72	1	Slow	7	Yes (indirect)	6	Slow	3	5.62E-03	1	Low	3
1,1-Dichloroethene	2.13	1	1.81	1	Slow	7	--		Slow	3	2.61E-02	1	Low	3
2-Chloroethyl vinyl ether	1.28	5	2.20	2	Yes	3	--		No	3	2.50E-04	5	Low	3
Chloroethane	1.54	5	1.23	5	Slow	3	--		--		6.15E-04	5	Low	3
cis-1,2-Dichloroethene	1.86	1	1.55	1	Slow	3	Yes (indirect)	3	--		4.08E-03	1	Low	3
Tetrachloroethene	2.67	1	2.42	1	Yes	7	Yes (indirect)	3	Slow	3	1.84E-02	1	Low	3
trans-1,2-Dichloroethene	2.07	1	1.58	1	Slow	3	No	3	No	3	9.38E-03	1	Low	3
Trichloroethene	2.71	1	1.97	1	Yes	7	--		--		1.03E-02	1	Low	3
Vinyl Chloride	1.50	1	1.27	1	Slow	3	--		No	3	2.70E-02	1	Low	3
Acetone	-0.24	1	-0.24	1	Yes	3	--		--		3.88E-05	1	Low	3
Benzene	2.13	1	1.79	1	Yes	7	Yes (direct)	7	Yes	3	5.55E-03	1	Low	3
Carbon disulfide	2.00	1	1.66	1	--		--		--		3.03E-02	1	Low	3
methyl ethyl ketone	0.26	5	0.65	5	Yes	3	--		--		2.74E-05	5	Low	3
p-Isopropyl toluene	4.1	8	3.61	3	Yes	3	--		--		1.10E-02	3	High	3
Toluene	2.75	1	2.15	1	Yes	7	Yes	7	--		6.64E-03	1	Low	3
Metals														
Aluminum	NA		--		NA		NA		NA		NA		Low - Moderate	3
Antimony	NA		2.4	2	NA		NA		NA		NA		Low	3
Arsenic	NA		3.4	2	NA		NA		NA		NA		--	
Barium	NA		--		NA		NA		NA		NA		Moderate	3
Beryllium	NA		3.1	2	NA		NA		NA		NA		--	
Cadmium	NA		2.9	2	NA		NA		NA		NA		Moderate - High	3
Chromium (III)	NA		3.9	2	NA		NA		NA		NA		Low	3
Chromium (VI)	NA		1.1	2	NA		NA		NA		NA		--	
Cobalt	NA		2.1	2	NA		NA		NA		NA		Moderate	3
Copper	NA		2.7	2	NA		NA		NA		NA		Moderate - High	3
Iron	NA		--		NA		NA		NA		NA		Low	3
Lead	NA		4.2	2	NA		NA		NA		NA		Low - Moderate	3
Magnesium	NA		--		NA		NA		NA		NA		--	
Manganese	NA		--		NA		NA		NA		NA		--	
Mercury	NA		3.8	2	NA		NA		NA		NA		High	3
Nickel	NA		3.1	2	NA		NA		NA		NA		Low	3
Selenium	NA		1	2	NA		NA		NA		NA		Moderate	3
Silver	NA		2.6	2	NA		NA		NA		NA		Low - Moderate	3
Vanadium	NA		--		NA		NA		NA		NA		Low	3

Table 8.2.3: Migration and Dispersal Characteristics **DRAFT**
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Chemical	Octanol-Water Partition Coefficient (Log K_{ow})		Organic Carbon/Water Partition Coefficent (Log Koc) *		Potential for Significant Degradation: Biodegradation		Potential for Significant Degradation: Photolysis		Potential for Significant Degradation: Hydrolysis		Henry's Law Constants (atm-m^3/mole)		Bioconcentration Factor	
Zinc	NA		3.1	2	NA		NA		NA		NA		Moderate - High	3
Radionuclides														
Uranium-234	NA		-0.4	4	NA		NA		NA		NA		Low	3
Uranium-235	NA		-0.4	4	NA		NA		NA		NA		Low	3
Uranium-238	NA		-0.4	4	NA		NA		NA		NA		Low	3
Polychlorinated Biphenyls (PCBs)														
Aroclor-1242	4.11	5	4.0 - 5.1	3	Slow	3	--		No	3	5.60E-04	5	High	3
Aroclor-1248	5.75	5	4.4 - 4.9	3	Slow	3	--		No	3	3.50E-03	5	High	3
Aroclor-1254	6.03	5	4.63	5	Slow	3	--		No	3	2.70E-03	5	High	3
Aroclor-1260	7.14	5	4.8 - 6.8	3	Slow	3	--		No	3	7.10E-03	5	High	3
Polycyclic Aromatic Hydrocarbons (PAHs)														
Acenaphthylene	4.07	3	3.40	5	Slow	3	Yes	3	No	3	1.48E-03	5	Moderate	3
Benzo(a)anthracene	5.70	1	5.55	1	Slow	3	Yes	3	No	3	3.35E-06	1	Moderate	3
Benzo(a)pyrene	6.11	1	5.99	1	Slow	3	Yes	3	No	3	1.13E-06	1	Moderate	3
Benzo(b)fluoranthene	6.20	1	6.09	1	Slow	3	Yes	3	No	3	1.11E-04	1	Moderate	3
Benzo(g,h,i)perylene	6.51	5	6.20	5	Slow		Yes	3	No	3	5.34E-08	5	Moderate	3
Benzo(k)fluoranthene	6.20	1	6.09	1	Slow	3	Yes	3	No	3	8.29E-07	1	Moderate	3
Chrysene	5.70	1	5.60	1	Slow	3	Yes	3	No	3	9.46E-05	1	Moderate	3
Fluoranthene	5.12	1	4.69	1	Yes	3	Yes	3	No	3	1.61E-05	1	Moderate	3
Fluorene	4.21	1	3.89	1	Yes	3	Yes	3	No	3	6.36E-05	1	Moderate	3
Indeno(1,2,3-c,d)pyrene	6.65	1	6.54	1	Slow	3	Yes	3	No	3	1.60E-06	1	Moderate	3
Phenanthrene	4.46	5	4.15	5	Yes	3	Yes	3	No	3	1.59E-04	5	Moderate	3
Pyrene	5.11	1	4.83	1	Yes	3	Yes	3	No	3	1.10E-05	1	Moderate	3
Other Constituents														
Benzoic acid	1.86	1	1.51	1	Yes	3	Yes	3	No	3	1.54E-06	1	Low	3
bis (2-Ethylhexyl) phthalate	7.30	1	7.18	1	Yes	3	Yes	3	Yes	3	1.02E-07	1	High	3
Di-n-butyl phthalate	4.61	1	3.19	1	Yes	3	Yes	3	Yes	3	9.38E-10	1	Low	3
Di-n-octyl phthalate	9.20		--		Yes	3	Yes	3	Yes	3	--		Moderate	3
Cyanide (as hydrogen cyanide)	-0.25	5	3.0	2	Slow	3	No	3	--		--		Low	3

Notes:

1) USEPA. 1996. Soil Screening Guidance: Technical Background Document. Office of Solid waste and Emergency Response, EPA/540/128. May
2) Allison et al. 2005. Partition Coefficients for Metals in Surface Water, Soil and Waste. EPA/600/R-05/074. July
3) Hazardous Substance Data Base. (HSDB). 2006 On-line data base maintained by the National Institute of Health, Bethesda, MD
4) USEPA. 2000. Soil Screening Guidance for Radionuclides: User's Guide. Office of Radiation and Indoor Air. EPA/540-R-00-007. October.
5) USEPA. 1990. Basics of Pump-and-Treat Ground-Water Remediation Technology. Environmental Research Lab, Ada OK. EPA-600/8-90/003.
6) Howard, P. 1990. Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Volume II - Solvents. Lewis Publishers.
7) Howard, P. et al. 1991. Handbook of Environmental Degradation Rates, Lewis Publishers.

"NA" Not applicable
-- No information available
* Log Kd is reported for metals

Table 9.1.1: Background Levels of Metals in Soils
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

Metal	Subsurface Soil Background				Surface Soil Background				MADEP "Natural" Soil (mg/kg)	USEPA Soils over Glacial Till (mg/kg)
	Detection Frequency	Range of Detected Concentrations Min (mg/kg)	Max (mg/kg)	95% UCL (mg/kg)	Detection Frequency	Range of Detected Concentrations Min (mg/kg)	Max (mg/kg)	95% UCL (mg/kg)		
Antimony	0/9	NA	NA	--	0/10	NA	NA	--	1	NE
Arsenic	9/9	0.26	1.6	0.84	10/10	2.7	7.5	4.5	20	2.1 - 12
Beryllium	0/9	NA	NA	--	10/10	0.18	0.54	0.43	0.4	NE
Cadmium	0/9	NA	NA	--	10/10	0.12	4.4	2.3	2	NE
Chromium (total)	9/9	3.4	8.0	6.2	10/10	8.1	15.3	12.8	30	30 - 150
Copper	9/9	3.0	7.0	4.9	10/10	3.5	14.7	8.9	40	15 - 50
Lead	9/9	3.2	5.6	4.7	10/10	8.8	78.4	41.5	100	10 - 30
Mercury	0/9	NA	NA	--	7/10	0.09	1.2	0.59	0.3	0.02 - 0.36
Nickel	9/9	4.2	8.9	7.9	10/10	3.5	11.2	8.1	20	10 - 30
Selenium	0/9	NA	NA	--	10/10	1.2	2.4	1.9	0.5	0.2 - 0.8
Silver	1/9	0.49	0.49	--	8/10	0.08	11.4	7.5	0.6	NE
Thalium	0/9	NA	NA	--	0/10	NA	NA	--	0.6	NE
Zinc	8/9	17.3	28.1	23.8	10/10	40.3	28.1	28.3	100	47 - 131

Notes:
-- too few detects to calculate a 95% UCL
NA - metal was not detected in any sample
NE - metal was not evaluated
MADEP "natural" soil background generally reflects the 90th percentile value of a 1995 data set consisting of 750 - 1,000 samples
USEPA (1995e) - Surface soils over glacial till and drift - range presented

Table 9.1.2: Surface Soil Sampling Program - Detected Metals Compared to Background
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	95% Upper	Maximum	SS-E-01	SS-E-02	SS-H-01	SS-H-01 (dup)	SS-H-02	SS-H-03	SS-H-04
SAMPLE ID:	Confidence	Concentration or	EP-SS-E-01	EP-SS-E-02	EP-SS-H-01	EP-SS-H-01-D	EP-SS-H-02	EP-SS-H-03	EP-SS-H-04
LABORATORY SDG NO.:	Limit of the mean	Detection Limit	0828A	0828A	0828A	0828A	0828B	0828B	0828B
DATE SAMPLED:	of Background	in Background	4/16/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997	4/17/1997
UNITS:	Distribution	Distribution	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	--	--	--	--
Arsenic	4.52	7.5	3.6	1.4	1.8	2.0	1.5	3.3	4.6
Beryllium	0.43	0.54	0.40	0.32	0.31	0.31	0.37	0.38	0.39
Cadmium	2.27	4.4	2.0 J	2.6 J	2.2 J	2.3 J	1.2 J	3.8	1.1 J
Chromium (Total)	12.8	15.3	9.8	9.8	12.4	14.0	8.3	11.3	9.4
Copper	8.89	14.7	6.7	11.4	10.6	10.8	12.4	19.0	9.9
Lead	41.5	78.4	32.6 J	7.4 J	14.7 J	15.6 J	10.9	33.4	13.6
Mercury	0.59	1.2	0.13	0.11	0.28	0.24	--	0.11	0.08
Nickel	8.07	11.2	6.3	**12.1**	6.5	6.9	**11.6**	10.4	8.0
Selenium	1.88	2.4	1.5 J	0.74 J	0.99 J	1.1 J	0.63	0.85	1.1
Silver	7.53	11.4	2.5 J	3.9 J	6.4 J	6.7 J	5.1	3.4	0.99
Zinc	28.3	40.3	27.3	29.8	30.0	32.6	30.1	**57.2**	29.2

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID or "dup" in sample location indicates duplicate sample.
(4) Bold Type indicates value exceeds background.
(5) Satistical analysis not possible for antimony due to data rejection during the data validation process.
(6) Thallium was not detected in any samples.
mg/kg = milligrams per kilogram

Table 9.1.2: Surface Soil Sampling Program - Detected Metals Compared to Background
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION:	95% Upper	Maximum	SS-H-05	SS-H-06	SS-H-07	SS-EH-01	SS-EH-02	SS-EH-03
SAMPLE ID:	Confidence	Concentration or	EP-SS-H-05	EP-SS-H-06	EP-SS-H-07	EP-SS-EH-01	EP-SS-EH-02	EP-SS-EH-03
LABORATORY SDG NO.:	Limit of the mean	Detection Limit	0828B	0828B	0828A	0828A	0828A	0828A
DATE SAMPLED:	of Background	in Background	4/17/1997	4/17/1997	4/17/1997	4/16/1997	4/17/1997	4/17/1997
UNITS:	Distribution	Distribution	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	0.84	--	--	--	--
Arsenic	4.52	7.5	3.1	5.4	1.9	4.0	3.9	4.2
Beryllium	0.43	0.54	0.35	0.46	0.31	0.30	0.39	0.19
Cadmium	2.27	4.4	3.2	**24.3**	0.35 J	0.35 J	3.0 J	**26.9 J**
Chromium (Total)	12.8	15.3	10.6	**17.7**	10.3	11.1	11.9	10.5
Copper	8.89	14.7	10.4	**18.5**	12.3	7.2	7.2	**44.3**
Lead	41.5	78.4	47.4	74.3	13.3 J	30.7 J	21.8 J	77.7 J
Mercury	0.59	1.2	--	0.18	0.09	--	0.15	0.27
Nickel	8.07	11.2	7.4	10.9	10.2	4.9	8.0	11.2
Selenium	1.88	2.4	0.90	1.3	0.93 J	1.5 J	1.5 J	2.0 J
Silver	7.53	11.4	1.7	6.9	3.2 J	0.14 J	0.40 J	**18.3 J**
Zinc	28.3	40.3	29.9	**46.3**	**51.3**	20.1	29.0	**48.9**

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID or "dup" in sample location indicates duplicate sample.
(4) Bold Type indicates value exceeds background.
(5) Satistical analysis not possible for antimony due to data rejection during the data validation process.
(6) Thallium was not detected in any samples.
mg/kg = milligrams per kilogram

Table 9.1.2: Surface Soil Sampling Program - Detected Metals Compared to Background
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SAMPLE LOCATION:	95% Upper	Maximum	SS-EH-04	SS-A1-01	SS-A1-01 (dup)	SS-A1-02	SS-A1-03
SAMPLE ID:	Confidence	Concentration or	EP-SS-EH-04	L0514775-01	L0514775-02	L0514775-03	L0514775-04
LABORATORY SDG NO.:	Limit of the mean	Detection Limit	0828B	L0514775	L0514775	L0514775	L0514775
DATE SAMPLED:	of Background	in Background	4/17/1997	12/5/2005	12/5/2005	12/5/2005	12/5/2005
UNITS:	Distribution	Distribution	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	--	--	--	--	--
Arsenic	4.52	7.5	4.0	1.5	1.6	1.9	1.5
Beryllium	0.43	0.54	0.37	--	--	--	--
Cadmium	2.27	4.4	**6.4**	2	2.2	**6.6**	2.9
Chromium (Total)	12.8	15.3	10.8	4.6	4.9	8.7	6.8
Copper	8.89	14.7	10.7	12	11	**25**	**30**
Lead	41.5	78.4	40.6	13	13	36	11
Mercury	0.59	1.2	--	--	--	--	--
Nickel	8.07	11.2	7.0	4.6	4.3	5.8	4.9
Selenium	1.88	2.4	1.4	--	--	--	--
Silver	7.53	11.4	3.3	4.3	4.7	**20**	**20**
Zinc	28.3	40.3	28.8	26	33	38	29

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID or "dup" in sample location indicates duplicate sample.
(4) Bold Type indicates value exceeds background.
(5) Satistical analysis not possible for antimony due to data rejection during the data validation process.
(6) Thallium was not detected in any samples.
mg/kg = milligrams per kilogram

Table 9.1.2: Surface Soil Sampling Program - Detected Metals Compared to Background
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SAMPLE LOCATION:	95% Upper	Maximum	FS-SD-01	FS-SD-209	FS-SD-50	FS-SD-204	FS-TRIB-LB
SAMPLE ID:	Confidence	Concentration or	L1008325-18	L1008325-19	L1008325-20	L1008325-21	L1008325-17
LABORATORY SDG NO.:	Limit of the mean	Detection Limit	L1008325	L1008325	L1008325	L1008325	L1008325
DATE SAMPLED:	of Background	in Background	6/1/2010	6/1/2010	6/1/2010	6/1/2010	6/3/2010
UNITS:	Distribution	Distribution	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	--	--	0.167	0.398	0.073	0.347	1.34
Arsenic	4.52	7.5	2.9	2.24	1.53	1.53	2.21
Beryllium	0.43	0.54	0.303	**1.37**	0.395	**1.69**	**0.615**
Cadmium	2.27	4.4	2.56	**14.16**	0.94	**5.72**	**7.86**
Chromium (Total)	12.8	15.3	10.1	**24.8**	7.76	11.9	5.09
Copper	8.89	14.7	NA	NA	NA	NA	NA
Lead	41.5	78.4	32.9	**83.5**	13.5	64.5	**124**
Mercury	0.59	1.2	0.083	0.28	0.08	0.214	0.366
Nickel	8.07	11.2	7.06	9.86	2.91	5.7	**19**
Selenium	1.88	2.4	0.476	2.29	0.684	2.23	1.9
Silver	7.53	11.4	1.62	2.82	0.205	1.35	**25.2**
Zinc	28.3	40.3	32.4	**80.7**	8.45	26.4	31.6

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID or "dup" in sample location indicates duplicate sample.
(4) Bold Type indicates value exceeds background.
(5) Satistical analysis not possible for antimony due to data rejection during the data validation process.
(6) Thallium was not detected in any samples.
mg/kg = milligrams per kilogram

Table 9.1.2: Surface Soil Sampling Program - Detected Metals Compared to Background
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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SAMPLE LOCATION: SAMPLE ID: LABORATORY SDG NO.: DATE SAMPLED: UNITS:	95% Upper Confidence Limit of the mean of Background Distribution	Maximum Concentration or Detection Limit in Background Distribution	FS-TRIB-RB L1008325-27 L1008325 6/3/2010 mg/kg
Antimony	--	--	1.24
Arsenic	4.52	7.5	1.31
Beryllium	0.43	0.54	0.151
Cadmium	2.27	4.4	**13.9**
Chromium (Total)	12.8	15.3	4.62
Copper	8.89	14.7	NA
Lead	41.5	78.4	**104**
Mercury	0.59	1.2	0.606
Nickel	8.07	11.2	**11.4**
Selenium	1.88	2.4	1.5
Silver	7.53	11.4	**20.7**
Zinc	28.3	40.3	39.3

Notes:

(1) "J" qualifier indicates estimated value.
(2) "--" indicates compound not detected above detection limit.
(3) "D" in sample ID or "dup" in sample location indicates duplicate sample.
(4) Bold Type indicates value exceeds background.
(5) Satistical analysis not possible for antimony due to data rejection during the data validation process.
(6) Thallium was not detected in any samples.
mg/kg = milligrams per kilogram

Table 9.1.3: Comparison of Metal Concentrations in AOC A-1 Soils to Background Levels **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

Metal	Subsurface Soil Background				Subsurface Soils - AOC A-1				MassDEP "Natural" Soil (mg/kg)	USEPA Soils over Glacial Till (mg/kg)
	Detection Frequency	Range of Detected Concentrations Min (mg/kg)	Max (mg/kg)	95% UCL (mg/kg)	Detection Frequency	Range of Detected Concentrations Min (mg/kg)	Max (mg/kg)	95% UCL (mg/kg)		
Antimony	0/9	NA	NA	--	1/16	6.6	**6.6**	--	1	NE
Arsenic	9/9	0.26	1.6	0.84	16/16	0.29	**2.3**	1.4	20	2.1 - 12
Beryllium	0/9	NA	NA	--	2/16	0.21	**0.32**	--	0.4	NE
Cadmium	0/9	NA	NA	--	15/16	0.42	**66.3**	**33.5**	2	NE
Chromium (total)	9/9	3.4	8.0	6.2	16/16	3.9	**56.8**	**30.4**	30	30 - 150
Copper	9/9	3.0	7.0	4.9	16/16	6.4	**464**	**370**	40	15 - 50
Lead	9/9	3.2	5.6	4.7	15/16	3.2	**62.1**	**26.8**	100	10 - 30
Mercury	0/9	NA	NA	--	0/16	NA	NA	--	0.3	0.02 - 0.36
Nickel	9/9	4.2	8.9	7.9	16/16	4.4	**27**	**16.9**	20	10 - 30
Selenium	0/9	NA	NA	--	1/16	0.34	**0.34**	--	0.5	0.2 - 0.8
Silver	1/9	0.49	0.49	--	15/16	**0.61**	**62**	**27.9**	0.6	NE
thalium	0/9	NA	NA	--	0/16	NA	NA	--	0.6	NE
Zinc	8/9	17.3	28.1	23.8	16/16	15	**228**	**67**	100	47 - 131

Notes:
-- too few detects to calculate a 95% UCL
NA - metal was not detected in any sample
MassDEP "natural" soil background generally reflects the 90th percentile value of a 1995 data set consisting of 750 - 1,000 samples
Concentrations exceeding maximum detetected background values are highlighted in bold
USEPA (1995e) - Surface soils over glacial till and drift - range presented

Table 9.1.4: Comparison of Metal Concentrations in AOC B-2, B-3 and B-18 Soils to Background Levels **DRAFT**
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Metal	Subsurface Soil Background				Subsurface Soils - AOC B-2, B-3 and B-18				MassDEP "Natural" Soil (mg/kg)	USEPA Soils over Glacial Till (mg/kg)
	Detection Frequency	Range of Detected Concentrations Min (mg/kg)	Max (mg/kg)	95% UCL (mg/kg)	Detection Frequency	Range of Detected Concentrations Min (mg/kg)	Max (mg/kg)	95% UCL (mg/kg)		
Antimony	0/9	NA	NA	--	0/7	NA	NA	--	1	NE
Arsenic	9/9	0.26	1.6	0.84	7/7	0.3	**2.7**	**1.8**	20	2.1 - 12
Beryllium	0/9	NA	NA	--	0/7	NA	NA	--	0.4	NE
Cadmium	0/9	NA	NA	--	7/7	**3.7**	**76**	**53.6**	2	NE
Chromium (total)	9/9	3.4	8.0	6.2	7/7	6.1	**20.9**	**17.3**	30	30 - 150
Copper	9/9	3.0	7.0	4.9	6/7	**7.7**	**24.5**	**16.1**	40	15 - 50
Lead	9/9	3.2	5.6	4.7	7/7	4.2	**25.2**	**17.4**	100	10 - 30
Mercury	0/9	NA	NA	--	0/7	NA	NA	--	0.3	0.02 - 0.36
Nickel	9/9	4.2	8.9	7.9	7/7	4.6	**19.2**	**16.5**	20	10 - 30
Selenium	0/9	NA	NA	--	1/7	**0.68**	**0.68**	--	0.5	0.2 - 0.8
Silver	1/9	0.49	0.49	--	5/7	**1.4**	**33.8**	**30.8**	0.6	NE
thalium	0/9	NA	NA	--	0/7	NA	NA	--	0.6	NE
Zinc	8/9	17.3	28.1	23.8	7/7	27	**61.3**	**48.5**	100	47 - 131

Notes:
-- too few detects to calculate a 95% UCL
NA - metal was not detected in any sample
MassDEP "natural" soil background generally reflects the 90th percentile value of a 1995 data set consisting of 750 - 1,000 samples
Concentrations exceeding maximum detetected background values are highlighted in bold
USEPA (1995e) - Surface soils over glacial till and drift - range presented

Table 9.1.5: Comparison of Metal Concentrations in AOC 7 Soils to Background Levels **DRAFT**
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Metal	Subsurface Soil Background				Subsurface Soils - AOC 7 (1)				MassDEP "Natural" Soil (mg/kg)	USEPA Soils over Glacial Till (mg/kg)
	Detection Frequency	Range of Detected Concentrations Min (mg/kg)	Max (mg/kg)	95% UCL (mg/kg)	Detection Frequency	Range of Detected Concentrations Min (mg/kg)	Max (mg/kg)	95% UCL (mg/kg)		
Antimony	0/9	NA	NA	--	0/12	NA	NA	--	1	NE
Arsenic	9/9	0.26	1.6	0.84	11/12	0.26	**4.2**	**2.3**	20	2.1 - 12
Beryllium	0/9	NA	NA	--	3/12	0.17	**0.26**	--	0.4	NE
Cadmium	0/9	NA	NA	--	12/12	0.46	**61.9**	**27.2**	2	NE
Chromium (total)	9/9	3.4	8.0	6.2	12/12	4.6	**11.3**	**8.8**	30	30 - 150
Copper	9/9	3.0	7.0	4.9	9/12	3.5	**56.3**	**29.8**	40	15 - 50
Lead	9/9	3.2	5.6	4.7	12/12	3.7	**25.8**	**15.9**	100	10 - 30
Mercury	0/9	NA	NA	--	2/12	0.065	**0.14**	--	0.3	0.02 - 0.36
Nickel	9/9	4.2	8.9	7.9	12/12	6.6	**17.9**	**11.5**	20	10 - 30
Selenium	0/9	NA	NA	--	2/12	0.12	**0.31**	--	0.5	0.2 - 0.8
Silver	1/9	0.49	0.49	--	9/12	0.32	**19.9**	**6.2**	0.6	NE
thalium	0/9	NA	NA	--	1/12	0.12	**0.12**	--	0.6	NE
Zinc	8/9	17.3	28.1	23.8	12/12	19.3	**98.3**	**73.6**	100	47 - 131

Notes:
(1) does not include data collected during the Supplemental Design Investigation
-- too few detects to calculate a 95% UCL
NA - metal was not detected in any sample
MassDEP "natural" soil background generally reflects the 90th percentile value of a 1995 data set consisting of 750 - 1,000 samples
USEPA (1995e) - Surface soils over glacial till and drift - range presented

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	**B-101**		**B-102**		**B-103**	**B-104**		**B-105**	
Date Collected	**12/19/03**	**12/19/03**	**12/16/03**	**12/16/03**	**12/20/03**	**12/23/03**	**12/23/03**	**12/18/03**	**12/18/03**
Analysis Type	**High**	**High**	**High**	**Low**	**Low**	**Low**	**Low**	**High**	**Low**
Depth (feet)	**0-2**	**2-4**	**0-2**	**2-4**	**0-2**	**0-2**	**6-8**	**0-2**	**4-6**
Acetone	< 1,600	< 790	< 1,500	10 J	18 J	16	10	< 1,300	18
Benzene	< 160	< 79	< 150	< 0.87	< 0.91	< 0.80	< 0.69	< 130	< 0.91
2-Butanone	< 1,600	< 790	< 1,500	< 8.7	< 9.1	< 8.0	< 6.9	< 1,300	< 9.1
1,1-Dichloroethane	< 240	< 120	< 220	< 1.3	< 1.4	< 1.2	< 1.0	< 190	< 1.4
1,1-Dichloroethene	< 160	< 79	< 150	< 0.87	< 0.91	< 0.80	< 0.69	< 130	< 0.91
cis-1,2-Dichloroethene	< 160	< 79	< 150	< 0.87	< 0.91	1.6	< 0.69	< 130	< 0.91
Ethylbenzene	< 160	< 79	< 150	< 0.87	< 0.91	< 0.80	< 0.69	< 130	< 0.91
4-Methy-2-Pentanone	< 1,600	< 790	< 1,500	< 8.7	< 9.1	11	< 6.9	< 1,300	< 9.1
Methylene Chloride	< 1,600	< 790	< 1,500	< 8.7	< 9.1	< 8.0	< 6.9	< 1,300	< 9.1
Tetrachloroethene	810	2,300	400	200 J	11 J	18	5.6	2,300	520
Styrene	< 160	< 79	< 150	< 0.87	< 0.91	< 0.80	< 0.69	< 130	< 0.91
Toluene	< 240	< 120	< 220	4.3 U	4.4 U	3.5 U	4.9 U	< 190	3.3 U
1,1,1-Trichloroethane	< 160	< 79	< 150	53 J	1.5 J	2.0	< 0.69	130	25
Trichloroethene	< 160	< 79	< 150	26 J	4.2 J	2.2	< 0.69	< 130	4.0
o-Xylene	< 160	< 79	< 150	< 0.87	< 0.91	< 0.80	< 0.69	< 130	< 0.91
m,p-Xylene	< 160	< 79	< 150	< 0.87	< 0.91	< 0.80	< 0.69	< 130	< 0.91

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	B-106		B-107		B-108		B-109	
Date Collected	12/20/03	12/20/03	12/20/03	12/20/03	12/17/03	12/17/03	12/16/03	12/16/03
Analysis Type	Low	Low	Low	Low	Low	Low	High	High
Depth (feet)	0-2	6-8	0-2	6-8	0-2	2-4	0-2	2-4
Acetone	9.0	< 7.5	19	< 7.7	< 8.0	< 8.4	< 1,500	< 1,400
Benzene	< 0.76	< 0.75	< 0.62	< 0.77	< 0.80	< 0.84	< 150	< 140
2-Butanone	< 7.6	< 7.5	< 6.2	< 7.7	< 8.0	< 8.4	< 1,500	< 1,400
1,1-Dichloroethane	< 1.1	< 1.1	< 0.92	< 1.2	< 1.2	< 1.2	< 230	< 210
1,1-Dichloroethene	< 0.76	< 0.75	< 0.62	< 0.77	< 0.80	< 0.84	< 150	< 140
cis-1,2-Dichloroethene	< 0.76	< 0.75	< 0.62	< 0.77	< 0.80	< 0.84	< 150	< 140
Ethylbenzene	< 0.76	< 0.75	< 0.62	< 0.77	< 0.80	< 0.84	< 150	< 140
4-Methy-2-Pentanone	< 7.6	< 7.5	< 6.2	< 7.7	< 8.0	< 8.4	< 1,500	< 1,400
Methylene Chloride	< 7.6	< 7.5	< 6.2	< 7.7	< 8.0	< 8.4	< 1,500	< 1,400
Tetrachloroethene	5.4	2.1	9.1	< 0.77	4.8	12	1,400	1,300
Styrene	< 0.76	< 0.75	< 0.62	< 0.77	< 0.80	< 0.84	< 150	< 140
Toluene	3.3 U	4.1 U	3.3 U	4.4 U	2.9 U	4.3 U	< 230	< 210
1,1,1-Trichloroethane	0.91	< 0.75	1.2	< 0.77	0.89	5.0	1,200	1,000
Trichloroethene	< 0.76	< 0.75	0.79	< 0.77	< 0.80	< 0.84	< 150	< 140
o-Xylene	< 0.76	< 0.75	< 0.62	< 0.77	< 0.80	< 0.84	< 150	< 140
m,p-Xylene	< 0.76	< 0.75	< 0.62	< 0.77	< 0.80	< 0.84	< 150	< 140

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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BASF Corporation, Plainville Massachusetts

Location	B-110		B-111			B-112		B-113	
Date Collected	12/23/03	12/23/03	12/17/03	12/17/03	12/17/03	12/23/03	12/23/03	12/17/03	12/17/03
Analysis Type	Low	Low	High	High	Low	Low	Low	Low	Low
Depth (feet)	0-2	6-8	0-2	0-2 dup	2-4	0-2	6-8	0-2	6-8
Acetone	7.0	13	< 1,400	< 1,400	8.6	12	18	16 J	< 7.3
Benzene	< 0.69	< 0.76	< 140	< 140	< 0.76	< 0.82	< 0.73	< 0.69	< 0.73
2-Butanone	< 6.9	< 7.6	< 1,400	< 1,400	< 7.6	< 8.2	< 7.3	< 6.9	< 7.3
1,1-Dichloroethane	< 1.0	< 1.1	< 210	< 220	< 1.1	< 1.2	< 1.1	< 1.0	< 1.1
1,1-Dichloroethene	< 0.69	< 0.76	< 140	< 140	< 0.76	< 0.82	< 0.73	< 0.69	< 0.73
cis-1,2-Dichloroethene	< 0.69	3.1	< 140	< 140	< 0.76	< 0.82	< 0.73	1.1 J	12
Ethylbenzene	< 0.69	< 0.76	< 140	< 140	< 0.76	< 0.82	< 0.73	< 0.69	< 0.73
4-Methy-2-Pentanone	< 6.9	< 7.6	< 1,400	< 1,400	< 7.6	< 8.2	< 7.3	< 6.9	< 7.3
Methylene Chloride	< 6.9	< 7.6	< 1,400	< 1,400	< 7.6	< 8.2	< 7.3	< 6.9	< 7.3
Tetrachloroethene	23	48	1,600	1,500	53	140	78	96 J	25
Styrene	< 0.69	< 0.76	< 140	< 140	< 0.76	< 0.82	< 0.73	< 0.69	< 0.73
Toluene	2.4 U	2.3 U	< 210	< 220	4.3 U	4.2 U	5.1 U	1.7 U	2.6 U
1,1,1-Trichloroethane	< 0.69	3.7	< 140	< 140	6.4	< 0.82	2.2	1.2 J	< 0.73
Trichloroethene	0.70	14	< 140	< 140	< 0.76	2.6	3.8	8.4 J	5.3
o-Xylene	< 0.69	< 0.76	< 140	< 140	< 0.76	< 0.82	< 0.73	< 0.69	< 0.73
m,p-Xylene	< 0.69	< 0.76	< 140	< 140	< 0.76	< 0.82	< 0.73	< 0.69	< 0.73

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	**B-114**			**B-118**			**B-120**	**B-126**	
Date Collected	**12/23/03**	**12/23/03**	**12/23/03**	**3/12/04**	**3/12/04**	**3/12/04**	**3/12/04**	**3/10/04**	**3/10/04**
Analysis Type	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**
Depth (feet)	**0-2**	**0-2 dup**	**6-8**	**0-2**	**0-2 dup**	**16-18**	**0-2**	**10-12**	**19-20**
Acetone	11	15	15	35 J	21 J	< 6.9	19 J	28 J	< 6.9
Benzene	< 0.77	< 0.83	< 1.1	3.9 J	2.2	< 0.69	6.6	< 0.72	< 0.69
2-Butanone	< 7.7	< 8.3	< 11	< 9.1	8.2 J	< 6.9	< 7.3	< 7.2	< 6.9
1,1-Dichloroethane	< 1.2	< 1.2	< 1.6	< 1.4	< 1.0	< 1.0	< 1.1	< 1.1	< 1.0
1,1-Dichloroethene	< 0.77	< 0.83	< 1.1	< 0.91	< 0.69	< 0.69	< 0.73	< 0.72	< 0.69
cis-1,2-Dichloroethene	< 0.77	< 0.83	< 1.1	< 0.91	< 0.69	< 0.69	< 0.73	< 0.72	< 0.69
Ethylbenzene	< 0.77	< 0.83	< 1.1	< 0.91	< 0.69	0.81	3.3	< 0.72	< 0.69
4-Methy-2-Pentanone	< 7.7	< 8.3	< 11	< 9.1	< 6.9	< 6.9	< 7.3	< 7.2	< 6.9
Methylene Chloride	< 7.7	< 8.3	< 11	< 9.1	< 6.9	< 6.9	< 7.3	< 7.2	< 6.9
Tetrachloroethene	6.1	8.3	15	42	52	3.9	82	13	< 0.69
Styrene	< 0.77	< 0.83	< 1.1	< 0.91	< 0.69	< 0.69	< 0.73	< 0.72	< 0.69
Toluene	3.7 U	7.1 U	5.2 U	3.9	4.6	< 1.0	14	1.1	1.3
1,1,1-Trichloroethane	< 0.77	< 0.83	< 1.1	16	18	< 0.69	16	< 0.72	< 0.69
Trichloroethene	< 0.77	< 0.83	2.0	< 0.91	1.2	< 0.69	< 0.73	< 0.72	< 0.69
o-Xylene	< 0.77	< 0.83	< 1.1	< 0.91	0.95	< 0.69	4.6	< 0.72	< 0.69
m,p-Xylene	< 0.77	< 0.83	< 1.1	< 0.91	1.8	< 0.69	8.9	< 0.72	< 0.69

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	**B-127**		**B-128**			**B-129**	
Date Collected	**3/9/04**	**3/9/04**	**3/8/04**	**3/8/04**	**3/8/04**	**3/10/04**	**3/10/04**
Analysis Type	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**High**
Depth (feet)	**4-6**	**6-8**	**0-2**	**6-8**	**16-18**	**10-12**	**16-18 till**
Acetone	10 J	12 J	< 8.8	< 7.3	44 J	10 J	< 1,000
Benzene	< 0.65	< 0.70	< 0.88	< 0.73	< 0.80	< 0.81	< 100
2-Butanone	< 6.5	< 7.0	< 8.8	< 7.3	< 8.0	< 8.1	< 1,000
1,1-Dichloroethane	< 0.98	< 1.0	< 1.3	< 1.1	< 1.2	< 1.2	< 150
1,1-Dichloroethene	< 0.65	< 0.70	< 0.88	< 0.73	< 0.80	< 0.81	< 100
cis-1,2-Dichloroethene	< 0.65	< 0.70	< 0.88	< 0.73	< 0.80	< 0.81	< 100
Ethylbenzene	< 0.65	< 0.70	< 0.88	< 0.73	< 0.80	< 0.81	< 100
4-Methy-2-Pentanone	< 6.5	< 7.0	< 8.8	< 7.3	< 8.0	< 8.1	< 1,000
Methylene Chloride	< 6.5	< 7.0	< 8.8	< 7.3	< 8.0	< 8.1	< 1,000
Tetrachloroethene	10	11	< 0.88	< 0.73	< 0.80	11	1,800
Styrene	< 0.65	< 0.70	< 0.88	< 0.73	< 0.80	< 0.81	< 100
Toluene	1.2	1.2	1.4	2.5	1.7	1.3	< 150
1,1,1-Trichloroethane	9.2	11	< 0.88	< 0.73	< 0.80	1.5	< 100
Trichloroethene	0.81	0.80	< 0.88	< 0.73	< 0.80	< 0.81	310
o-Xylene	< 0.65	< 0.70	< 0.88	< 0.73	< 0.80	< 0.81	< 100
m,p-Xylene	< 0.65	< 0.70	< 0.88	< 0.73	< 0.80	< 0.81	< 100

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	**B-131**			**B-132**			
Date Collected	**12/9/04**	**12/9/04**	**12/9/04**	**12/9/04**	**12/9/04**	**12/9/04**	**12/9/04**
Analysis Type							
Depth (feet)	**10-12**	**14-16**	**16-18**	**10-12**	**14-16**	**16-18 sand**	**16-18 till**
Acetone	< 1,420	< 25,800	< 11,500	< 1.400	< 3,400	< 12,100	< 4,120
Benzene	< 70.9	< 1,290	< 574	< 70.2	< 170	< 607	< 206
2-Butanone	< 709	< 12,900	< 5,740	< 702	< 1,700	< 6,070	< 2,060
1,1-Dichloroethane	< 70.9	< 1,290	< 574	< 70.2	< 170	< 607	< 206
1,1-Dichloroethene	< 70.9	< 1,290	< 574	< 70.2	< 170	< 607	< 206
cis-1,2-Dichloroethene	< 70.9	< 1,290	< 574	< 70.2	< 170	< 607	< 206
Ethylbenzene	< 70.9	< 1,290	< 574	< 70.2	< 170	< 607	< 206
4-Methy-2-Pentanone	< 709	< 12,900	< 5,740	< 702	< 1,700	< 6,070	< 2,060
Methylene Chloride	< 709	< 12,900	< 5,740	< 702	< 1,700	< 6,070	< 2,060
Tetrachloroethene	3,330	104,000	57,100	< 70.2	217,000	44,300	58,700
Styrene	< 70.9	< 1,290	< 574	< 70.2	< 170	< 607	< 206
Toluene	< 70.9	< 1,290	< 574	< 70.2	< 170	< 607	< 206
1,1,1-Trichloroethane	< 70.9	1,660	769	< 70.2	5,200	< 607	< 206
Trichloroethene	< 70.9	< 1,290	< 574	< 70.2	470	< 607	679
o-Xylene	< 70.9	< 1,290	< 574	< 70.2	< 170	< 607	< 206
m,p-Xylene	< 142	< 2,580	< 1,150	< 140	< 340	< 1,210	< 412

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	**MW-101**			**MW-102**		**MW-103**		**MW-104**	
Date Collected	**12/19/03**	**12/19/03**	**12/19/03**	**12/19/03**	**12/19/03**	**12/18/03**	**12/18/03**	**12/18/03**	**12/18/03**
Analysis Type	**Low**	**Low**	**Low**	**Low**	**High**	**Low**	**Low**	**Low/High**	**Low**
Depth (feet)	**0-2**	**0-2 dup**	**6-8**	**0-2**	**2-4**	**0-2**	**8-10**	**0-2**	**2-4**
Acetone	16	24	8.3	9.9	< 1,400	22	< 7.1	87 J	32 J
Benzene	< 0.86	< 0.90	< 0.83	< 0.82	< 140	< 0.98	< 0.71	< 0.76	< 0.68
2-Butanone	< 8.6	< 9.0	< 8.3	< 8.2	< 1,400	< 9.8	< 7.1	31 J	8.2 J
1,1-Dichloroethane	< 1.3	< 1.4	< 1.2	< 1.2	< 210	< 1.5	< 1.1	< 1.1	< 1.0
1,1-Dichloroethene	< 0.86	< 0.90	< 0.83	< 0.82	< 140	< 0.98	< 0.71	< 0.76	< 0.68
cis-1,2-Dichloroethene	< 0.86	< 0.90	< 0.83	< 0.82	< 140	< 0.98	< 0.71	< 0.76	1.4 J
Ethylbenzene	< 0.86	< 0.90	< 0.83	< 0.82	< 140	< 0.98	< 0.71	< 0.76	< 0.68
4-Methy-2-Pentanone	< 8.6	< 9.0	< 8.3	< 8.2	< 1,400	< 9.8	< 7.1	< 7.6	< 6.8
Methylene Chloride	< 8.6	< 9.0	< 8.3	< 8.2	< 1,400	< 9.8	< 7.1	< 7.6	< 6.8
Tetrachloroethene	2.6 J	5.0	< 0.83	10	980	6.4	5.2	530	140 J
Styrene	< 0.86	< 0.90	< 0.83	< 0.82	< 140	< 0.98	< 0.71	< 0.76	< 0.68
Toluene	5.6 U	4.0 U	5.5 U	4.8 U	< 210	3.2 U	3.7 U	4.3 U	3.2 U
1,1,1-Trichloroethane	7.5	12	1.1	0.95	460	< 0.98	< 0.71	1.6 J	1.4 J
Trichloroethene	< 0.86	< 0.90	< 0.83	1.2	< 140	1.5	< 0.71	3.2 J	3.3 J
o-Xylene	< 0.86	< 0.90	< 0.83	< 0.82	< 140	< 0.98	< 0.71	< 0.76	1.1 J
m,p-Xylene	< 0.86	< 0.90	< 0.83	< 0.82	< 140	< 0.98	< 0.71	< 0.76	1.9 J

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	MW-105	MW-106		P-15		P-16		P-17	
Date Collected	8/19/04	3/5/04	3/5/04	12/19/03	12/19/03	12/22/03	12/22/03	12/22/03	12/22/03
Analysis Type		Low (GEL)	Low	Low	Low	High	High	High	Low
Depth (feet)	18-20	0-2	4-6	0-2	6-8	0-2	10-12	0-2	2-4
Acetone	< 410	15.8	9.9	8.2	< 7.4	< 1,200	< 130,000	< 1,000	9.5
Benzene	< 41	< 0.704	< 0.84	< 0.72	< 0.74	< 120	< 13,000	< 100	< 0.81
2-Butanone	< 410	< 3.52	< 8.4	< 7.2	< 7.4	< 1,200	< 130,000	< 1,000	< 8.1
1,1-Dichloroethane	< 62	< 0.704	< 1.3	< 1.1	< 1.1	< 190	< 19,000	< 150	< 1.2
1,1-Dichloroethene	< 41	0.983	< 0.84	< 0.72	< 0.74	< 120	< 13,000	< 100	< 0.81
cis-1,2-Dichloroethene	170	< 0.704	< 0.84	< 0.72	< 0.74	< 120	< 13,000	< 100	< 0.81
Ethylbenzene	< 41	< 0.704	< 0.84	< 0.72	< 0.74	< 120	< 13,000	< 100	< 0.81
4-Methy-2-Pentanone	< 410	< 3.52	< 8.4	41	< 7.4	< 1,200	< 130,000	< 1,000	< 8.1
Methylene Chloride	< 410	< 3.52	< 8.4	< 7.2	< 7.4	< 1,200	< 130,000	< 1,000	< 8.1
Tetrachloroethene	1,700	6.35	< 0.84	62	7.9	750	5,000,000	19,000	130
Styrene	< 41	< 0.704	< 0.84	< 0.72	< 0.74	< 120	< 13,000	< 100	< 0.81
Toluene	< 62	0.397	< 1.3	3.2 U	5.0 U	< 190	< 19,000	< 150	2.2
1,1,1-Trichloroethane	< 41	19.4	< 0.84	< 0.72	< 0.74	< 120	< 13,000	< 100	< 0.81
Trichloroethene	600	0.377	< 0.84	1.3	< 0.74	< 120	< 13,000	130	< 0.81
o-Xylene	< 41	< 0.704	< 0.84	< 0.72	< 0.74	< 120	< 13,000	< 100	< 0.81
m,p-Xylene	< 41	< 0.704	< 0.84	< 0.72	< 0.74	< 120	< 13,000	< 100	< 0.81

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	**P-20**				**PW-21**		**SS-105 (Dry Well)**	**SS-106**
Date Collected	**3/10/04**	**3/10/04**	**3/10/04**	**3/10/04**	**3/10/04**	**3/10/04**	**3/5/04**	**3/4/04**
Analysis Type	**Low**	**High**	**High**	**High**	**Low/High**	**High**	**High**	**Low**
Depth (feet)	**10-12**	**14-16**	**16-18 sand**	**16-18 till**	**10-12**	**16-18 till**	**10-12**	**1.5**
Acetone	< 7.2	< 2,400	< 1,000	< 2,100	14 J	< 1,100	< 1,100,000	28
Benzene	< 0.72	< 240	< 100	< 210	< 0.95	< 110	< 110,000	< 0.84
2-Butanone	< 7.2	< 2,400	< 1,000	< 2,100	< 9.5	< 1,100	< 1,100,000	< 8.4
1,1-Dichloroethane	< 1.1	< 360	< 150	330	< 1.4	< 160	< 160,000	< 1.3
1,1-Dichloroethene	< 0.72	< 240	< 100	440	< 0.95	< 110	< 110,000	< 0.84
cis-1,2-Dichloroethene	< 0.72	< 240	310	420	< 0.95	< 110	< 110,000	< 0.84
Ethylbenzene	< 0.72	< 240	< 100	< 210	< 0.95	< 110	< 110,000	< 0.84
4-Methy-2-Pentanone	< 7.2	< 2,400	< 1,000	< 2,100	< 9.5	< 1,100	< 1,100,000	< 8.4
Methylene Chloride	< 7.2	< 2,400	< 1,000	< 2,100	< 9.5	< 1,100	< 1,100,000	< 8.4
Tetrachloroethene	9.1	41,000	12,000	28,000	240	8,900	11,000,000	2.1
Styrene	< 0.72	< 240	< 100	< 210	< 0.95	< 110	< 110,000	< 0.84
Toluene	< 1.1	< 360	< 150	< 320	1.4	< 160	< 160,000	< 1.3
1,1,1-Trichloroethane	< 0.72	< 240	< 100	< 210	12	290	< 110,000	< 0.84
Trichloroethene	< 0.72	< 240	1,200	2,200	1.1	260	< 110,000	< 0.84
o-Xylene	< 0.72	< 240	< 100	< 210	< 0.95	< 110	< 110,000	< 0.84
m,p-Xylene	< 0.72	< 240	< 100	< 210	< 0.95	< 110	< 110,000	< 0.84

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	**TB-12/16/03**		**TB-12/17/03**		**TB-12/18/03**		**TB-12/19/03**	
Date Collected	**12/16/03**	**12/16/03**	**12/17/03**	**12/17/03**	**12/18/03**	**12/18/03**	**12/19/03**	**12/19/03**
Analysis Type	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**
Depth (feet)	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Acetone	< 10	< 500	< 10	< 500	< 10	< 500	< 10	< 500
Benzene	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50
2-Butanone	< 10	< 500	< 10	< 500	< 10	< 500	< 10	< 500
1,1-Dichloroethane	< 1.5	< 75	< 1.5	< 75	< 1.5	< 75	< 1.5	< 75
1,1-Dichloroethene	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50
cis-1,2-Dichloroethene	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50
Ethylbenzene	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50
4-Methy-2-Pentanone	13	< 500	< 10	< 500	< 10	< 500	< 10	< 500
Methylene Chloride	< 10	< 500	< 10	< 500	< 10	< 500	< 10	< 500
Tetrachloroethene	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50
Styrene	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50
Toluene	12	< 75	8.2	< 75	10	< 75	8.8	< 75
1,1,1-Trichloroethane	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50
Trichloroethene	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50
o-Xylene	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50
m,p-Xylene	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50	< 1.0	< 50

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	TB-12/22/03		TB-12/23/03	TB-3/5/04	TB-3/8/04	TB-3/9/04	TB-3/10/04	TB-3/12/04	EB-12/18/03
Date Collected	12/22/03	12/22/03	12/23/03	3/5/04	3/8/04	3/9/04	3/10/04	3/12/04	12/18/03
Analysis Type	Low	High	Low	Low	Low	Low	Low	Low	N/A
Depth (feet)	N/A	N/A	N/A	N/A	N/A	N/A	NA	NA	N/A
Acetone	< 10	< 500	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0
Benzene	< 1.0	< 50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50
2-Butanone	< 10	< 500	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0
1,1-Dichloroethane	< 1.5	< 75	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 0.75
1,1-Dichloroethene	< 1.0	< 50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50
cis-1,2-Dichloroethene	< 1.0	< 50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50
Ethylbenzene	< 1.0	< 50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50
4-Methy-2-Pentanone	< 10	< 500	17	< 10	< 10	< 10	< 10	< 10	< 5.0
Methylene Chloride	< 10	< 500	< 10	< 10	< 10	< 10	< 10	< 10	5.8
Tetrachloroethene	< 1.0	< 50	< 1.0	< 1.0	72	< 1.0	< 1.0	< 1.0	< 0.50
Styrene	< 1.0	< 50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50
Toluene	11	< 75	7.2	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 0.75
1,1,1-Trichloroethane	< 1.0	< 50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50
Trichloroethene	< 1.0	< 50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50
o-Xylene	< 1.0	< 50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50
m,p-Xylene	< 1.0	< 50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.6: SDI Soil Sampling Results - Detected VOCs
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Location	**EB-12/23/03**	**FB-3/9/04**	**FB-3/12/04**
Date Collected	**12/23/03**	**3/9/04**	**3/12/04**
Analysis Type	**N/A**	**N/A**	**N/A**
Depth (feet)	**N/A**	**N/A**	**N/A**
Acetone	< 5.0	< 5.0	< 5.0
Benzene	< 0.50	< 0.50	< 0.50
2-Butanone	< 5.0	< 5.0	< 5.0
1,1-Dichloroethane	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene	< 0.50	< 0.50	< 0.50
Ethylbenzene	< 0.50	< 0.50	< 0.50
4-Methy-2-Pentanone	< 5.0	< 5.0	< 5.0
Methylene Chloride	< 5.0	< 2.5	< 2.5
Tetrachloroethene	< 0.50	< 0.50	< 0.50
Styrene	< 0.50	< 0.50	< 0.50
Toluene	< 0.75	< 0.75	< 0.75
1,1,1-Trichloroethane	< 0.50	< 0.50	< 0.50
Trichloroethene	< 0.50	< 0.50	< 0.50
o-Xylene	< 0.50	< 0.50	< 0.50
m,p-Xylene	< 0.50	< 0.50	< 0.50

All soil concentrations in (µg/kg).
"J" qualifier indicates estimated value.
"< xx" constituent not detected
at detection limit of "xx"
"U" qualifier indicates a chang to
non-detect based on data validation.
Equipment blank (EB) and trip blank (TB)
concentrations in (µg/l).

Table 9.1.7: SDI Soil Sampling Results - Detected Metals
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Location	Depth (feet)	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Silver
B-101	0-2	1.6	15	< 0.21	39	9.7 J	< 0.08	< 0.42
B-102	0-2	1.3	59	11	17	11	< 0.08	30
B-103	0-2	1.5	15	14	17	8.8	< 0.07	51
B-104	0-2	3.4	18	< 0.42	3.0	3.3	< 0.09	< 0.42
B-105	0-2	1.5	19	3.6	5.8	4.2	< 0.08	3.0
B-106	0-2	1.2	15	< 0.21	4.8	4.3	< 0.08	< 0.42
B-107	0-2	2.3	18	0.26	6.0	7.8	< 0.09	< 0.44
B-108	0-2	1.2	12	0.59	6.8	4.8	< 0.08	< 0.41
B-109	0-2	1.2	31	8.2	21	8.3	< 0.08	6.2
B-110	0-2	2.8	22	0.89	3.4	3.9	< 0.08	0.57
B-111	0-2	1.4	20	8.2	4.9	3.9	< 0.07	2.9
B-111 (DUP-1)	0-2	1.8	23	9.2	4.8	3.9	< 0.08	2.9
B-112	0-2	1.9	19	2.2	7.6	11	< 0.09	1.5
B-113	0-2	1.4	17	35	6.0	22	0.09	46
B-114	0-2	1.3	12	1.6	7.4	4.5	< 0.08	1.1
B-114 (DUP-3)	0-2	1.2	12	2.0	6.9	4.6	< 0.08	0.69
MW-101	0-2	2.4	24	< 0.22	6.4	72 J	< 0.08	< 0.43
MW-101 (DUP-2)	0-2	1.8	17	< 0.22	6.7	22 J	< 0.08	< 0.43
MW-102	0-2	1.2	11	< 0.23	5.9	4.5 J	< 0.09	< 0.46
MW-103	0-2	3.0	50	97	23	150	0.18	27
MW-104	0-2	4.2	29	52	9.2	22	0.08	9.7
P-15	0-2	1.1	12	0.32	13	4.9 J	< 0.08	< 0.44
P-16	0-2	1.9	18	< 0.21	6.7	10	< 0.08	< 0.42
P-17	0-2	2.4	18	1.2	34	16	< 0.08	3.2
SS-105 (Dry Well)	10-12	5.0	13	< 0.47	18	17	< 0.10	< 0.47
SS-106	1.5	1.0	10	< 0.41	5.2	3.7	< 0.08	< 0.41
FB-3/8/04	N/A	< 0.005	< 0.01	< 0.002	< 0.01	<0.005	< 0.0002	< 0.003
FB-3/11/04	N/A	< 0.005	< 0.01	< 0.002	< 0.01	<0.005	< 0.0002	< 0.003

All soil concentrations in milligrams per kilogram (mg/kg).
"J" qualifier on data indicates an estimated concentration based on data validation.
"< xx" indicates not detected at detection limit of "xx"
Field Blank concentrations in milligrams per liter (mg/l).

Table 9.1.8: Comparison of Metal Concentrations in AOC 7 Surface Soils to Background Levels **DRAFT**
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Metal	Surface Soil Background				Surface Soils - AOC 7 (SDI Investigation)				MassDEP "Natural" Soil (mg/kg)	USEPA Soils over Glacial Till (mg/kg)
	Detection Frequency	Range of Detected Concentrations Min (mg/kg)	Max (mg/kg)	95% UCL (mg/kg)	Detection Frequency	Range of Detected Concentrations Min (mg/kg)	Max (mg/kg)	95% UCL (mg/kg)		
Antimony	0/10	ND	ND	--	NA	NA	NA	NA	1	NE
Arsenic	10/10	2.7	7.5	4.5	22/22	1.0	4.2	2.1	20	2.1 - 12
Barium	NA	NA	NA	NA	22/22	10	59	32	50	300 - 1500
Beryllium	10/10	0.18	0.54	0.43	NA	NA	NA	NA	0.4	NE
Cadmium	10/10	0.12	4.4	2.3	15/22	0.3	**97**	**32**	2	NE
Chromium (total)	10/10	8.1	15.3	12.8	22/22	3.0	**39**	**20**	30	30 - 150
Copper	10/10	3.5	14.7	8.9	NA	NA	NA	NA	40	15 - 50
Lead	10/10	8.8	78.4	41.5	22/22	3.3	**150**	46	100	10 - 30
Mercury	7/10	0.09	1.2	0.59	3/22	0.1	0.2	--	0.3	0.02 - 0.36
Nickel	10/10	3.5	11.2	8.1	NA	NA	NA	NA	20	10 - 30
Selenium	10/10	1.2	2.4	1.9	NA	NA	NA	NA	0.5	0.2 - 0.8
Silver	8/10	0.08	11.4	7.5	12/22	0.6	**51**	--	0.6	NE
thalium	0/10	ND	ND	--	NA	NA	NA	NA	0.6	NE
Zinc	10/10	40.3	28.1	28.3	NA	NA	NA	NA	100	47 - 131

Notes:
-- too few detects to calculate a 95% UCL
NA - metal was not analyzed for
ND - metal was not detected in any sample
MassDEP "natural" soil background generally reflects the 90th percentile value of a 1995 data set consisting of 750 - 1,000 samples
Concentrations exceeding maximum detetected background values are highlighted in bold

Table 9.1.9: SDI Soil Sampling Results - PCBs **DRAFT**
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Location	Depth	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total
B-101	0-6	1.11	1.02	< 0.260	2.13
	0-2	0.830	0.765	< 0.532	1.595
	2-4	0.497	0.556	< 0.263	1.053
	4-6	0.122	0.072	< 0.052	0.194
	6-12	< 0.054	< 0.054	< 0.054	< 0.054
B-102	0-6	0.283	< 0.053	< 0.053	0.283
	6-12	0.313	< 0.059	< 0.059	0.313
B-104	0-6	135 J	< 26.9 J	< 26.9 J	135 J
	6-12	2.90 J	1.33 J	< 0.575 J	4.23 J
	6-8	9.78 J	6.44 J	< 2.63 J	16.2 J
	8-10	3.38	2.38	< 0.543	5.76
	10-12	0.210	< 0.055	< 0.055	0.210
	12-14	0.909	< 0.062	< 0.062	0.909
B-105	0-6	2.94 J	1.81 J	< 0.521 J	4.75 J
	0-2	0.616	0.982	< 0.260	1.60
	4-6	2.16 J	1.16 J	< 0.521 J	3.32 J
	6-12	27.3 J	17.8 J	< 2.87 J	45.1 J
	6-8	7.59 J	6.58 J	< 1.36 J	14.2 J
	8-10	1.71	0.729	< 0.284	2.44
	10-12	5.49 J	3.96 J	< 1.49 J	9.45 J
B-106	0-6	< 0.053	< 0.053	< 0.053	< 0.053
	6-12	< 0.056	< 0.056	< 0.056	< 0.056
B-107	0-6	15.7 J	< 2.81 J	< 2.81 J	15.7 J
	0-2	14.5 J	< 2.78 J	< 2.78 J	14.5 J
	2-4	0.530	0.380	< 0.054	0.910
	6-12	0.131	< 0.056	< 0.056	0.131
B-108	0-6	2.70 J	< 0.532 J	< 0.532 J	2.70 J
	0-2	3.40 J	< 0.521 J	< 0.521 J	3.40 J
	2-4	1.96	< 0.263	< 0.263	1.96
	4-6	1.98	< 0.284	< 0.284	1.98
	6-12	1.19	< 0.298	< 0.298	1.19
B-109	0-6	14.2 J	< 2.69 J	< 2.69 J	14.2 J
	6-12	171 J	< 30.5 J	< 30.5 J	171 J
	6-8	1,810 J	483 J	< 244 J	2,293 J
	8-10	548 J	169 J	< 47.6 J	717 J
	10-12	90.8 J	29.6 J	< 11.6 J	120 J
B-110	0-6	< 13.3 J	46.4 J	< 13.3 J	46.4 J
	6-12	4.43 J	8.47 J	< 1.10 J	12.9 J
	6-8	< 2.66 J	15.5 J	< 2.66 J	15.5 J
	8-10	< 0.556	3.16	< 0.556	3.16
	10-12	0.075	< 0.054	< 0.054	0.075
	12-14	0.154	0.075	< 0.059	0.229
B-111	0-6	0.241	< 0.054	< 0.054	0.241
	6-12	< 0.060	< 0.060	< 0.060	< 0.060
B-112	0-6	11.5 J	3.54 J	< 1.06 J	15.0 J
	6-12	1.58	1.03	< 0.281	2.61
	6-8	4.09 J	3.23 J	< 1.10 J	7.32 J
	8-10	< 0.058	< 0.058	< 0.058	< 0.058
	10-12	0.088	0.071	< 0.059	0.159
	12-14	< 0.056	< 0.056	< 0.056	< 0.056
B-113	0-6	< 0.056	0.390	< 0.056	0.39
	6-12	< 0.058	< 0.058	< 0.058	< 0.058
B-114	0-6	< 0.054	< 0.054	< 0.054	< 0.054
	6-12	0.621	< 0.057	< 0.057	0.621

Table 9.1.9: SDI Soil Sampling Results - PCBs **DRAFT**
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BASF Corporation, Plainville Massachusetts

Location	Depth	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total
B-116	0-6	0.563	0.705	< 0.108	1.27
	6-12	0.104	0.074	< 0.056	0.18
	12-14.5	< 0.060	< 0.060	< 0.060	< 0.060
B-117	0-6	< 0.055	< 0.055	< 0.055	< 0.055
	6-12	< 0.060	< 0.060	< 0.060	< 0.060
	6-12 dup (102)	< 0.058	< 0.058	< 0.058	< 0.058
	12-18	< 0.060	< 0.060	< 0.060	< 0.060
B-118	0-6	8.10 J	< 0.521 J	< 0.521 J	8.10 J
	0-2	10.2 J	< 2.63 J	< 2.63 J	10.2 J
	2-4	2.25	< 0.515	< 0.515	2.25
	6-12	0.069 J	0.371 J	< 0.060	0.440 J
	6-12 dup (113)	0.142 J	0.768 J	< 0.059	0.910
	12-18	< 0.059	< 0.059	< 0.059	< 0.059
B-119	0-6	16.9 J	11.3 J	< 5.49 J	28.2 J
	0-6 dup (106)	14.3 J	10.1 J	< 5.49 J	24.4 J
	0-2	59.3 J	35.3 J	< 14 J	94.6 J
	2-4	6.24 J	4.51 J	< 2.91 J	10.8 J
	5-7	5.12 J	3.27 J	< 0.532 J	8.39 J
	6-12	0.313	< 0.054	< 0.054	0.313
	12-18	0.249	< 0.059	< 0.059	0.249
B-120	0-6	0.458	< 0.053	< 0.053	0.458
	0-6 dup (114)	0.503	< 0.053	< 0.053	0.503
	6-12	0.313	< 0.058	< 0.058	0.313
	6-12 dup (115)	0.359	< 0.058	< 0.058	0.359
	12-18	0.073	< 0.056	< 0.056	0.073
B-121	0-6	23.1 J	33.8 J	< 5.32 J	56.9 J
	6-12	8.22 J	9.87 J	< 2.78 J	18.1 J
	6-12 dup (109)	8.20 J	9.29 J	< 2.84 J	17.5 J
	6-8	60.6 J	51.6 J	< 13.4 J	112 J
	8-10	4.56 J	3.72 J	< 0.549 J	8.28 J
	10-12	0.82	0.371	< 0.056	1.19
	12-18	0.169	0.288	< 0.058	0.457
	12-18 dup (110)	0.164	0.173	< 0.058	0.337
B-122	0-6	< 0.053	< 0.053	< 0.053	< 0.053
	6-12	0.736	< 0.056	< 0.056	0.736
	12-18	< 0.061	< 0.061	< 0.061	< 0.061
B-123	0-6	0.089	< 0.054	0.154	0.243
	6-8	< 0.057	0.106	< 0.057	0.106
B-124	0-6	< 0.056	< 0.056	< 0.056	< 0.056
	6-8	< 0.052	< 0.052	< 0.052	< 0.052
B-125	0-6	< 0.054	< 0.054	< 0.054	< 0.054
	6-12	< 0.056	< 0.056	< 0.056	< 0.056
	6-12 dup (101)	< 0.056	< 0.056	< 0.056	< 0.056
	12-18	< 0.059	< 0.059	< 0.059	< 0.059
B-127	12-18	< 0.056	< 0.056	< 0.056	< 0.056
B-128	0-6	< 0.059	< 0.059	< 0.059	< 0.059
	6-12	< 0.056	< 0.056	< 0.056	< 0.056
	12-18	< 0.058	< 0.058	< 0.058	< 0.058
MW-101	0-6	3.01 J	< 0.526 J	< 0.526 J	3.01 J
	0-2	3.16	< 0.543	< 0.543	3.16
	2-4	0.211	0.123	< 0.053	0.334
	4-6	0.171	0.081	< 0.053	0.252
	6-12	0.398	< 0.054	< 0.054	0.398
	0-6	2.71 J	2.20 J	< 1.06 J	4.91 J

Table 9.1.9: SDI Soil Sampling Results - PCBs **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

Location	Depth	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total
MW-102	0-2	0.231	0.139	< 0.058	0.370
	2-4	1.16	0.624	< 0.521	1.784
	4-6	< 0.052	< 0.052	< 0.052	< 0.052
	6-12	0.306	0.179	< 0.056	0.485
MW-103	0-6	12.9 J	14.5 J	< 2.75 J	27.4 J
	0-2	< 2.84 J	17.6 J	< 2.84 J	17.6 J
	2-4	12.4 J	13.9 J	< 2.78 J	26.3 J
	4-6	< 0.532 J	4.45 J	< 0.532 J	4.45 J
	6-12	0.102	0.079	< 0.056	0.181
MW-104	0-6	6.67 J	3.01 J	< 1.12 J	9.68 J
	0-2	< 2.81 J	7.32 J	< 2.81 J	7.32 J
	2-4	2.05	< 0.284	< 0.284	2.05
	4-6	< 0.057	< 0.057	< 0.057	< 0.057
	6-12	< 0.056	< 0.056	< 0.056	< 0.056
MW-106	0-6	0.099	< 0.004	< 0.004	0.099
	0-2	0.242	< 0.018	< 0.018	0.242
	6-12	0.172	< 0.060	< 0.060	0.172
P-15-CY	0-6	0.844	0.973	< 0.260	1.817
	6-12	0.196	0.212	< 0.053	0.408
P-16	0-6	8.62 J	11.6 J	< 2.60 J	20.2 J
	0-2	< 2.66 J	13.3 J	< 2.66 J	13.3 J
	4-6	0.275	0.317	< 0.052	0.592
	6-12	< 0.058	< 0.058	< 0.058	< 0.058
P-17	0-6	17.9 J	21.6 J	< 2.69 J	39.5 J
	0-2	< 27.8 J	42.9 J	< 27.8 J	42.9 J
	2-4	0.287	0.405	< 0.052	0.692
	4-6	< 0.521	1.74	< 0.521	1.74
	6-12	0.351	0.333	< 0.054	0.684
SS-101	0-2	< 0.053	0.054	0.069	0.123
	2-4	< 0.054	< 0.054	< 0.054	< 0.054
SS-102	0-2	< 0.054	< 0.054	< 0.054	< 0.054
	2-4	< 0.052	< 0.052	< 0.052	< 0.052
SS-103	4-6	< 0.054	0.116	< 0.054	0.116
	6-8	< 0.054	< 0.054	< 0.054	< 0.054
SS-104	0-2	< 0.054	0.324	0.194	0.518
SS-105 (Dry Well)	10-12	< 0.060	0.070	< 0.060	0.070
SS-106	1.5	0.695	0.596	< 0.260	1.29
EB-12/19/03	N/A	< 0.500 J	< 0.500 J	< 0.500 J	< 0.500 J
FB-3/8/04	N/A	< 0.500	< 0.500	< 0.500	< 0.500
FB-3/9/04	N/A	< 0.500	< 0.500	< 0.500	< 0.500
FB-3/9/04(2)	N/A	< 0.500 J	< 0.500 J	< 0.500 J	< 0.500 J
FB-3/10/04	N/A	< 0.500 J	< 0.500 J	< 0.500 J	< 0.500 J
FB-3/11/04	N/A	< 0.500	< 0.500	< 0.500	< 0.500
FB-3/11/04(2)	N/A	< 0.500	< 0.500	< 0.500	< 0.500
FB-3/12/04	N/A	< 0.500	< 0.500	< 0.500	< 0.500
FB-3/12/04(2)	N/A	< 0.500	< 0.500	< 0.500	< 0.500
FB-3/12/04(3)	N/A	< 0.500	< 0.500	< 0.500	< 0.500

All soil concentrations in milligrams per kilogram (mg/kg).
"< xx" indicates constituent was not detected at a detection limit of "xx"
"J" qualifier on data indicates an estimated concentration based on data validation.
Equipment blank (EB) and field blank (FB) concentartions in micrograms per liter (ug/l).

Table 9.1.10: SDI Soil Sampling Results - Extractable Petroleum Hydrocarbons **DRAFT**
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Location	Depth (feet)	C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics
B-101	0-2	< 10.6	13.8	< 10.6
B-102	0-2	122	998	964
B-103	0-2	< 10.5	214	149
B-104	0-2	< 10.6	< 10.6	< 10.6
B-105	0-2	< 20.8	239	162
B-106	0-2	< 10.6	< 10.6	< 10.6
B-107	0-2	< 11.1	< 11.1	< 11.1
B-108	0-2	< 52.1	127	142
B-109	0-2	114	1,200	927
B-110	0-2	< 10.6	16.6	14.6
B-111	0-2	65.2	418	382
B-111 (DUP-1)	0-2	< 52.6	359	324
B-112	0-2	< 10.9	23.2	18.5
B-113	0-2	< 11.2	117	56.8
B-114	0-2	< 10.6	< 10.6	< 10.6
B-114 (DUP-3)	0-2	< 10.6	< 10.6	< 10.6
B-127	2-4	< 53.8 J	146 J	96.9 J
MW-101	0-2	< 10.9	< 10.9	< 10.9
MW-101 (DUP-2)	0-2	< 10.9	11.8	< 10.9
MW-102	0-2	< 11.6	20.8	13.9
MW-103	0-2	< 11.4	74.6	32.7
MW-104	0-2	< 56.2 J	606	317
P-15	0-2	< 11.1	< 11.1	< 11.1
P-16	0-2	< 10.6 J	124 J	79.3
P-17	0-2	< 11.1	134	121
SS-105 (Dry Well)	10-12	67.2	70.0	67.4
SS-106	1.5	< 10.4	< 10.4	< 10.4
FB-3/8/04	N/A	< 100	< 100	< 100
FB-3/11/04	N/A	< 100	< 100	< 100

All soil concentrations in milligrams per kilogram (mg/kg).
"J" qualifier on data indicates an estimated concentration based on data validation.
Field Blank concentrations in micrograms per liter (ug/l).
C11-C22 Aromatics are blank adjusted, per method.

Table 9.1.11: Average Concentration and Estimated Mass by AOC
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AOC	**AOC-A Sub-AOC A-1**		**AOC-A Sub AOC A-12**		**AOC-B Sub AOC B-2**	
Volume of Soil (ft^3)	185,909		68,735		8,639	
Depth to Ground water (ft)[2]	7.8		8.5		6.3	
Assumed Depth (ft)	9		10		8	
	Total Mass of Contaminant (lb)	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Weighted Average Concentration**
Organics (Concentration in µg/kg)						
VOCs	1.2	45.4	3.5	350	0.02	15
SVOCs	--	--	3.4	340	--	--
PCBs	--	--	--	--	--	--
Inorganics (Concentration in mg/kg)						
Antimony	6	0.2			--	--
Arsenic	28	1.1	10.85	1.1	0.5	0.4
Beryllium	0.7	0.0	--	--	--	--
Cadmium	303	12	2,438	247	1,179	879
Chromium (total)	346	13	220	22	11	8
Copper	1,701	65	381	39	10	8
Lead	271	10	77	7.8	6.0	4.5
Mercury	--	--	0.2	0.02	--	--
Nickel	269	10	73	7.3	13	10
Selenium	0.9	0.0	--	--	--	--
Silver	245	9	140	14	5.5	4.1
Thallium	--	--	--	--	--	--
Zinc	1,178	45	682	69	47	35

Notes:
(1) Soil in AOC 30 has been excavated and replaced with clean fill.
(2) Averaged when there is more than one boring in an AOC.
(3) AOC #13 is part of the Sediment Sampling Program. Assumes dry bulk density of 38 kg/ft^3
(4) Does not reflect excavation of the dry well in the upper courtyard area

Table 9.1.11: Average Concentration and Estimated Mass by AOC
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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AOC	**AOC-B Sub AOC B-3**		**AOC-B Sub AOC B-4**		**AOC-B Sub AOC B-18**	
Volume of Soil (ft^3)	3,838		32,883		19,433	
Depth to Ground water (ft)[2]	5.0		8.5		7.0	
Assumed Depth (ft)	6		10		9	
	Total Mass of Contaminant (lb)	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Weighted Average Concentration**
Organics (Concentration in µg/kg)						
VOCs	0.0001	0.2	--	--	1.1	344
SVOCs	--	--	--	--	--	--
PCBs	--	--	--	--	--	--
Inorganics (Concentration in mg/kg)						
Antimony	0.00	0.0	--	--	--	--
Arsenic	0.1	0.2	1	0.3	2.8	0.9
Beryllium	0.0	0.0	--	--	--	--
Cadmium	113	200	11,442	2,419	850	278
Chromium (total)	5.7	10	54	11	58	19
Copper	38	67	799	169	207	68
Lead	34	60	81	17	61	20
Mercury	0.00	0.00	--	--	--	--
Nickel	1.2	2.2	18	4	46	15
Selenium	0.01	0.0	--	--	0.1	0.0
Silver	23	42	126	27	54	18
Thallium	0.00	0.01	--	--	--	--
Zinc	56	99	2,087	441	323	106

Notes:
(1) Soil in AOC 30 has been excavated and replaced with clean fill.
(2) Averaged when there is more than one boring in an AOC.
(3) AOC #13 is part of the Sediment Sampling Program. Assumes dry bulk density of 38 kg/ft^3
(4) Does not reflect excavation of the dry well in the upper courtyard area

Table 9.1.11: Average Concentration and Estimated Mass by AOC
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AOC	**AOC-B Sub AOC B-35**		**AOC 5**		**AOC 6**	
Volume of Soil (ft^3)	7,898		23,913		82,429	
Depth to Ground water (ft)[2]	7.0		8.5		9.2	
Assumed Depth (ft)	9		10		9	
	Total Mass of Contaminant (lb)	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Weighted Average Concentration**
Organics (Concentration in µg/kg)						
VOCs	--	--	5.0	1,456	0.9	94
SVOCs	--	--	--	--	--	--
PCBs	--	--	--	--	--	--
Inorganics (Concentration in mg/kg)						
Antimony	--	--	--	--	--	--
Arsenic	--	--	4.5	1.3	1.6	0.2
Beryllium	--	--	--	--	--	--
Cadmium	222	179	--	--	--	--
Chromium (total)	7.8	6.3	23	6.6	47	4.8
Copper	196	158	164	48	189	19
Lead	10	8.4	18	5.4	21	2.1
Mercury	--	--	--	--	--	--
Nickel	7.0	5.6	39	11	33	3.3
Selenium	--	--	--	--	--	--
Silver	20	16	19	5.6	32	3.2
Thallium	--	--	--	--	--	--
Zinc	83	66	112	33	136	14

Notes:
(1) Soil in AOC 30 has been excavated and replaced with clean fill.
(2) Averaged when there is more than one boring in an AOC.
(3) AOC #13 is part of the Sediment Sampling Program. Assumes dry bulk density of 38 kg/ft^3
(4) Does not reflect excavation of the dry well in the upper courtyard area

Table 9.1.11: Average Concentration and Estimated Mass by AOC
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AOC	**AOC 7 (4)**		**AOC 14**		**AOC 16**	
Volume of Soil (ft^3)	294,370		6,283		78,042	
Depth to Ground water (ft)(2)	5.0		20.0		8.5	
Assumed Depth (ft)	8		20		10	
	Total Mass of Contaminant (lb)	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Weighted Average Concentration**
Organics (Concentration in µg/kg)						
VOCs	1.6	28	0.1	89.2	0.7	65
SVOCs	0.2	3.8	--	--	59	5,241
PCBs	1,831	31,795	--	--	--	--
Inorganics (Concentration in mg/kg)						
Antimony	--	--	--	--	--	--
Arsenic	44	0.8	0.9	1.1	21	1.9
Beryllium	1.9	0.0	0.0	0.0	--	--
Cadmium	291	5.1	--	--	166	15
Chromium (total)	439	7.6	8.6	10.2	422	38
Copper	411	7.1	7.5	8.9	1,408	125
Lead	421	7.3	4.0	4.8	290	26
Mercury	0.5	0.0	--	--	--	--
Nickel	521	9.1	5.7	6.8	151	13
Selenium	1.0	0.0	--	--	3	0.3
Silver	141	2.5	0.2	0.3	9,335	832
Thallium	--	--	--	--	--	--
Zinc	1,886	33	17	20	400	36

Notes:
(1) Soil in AOC 30 has been excavated and replaced with clean fill.
(2) Averaged when there is more than one boring in an AOC.
(3) AOC #13 is part of the Sediment Sampling Program. Assumes dry bulk density of 38 kg/ft^3
(4) Does not reflect excavation of the dry well in the upper courtyard area

Table 9.1.11: Average Concentration and Estimated Mass by AOC
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AOC	**AOC 22**		**AOC 23**		**AOC 26**	
Volume of Soil (ft^3)	3,142		58,715		17,424	
Depth to Ground water (ft)[2]	10.0		18.0		18.0	
Assumed Depth (ft)	10		18			
	Total Mass of Contaminant (lb)	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Weighted Average Concentration**
Organics (Concentration in µg/kg)						
VOCs	0.02	57.5	--	--	0.01	5.5
SVOCs	--	--	--	--	--	--
PCBs	--	--	--	--	--	--
Inorganics (Concentration in mg/kg)						
Antimony	--	--	--	--	--	--
Arsenic	--	--	3.7	0.5	1.2	0.6
Beryllium	--	--	--	--	--	--
Cadmium	--	--	1.5	0.2	29	14
Chromium (total)	--	--	51	7.1	27	13
Copper	--	--	54	7.6	279	130
Lead	--	--	27	3.7	29	14
Mercury	--	--	--	--	--	--
Nickel	--	--	54	7.5	25	12
Selenium	--	--	--	--	--	--
Silver	--	--	--	--	2.0	0.9
Thallium	--	--	--	--	--	--
Zinc	--	--	167	23	102	47

Notes:
(1) Soil in AOC 30 has been excavated and replaced with clean fill.
(2) Averaged when there is more than one boring in an AOC.
(3) AOC #13 is part of the Sediment Sampling Program. Assumes dry bulk density of 38 kg/ft^3
(4) Does not reflect excavation of the dry well in the upper courtyard area

Table 9.1.11: Average Concentration and Estimated Mass by AOC
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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AOC	**AOC 30[1]**		**AOC 13[3] West of AOC A**		**AOC 13[3] South Embayment**	
Volume of Soil (ft^3)	1,200		42,190		71,115	
Depth to Ground water (ft)[2]	3.0		NA		NA	
Assumed Depth (ft)						
	Total Mass of Contaminant (lb)	**Weighted Average Concentration**	**Total Mass of Contaminant (lb)**	**Average Concentration**	**Total Mass of Contaminant (lb)**	**Average Concentration**
Organics (Concentration in µg/kg)						
VOCs	--	--	--	--	1	283
SVOCs	--	--	--	--	15	4,552
PCBs	--	--	--	--	37	11,108
Inorganics (Concentration in mg/kg)						
Antimony	--	--	1.8	0.9	8.6	3
Arsenic	--	--	0.2	0.1	7.2	2.2
Beryllium	--	--	0.3	0.2	0.6	0.2
Cadmium	--	--	1.0	0.5	231	70
Chromium (total)	--	--	30	15	89	27
Copper	--	--	13	6.4	183	55
Lead	--	--	18	9	239	72
Mercury	--	--	--	--	0.19	0.06
Nickel	--	--	21	11	57	17
Selenium	--	--	0.5	0.3	4.8	1.5
Silver	--	--	--	--	98	29
Thallium	--	--	--	--	--	0
Zinc	--	--	65	33	432	130

Notes:
(1) Soil in AOC 30 has been excavated and replaced with clean fill.
(2) Averaged when there is more than one boring in an AOC.
(3) AOC #13 is part of the Sediment Sampling Program. Assumes dry bulk density of 38 kg/ft^3
(4) Does not reflect excavation of the dry well in the upper courtyard area

Table 9.2.1 Summary of Metal Concentrations Detected in Background Monitoring Wells **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

LOCATION SAMPLING DATE		Max Detected	MW07 1-Sep-87	MW07 31-Aug-88	MW07 6-Jan-95	MW07 1-Mar-95	MW07 27-Apr-95	MW07 22-Apr-97	MW07 12-Aug-97	MW07 15-Dec-05	MW37 9-Jan-95
Total Metals	**Units**										
Antimony, Total	**ug/l**	**11.1**	NA	NA	--	--	--	11.1	--	--	--
Arsenic, Total	**ug/l**	**17.4**	NA	NA	--	--	--	--	--	--	2.3 J
Beryllium, Total	**ug/l**	**0.7**	NA	NA	--	--	--	--	--	--	--
Cadmium, Total	**ug/l**	**0.7**	NA	NA	--	--	--	--	--	--	--
Chromium, Total	**ug/l**	**22.8**	NA	NA	--	5.6	1.8	--	--	0.8 J	--
Copper, Total	**ug/l**	**42.7**	NA	NA	--	--	--	1.0 J	--	--	--
Lead, Total	**ug/l**	**17.8**	NA	NA	--	--	--	--	--	--	--
Mercury, Total	**ug/l**	**0.32**	NA	NA	--	--	--	0.23	--	--	--
Nickel, Total	**ug/l**	**21**	NA	NA	--	--	--	--	--	--	--
Selenium, Total	**ug/l**	--	NA	NA	--	--	--	--	--	--	--
Silver, Total	**ug/l**	--	NA	NA	--	--	--	--	--	--	--
Thallium, Total	**ug/l**	--	NA	NA	--	--	--	--	--	--	--
Zinc, Total	**ug/l**	**95.9**	NA	NA	--	--	--	--	--	--	--
Dissolved Metals											
Antimony, Dissolved	**ug/l**	--	--	--	NA	NA	NA	NA	NA	--	NA
Arsenic, Dissolved	**ug/l**	**0.9**	--	--	NA	NA	NA	NA	NA	--	NA
Beryllium, Dissolved	**ug/l**	--	--	--	NA	NA	NA	NA	NA	--	NA
Cadmium, Dissolved	**ug/l**	--	--	--	NA	NA	NA	NA	NA	--	NA
Chromium, Dissolved	**ug/l**	--	--	--	NA	NA	NA	NA	NA	--	NA
Copper, Dissolved	**ug/l**	**0.6**	--	--	NA	NA	NA	NA	NA	--	NA
Lead, Dissolved	**ug/l**	--	--	--	NA	NA	NA	NA	NA	--	NA
Mercury, Dissolved	**ug/l**	--	--	--	NA	NA	NA	NA	NA	--	NA
Nickel, Dissolved	**ug/l**	**1.0**	--	--	NA	NA	NA	NA	NA	--	NA
Selenium, Dissolved	**ug/l**	--	--	--	NA	NA	NA	NA	NA	--	NA
Silver, Dissolved	**ug/l**	--	--	--	NA	NA	NA	NA	NA	--	NA
Thallium, Dissolved	**ug/l**	--	--	--	NA	NA	NA	NA	NA	--	NA
Zinc, Dissolved	**ug/l**	--	--	--	NA	NA	NA	NA	NA	--	NA

-- Not Detected
J Estimated value
NA not analyzed

Table 9.2.1 Summary of Metal Concentrations Detected in Background Monitoring Wells **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

LOCATION		MW37	MW37	MW37	MW37	MW37
SAMPLING DATE		1-Mar-95	27-Apr-95	22-Apr-97	12-Aug-97	15-Dec-05
Total Metals	**Units**					
Antimony, Total	ug/l	--	--	8.2	--	--
Arsenic, Total	ug/l	2	--	--	--	17.4
Beryllium, Total	ug/l	--	--	--	--	0.7
Cadmium, Total	ug/l	--	--	--	--	0.7
Chromium, Total	ug/l	--	2.4	2.9 J	--	22.8
Copper, Total	ug/l	--	--	6.1 J	--	42.7
Lead, Total	ug/l	--	--	4.5 J	--	17.8
Mercury, Total	ug/l	--	--	0.32	--	--
Nickel, Total	ug/l	--	--	3.3	--	21
Selenium, Total	ug/l	--	--	--	--	--
Silver, Total	ug/l	--	--	--	--	--
Thallium, Total	ug/l	--	--	--	--	--
Zinc, Total	ug/l	--	--	16.7	--	95.9
Dissolved Metals						
Antimony, Dissolved	ug/l	NA	NA	NA	NA	--
Arsenic, Dissolved	ug/l	NA	NA	NA	NA	0.9
Beryllium, Dissolved	ug/l	NA	NA	NA	NA	--
Cadmium, Dissolved	ug/l	NA	NA	NA	NA	--
Chromium, Dissolved	ug/l	NA	NA	NA	NA	--
Copper, Dissolved	ug/l	NA	NA	NA	NA	0.6
Lead, Dissolved	ug/l	NA	NA	NA	NA	--
Mercury, Dissolved	ug/l	NA	NA	NA	NA	--
Nickel, Dissolved	ug/l	NA	NA	NA	NA	1
Selenium, Dissolved	ug/l	NA	NA	NA	NA	--
Silver, Dissolved	ug/l	NA	NA	NA	NA	--
Thallium, Dissolved	ug/l	NA	NA	NA	NA	--
Zinc, Dissolved	ug/l	NA	NA	NA	NA	--

-- Not Detected
J Estimated value
NA not analyzed

Table 9.2.2: SDI Groundwater Sampling Results - CVOCs
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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Location	Date	Chloroethane	1,1-DCA	1,1-DCE	cis-1,2-DCE	PCE	Toluene	1,1,1-TCA	TCE
MW27	1/22/2004	< 1.0	< 0.75	< 0.50	< 0.50	< 0.50	< 0.75	< 0.50	< 0.50
MW28	1/22/2004	< 1.0	< 0.75	< 0.50	54	**220**	< 0.75	42	**48**
MW101	1/21/2004	17	**140**	< 0.50	1.2	2.7	< 0.75	22	4.4
MW102	1/21/2004	< 1.0	< 0.75	< 0.50	< 0.50	2.8	< 0.75	< 0.50	0.72
	1/21/2004 dup	< 1.0	< 0.75	< 0.50	< 0.50	2.8	< 0.75	< 0.50	0.71
MW103	1/22/2004	< 1.0	< 0.75	< 0.50	70	**180**	< 0.75	1.1	**41**
MW104	1/22/2004	< 1.0	4.4	< 0.50	68	**29**	< 0.75	13	4.8
MW106	4/7/2004	< 1.0	< 0.75	< 0.50	< 0.50	**7.4**	< 0.75	< 0.50	< 0.50
P15	4/7/2004	< 200	< 150	< 100	**270**	**9,300**	< 150	**890**	**360**
P16	1/22/2004	< 100	**1,700**	**67**	**100**	**58,000**	< 75	**970**	**1,300**
P17	4/7/2004	< 25	< 19	< 12	53	**690**	< 19	120	**87**
PW20	4/8/2004	< 2,000	< 1,500	< 1,000	< 1,000	**65,000**	< 1,500	< 1,000	< 1,000
PW21	4/8/2004	< 2,000	< 1,500	< 1,000	< 1,000	**150,000**	< 1,500	**16,000**	< 1,000
PW23	4/8/2004	< 1,000	< 750	< 500	< 500	**38,000**	< 750	**1,300**	**540**

All concentrations in micrograms per liter (ug/l) or parts per billion (ppb).
1,1-DCA = 1,1-dichloroethane
1,1-DCE - 1,1-dichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
PCE = Tetrachloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
TCE = Trichloroethene
NA = Compound not analyzed for (not included in target list)

Table 9.5.1 Concentrations of Metals in Background Sediments **DRAFT**
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:				**SD-09**	**SD-09A**	**SD-09A**	**SD-09A**	**SD-10**	**SD-10A**	**SD-10A**	**SD-03**
SAMPLE ID:				**EP-SD09**	**EP-SD-09A-2**	**L0506096-03**	**L1008325-03**	**EP-SD10**	**EP-SD-10A-2**	**L0506096-04**	**EP-SD03**
LABORATORY SDG NO.:				**A0632**	**0826A**	**L0506096**	**L1008325**	**A0632**	**0826A**	**L0506096**	**Z0632**
DATE SAMPLED:				**5/30/1995**	**4/15/1997**	**6/3/2005**	**6/2/2010**	**5/30/1995**	**4/15/1997**	**6/3/2005**	**5/19/1995**
PHASE:				**I**	**II**	**Supp**	**Supp**	**I**	**II**	**Supp**	**I**
LOCATION				**Turnpike Lake**	**Turnpike Lake**	**Turnpike Lake**	**Turnpike Lake**	**Turnpike Lake**	**Turnpike Lake**	**Turnpike Lake**	**Wetland**
Total Organic Carbon (%)				2.1	16	25.9	11.4/10.2	16	NA	18.7	8.85
Metals	**MassDEP "Natural" Soil**	**USEPA Soils over Glacial Till**	**MassDEP Sediment Screening Values**								
UNITS: *For Metals*	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Antimony	1	NE	NE	6.3 U	0.81 U	35 U	1.1	29.2 U	0.80 U	21 U	15.8 U
Arsenic	20	2.1 - 12	33	1.0	3.2	7 U	6.29	1.6	2.6	4.4	0.8 U
Beryllium	0.4	NE	NE	0.36	2.0	3.5 U	1.734	1.4 U	1.5	2.1 U	0.79 U
Cadmium	2	NE	5	0.95 J	<0.41	13	26.27	2.9 U	<0.51	4.2 U	1.6 U
Chromium	30	30 - 150	110	6.0	5.6	15	22.3	10.7	9.3	13	21.4
Copper	40	15 - 50	150	4.1 J	16.8	51	NA	4.6 J	5.9	54	10.8 J
Lead	100	10 - 30	130	42.8 J	25.2 J	320	230	< 11.4	14.8 J	210	42.0
Mercury	0.3	0.02 - 0.36	0.18	0.16 U	0.10 U	1.4 U	0.162	0.66 U	0.10 U	0.84 U	0.38 U
Nickel	20	10 - 30	49	5.8	5.1	19	28	< 15.7	4.4	13	24.1
Selenium	0.5	0.2 - 0.8	NE	1.0 J	2.9	35 U	3.8	7.3 U	2.6	21 U	7.9 U
Silver	0.6	NE	NE	0.94 U	0.07 UJ	7 U	5.66	4.4 U	0.07 UJ	4.2 U	2.4 UJ
Thallium	0.6	NE	NE	0.6 U	0.20 UJ	35 U	0.4477	2.9 U	0.20 UJ	21 U	15.8 U
Zinc	100	47 - 131	460	< 45.4	15.5 J	380	378	< 77.2	11.0 J	100	54.8U

Notes:
(1) "<xx" indicates that the constituent was detected at some level below the noted value.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
mg/kg = milligrams per kilogram
NA - not available
NE - metal was not evaluated
MassDEP "natural" soil background generally reflects the 90th percentile value of a 1995 data set consisting of 750 to 1000 samples
USEPA (1995e) - Surface soils over glacial till and drift - range presented
MassDEP (2006). Technical Update - Revised Sediment Screening Values

Table 9.5.1 Concentrations of Metals in Background Sediments
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

SAMPLE LOCATION:				**SD-03**	**SD-03DUP**	**SD-TRIB**
SAMPLE ID:				**L0505996-11**	**L0505996-13**	**L1008325-15**
LABORATORY SDG NO.:				**L0505996**	**L0505996**	**L1008325**
DATE SAMPLED:				**6/2/2005**	**6/2/2005**	**6/3/2010**
PHASE:				**Supp**	**Supp**	**Supp**
LOCATION				**Wetland**	**Wetland**	**Wetland**
Total Organic Carbon (%)				21.6	26.3	15.2/15.4
Metals	**MassDEP "Natural" Soil**	**USEPA Soils over Glacial Till**	**MassDEP Sediment Screening Values**			
UNITS: *For Metals*	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**	**mg/kg**	**mg/kg**	**mg/kg**
Antimony	1	NE	NE	12 U	14 U	0.543
Arsenic	20	2.1 - 12	33	3 J	5.1 J	2.82
Beryllium	0.4	NE	NE	3.9 J	6.8 J	4.52
Cadmium	2	NE	5	2.4	2.8 U	26.7
Chromium	30	30 - 150	110	17 J	25 J	23.4
Copper	40	15 - 50	150	24	33	NA
Lead	100	10 - 30	130	41	50	68.8
Mercury	0.3	0.02 - 0.36	0.18	0.46 U	0.56 U	0.18
Nickel	20	10 - 30	49	12 J	19 J	52
Selenium	0.5	0.2 - 0.8	NE	12 U	14 U	3.89
Silver	0.6	NE	NE	2.3 U	2.8 U	5.67
Thallium	0.6	NE	NE	12 U	14 U	0.285
Zinc	100	47 - 131	460	24	29	72.6

Notes:
(1) "<xx" indicates that the constituent was detected at some level below the noted value.
(2) "J" qualifier indicates estimated value.
(3) "U" qualifier indicates not detected above detection limit.
mg/kg = milligrams per kilogram
NA - not available
NE - metal was not evaluated
MassDEP "natural" soil background generally reflects the 90th percentile value of a 1995 data set consisting of 750 to 1000 samples
USEPA (1995e) - Surface soils over glacial till and drift - range presented
MassDEP (2006). Technical Update - Revised Sediment Screening Values

Table 9.6.1: Fish Sampling Program -- Comparison of Results to Background
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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LOCATION:	BACKGROUND CONCENTRATIONS									
CLASS:	BOTTOM FEEDER				GAME SPECIES				PREY SPECIES	
SAMPLE TYPE:	MUSCLE		OFFAL		MUSCLE		OFFAL		WHOLE	
UNITS: *For Metals*	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg
Metals										
Aluminum	NA	ND	NA	20.10	NA	ND	NA	ND	NA	7.60
Arsenic	NA	ND	NA	0.54	NA	ND	NA	ND	NA	ND
Barium	0.29	0.36	6.66	9.20	0.13	0.16	2.98	3.80	2.61	2.80
Cadmium	NA	ND	NA	ND	NA	ND	NA	ND	0.01	0.01
Chromium	0.16	0.17	0.34	0.40	0.15	0.16	0.41	0.51	0.31	0.34
Cobalt	NA	ND	NA	0.08	NA	ND	NA	ND	NA	ND
Copper	NA	ND	3.15	5.00	NA	ND	1.20	1.80	0.63	0.77
Lead	NA	ND	NA	0.62	NA	ND	NA	ND	NA	ND
Mercury	0.10	0.14	0.06	0.07	0.29	0.31	0.16	0.17	0.10	0.12
Nickel	0.15	0.16	0.23	0.29	NA	0.13	NA	0.14	NA	0.94
Selenium	0.62	0.70	0.73	0.84	0.79	0.90	NA	1.00	0.62	0.68
Silver	NA	0.10	NA	ND	NA	ND	NA	ND	NA	ND
Vanadium	0.06	0.07	0.20	0.23	NA	ND	NA	0.22	0.12	0.13
Zinc	7.01	8.80	19.90	24.10	7.12	8.50	57.38	68.30	27.09	32.10
Polychlorinated Biphenyls (PCBs)										
UNITS: *For PCBs*	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Aroclor 1242	NA	1.80	NA	4.20	NA	ND	NA	11.00	NA	ND
Aroclor 1254	9.91	14.00	21.61	29.00	NA	3.20	36.04	60.00	19.64	26.00
Aroclor 1260	12.02	18.00	21.56	28.00	NA	ND	31.42	42.00	9.71	10.00

Notes:

(1) "NA" indicates that 95%UCL could not be calculated because less than half of the samples were detects.

(2) "ND" indicates that none of the samples were detects, thus there is no maximum concentration.

(3) Bold type indicates that the sample exceeds background.

(4) Comparisons to background were made as follows:

a. If the 95% UCL was calculated for both background and the on-site samples, the 95%UCLs are compared.

b. If the 95%UCL was not calculated for either background or the on-site samples, the maximum concentrations are compared.

c. For the purposes of this comparison, any detection is considered above background if the corresponding concentrations is ND in background.

Table 9.6.1: Fish Sampling Program -- Comparison of Results to Background
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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LOCATION:	SOUTH EMBAYMENT									
CLASS:	BOTTOM FEEDER				GAME SPECIES				PREY SPECIES	
SAMPLE TYPE:	MUSCLE		OFFAL		MUSCLE		OFFAL		WHOLE	
UNITS: *For Metals*	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg
Metals										
Aluminum	NA	**14.90**	NA	ND	NA	ND	NA	ND	NA	ND
Arsenic	NA	ND	NA	**0.72**	NA	ND	NA	ND	NA	ND
Barium	NA	0.08	3.47	4.20	NA	ND	1.44	2.40	2.49	2.90
Cadmium	NA	ND	NA	**0.64**	NA	ND	0.19	**0.22**	**0.71**	1.00
Chromium	NA	ND	NA	0.61	0.15	0.17	**0.44**	0.49	**0.46**	0.48
Cobalt	NA	ND	NA	**0.10**	NA	ND	NA	ND	NA	ND
Copper	0.37	**0.39**	**3.30**	6.50	NA	ND	**1.48**	2.20	0.63	0.74
Lead	NA	ND	NA	0.44	NA	ND	NA	ND	NA	ND
Mercury	0.09	0.10	0.05	0.06	**0.57**	0.74	**0.41**	0.57	**0.13**	0.14
Nickel	NA	ND	NA	0.19	NA	**0.15**	NA	0.10	NA	ND
Selenium	0.32	0.34	0.56	0.66	0.84	0.97	NA	1.00	NA	ND
Silver	NA	ND	0.39	**0.63**	NA	**0.08**	NA	**0.06**	NA	**0.09**
Vanadium	NA	ND	0.18	0.19	NA	ND	0.14	0.22	**0.19**	0.21
Zinc	5.79	6.70	16.62	17.50	5.14	5.80	32.30	45.20	26.12	27.90
Polychlorinated Biphenyls (PCBs)										
UNITS: *For PCBs*	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Aroclor 1242	NA	**99.00**	NA	**240.00**	NA	**46.00**	NA	**240.00**	NA	**70.00**
Aroclor 1254	**347.59**	530.00	**645.63**	1200.00	28.23	**36.00**	**166.61**	190.00	**186.44**	260.00
Aroclor 1260	**62.04**	83.00	**120.21**	160.00	8.58	**13.00**	**123.91**	170.00	**50.18**	64.00

Notes:

(1) "NA" indicates that 95%UCL could not be calculated because less than half of the samples were detects.

(2) "ND" indicates that none of the samples were detects, thus there is no maximum concentration.

(3) Bold type indicates that the sample exceeds background.

(4) Comparisons to background were made as follows:

a. If the 95% UCL was calculated for both background and the on-site samples, the 95%UCLs are compared.

b. If the 95%UCL was not calculated for either background or the on-site samples, the maximum concentrations are compared.

c. For the purposes of this comparison, any detection is considered above background if the corresponding concentrations is ND in background.

Table 9.6.1: Fish Sampling Program -- Comparison of Results to Background
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

DRAFT

LOCATION:	PRIVATE IMPOUNDMENT									
CLASS:	BOTTOM FEEDER				GAME SPECIES				PREY SPECIES	
SAMPLE TYPE:	MUSCLE		OFFAL		MUSCLE		OFFAL		WHOLE	
UNITS: *For Metals*	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg	95% UCL OF MEAN mg/kg	MAXIMUM CONCENTRATION mg/kg
Metals										
Aluminum	NA	ND	NA	19.60	NA	ND	NA	ND	7.26	**8.20**
Arsenic	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND
Barium	NA	ND	NA	2.50	NA	ND	NA	0.84	2.00	2.40
Cadmium	NA	**0.02**	NA	**0.58**	NA	ND	NA	**0.41**	0.38	**0.47**
Chromium	NA	0.08	NA	0.34	NA	0.14	NA	0.25	0.30	0.32
Cobalt	NA	ND	NA	0.06	NA	ND	NA	ND	NA	ND
Copper	NA	ND	NA	1.80	NA	ND	NA	1.20	**0.97**	1.10
Lead	NA	ND	NA	**1.10**	NA	ND	NA	ND	0.14	**0.15**
Mercury	NA	0.03	NA	0.02	NA	ND	NA	0.16	0.10	0.12
Nickel	NA	0.13	NA	**2.80**	NA	0.11	NA	ND	NA	0.44
Selenium	NA	0.40	NA	0.77	NA	**0.73**	NA	ND	**0.68**	0.69
Silver	NA	ND	NA	**0.08**	NA	ND	NA	ND	NA	**0.07**
Vanadium	NA	**0.11**	NA	0.71	NA	ND	NA	0.17	**0.18**	0.18
Zinc	NA	ND	NA	**27.20**	NA	7.40	NA	64.40	20.11	20.30
Polychlorinated Biphenyls (PCBs)										
UNITS: *For PCBs*	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Aroclor 1242	NA	ND	NA	ND	NA	**4.40**	NA	**18.00**	NA	ND
Aroclor 1254	**176.13**	160.00	NA	**370.00**	NA	**8.20**	NA	**74.00**	**77.54**	110.00
Aroclor 1260	**59.81**	54.00	NA	**110.00**	NA	ND	NA	23.00	**181.10**	320.00

Notes:

(1) "NA" indicates that 95%UCL could not be calculated because less than half of the samples were detects.

(2) "ND" indicates that none of the samples were detects, thus there is no maximum concentration.

(3) Bold type indicates that the sample exceeds background.

(4) Comparisons to background were made as follows:

a. If the 95% UCL was calculated for both background and the on-site samples, the 95%UCLs are compared.

b. If the 95%UCL was not calculated for either background or the on-site samples, the maximum concentrations are compared.

c. For the purposes of this comparison, any detection is considered above background if the corresponding concentrations is ND in background.

Table 9.7.1: Indoor Air testing Results (2001 - 2009)
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

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Location	Tetrachloroethene (ppbv) [a]					Trichloroethene (ppbv)				
	9/12/2001	3/6/2003	5/22/2003	12/18/2007	11/9/2009	9/12/2001	3/6/2003	5/22/2003	12/18/2007	11/9/2009
AS-1A	1.1	2.7	3.1	4.1	2.2	0.032 J [e]	0.38	0.14	0.61	0.36
AS-1B	0.95	3.5	3.1	-- [b]	--	0.037	0.38	0.15	--	--
AS-2A	0.66	2.4	2.8	--	--	0.18	0.61	0.29	--	--
AS-3A [c]	0.46	0.4	0.18	4.9	2.2	0.38	0.28	0.071	3.2	1.1
AS-4A	0.51	0.93	1.4	--	--	0.041	0.14	0.2	--	--
AS-8A	--	4.3	3.8	4.7	1.8	--	0.82	0.16	0.76	0.8
AS-9A	--	0.96	0.64	--	--	--	0.16	0.048	--	--
AS-10A	--	3.3	1.8	--	--	--	0.5	0.12	--	--
AS-11A	--	9.2	2	11	11	--	13	2.3	11	28
AS-11B	--	--	2	16	10	--	--	2.4	31	28
AS-12A	--	--	2.1	--	--	--	--	0.11	--	--
AS-13A	--	--	2.3	5.2	1.8	--	--	0.33	1.9	1.2

	1,1,1-Trichloroethane (ppbv)					1,1-Dichloroethane (ppbv)				
	9/12/2001	3/6/2003	5/22/2003	12/18/2007	11/9/2009	9/12/2001	3/6/2003	5/22/2003	12/18/2007	11/9/2009
AS-1A	0.32	0.52	0.34	1.3	0.43	0.1	0.1	0.061	< 0.50 [d]	0.57
AS-1B	0.31	0.51	0.34	--	--	0.078	0.096	0.063	--	--
AS-2A	0.37	0.69	0.54	--	--	< 0.034	0.065	0.071	--	--
AS-3A [c]	0.3	0.36	0.21	2.5	0.85	< 0.034	<0.011	<0.0075	< 0.50	0.38
AS-4A	0.43	0.27	0.46	--	--	0.16	0.16	0.11	--	--
AS-8A	--	0.93	0.4	1.4	0.69	--	0.11	0.076	< 0.50	0.47
AS-9A	--	0.28	0.18	--	--	--	0.14	0.1	--	--
AS-10A	--	0.66	0.35	--	--	--	0.099	0.09	--	--
AS-11A	--	4.9	2.8	4.6	4.9	--	0.18	0.063	< 0.50	0.7
AS-11B	--	--	2.9	7.2	4.8	--	--	0.067	0.52	0.67
AS-12A	--	--	0.3	--	--	--	--	0.08	--	--
AS-13A	--	--	0.63	2	0.72	--	--	0.073	< 0.50	0.37

	1,1-Dichloroethene (ppbv)					Vinyl Chloride (ppbv)				
	9/12/2001	3/6/2003	5/22/2003	12/18/2007	11/9/2009	9/12/2001	3/6/2003	5/22/2003	12/18/2007	11/9/2009
AS-1A	<0.016 J	0.22	0.25	< 0.50	< 0.02	< 0.016	< 0.014	0.015	< 0.50	0.05
AS-1B	0.022 J	0.22	0.28	--	--	< 0.017	0.016	0.014	--	--
AS-2A	< 0.017 J	0.2	0.27	--	--	< 0.017	< 0.015	0.014	--	--
AS-3A [c]	< 0.017 J	0.0245	0.021	< 0.50	< 0.02	< 0.017	< 0.018	< 0.012	< 0.50	0.03
AS-4A	< 0.017 J	0.099	0.012	--	--	< 0.017	< 0.015	0.019	--	--
AS-8A	--	0.37	0.32	< 0.50	< 0.02	--	< 0.012	0.018	< 0.50	0.04
AS-9A	--	0.14	0.078	--	--	--	< 0.012	0.021	--	--
AS-10A	--	0.32	0.25	--	--	--	< 0.014	0.032	--	--
AS-11A	--	0.21	0.09	< 0.50	0.08	--	0.015	0.022	< 0.50	0.03
AS-11B	--	--	0.1	< 0.50	0.07	--	--	0.018	< 0.50	0.03
AS-12A	--	--	0.29	--	--	--	--	0.02	--	--
AS-13A	--	--	0.34	< 0.50	< 0.02	--	--	0.025	< 0.50	0.03

a all concentrations reported in ppbv to two significant figures.
b -- no sample collected
c concentrations reported for locations AS-3A on 3/6/03 and 5/22/03 represent average of duplicate results.
d < xx constituent not detected above detection limit; detection limit is reported
e J - estimated value

Table 9.7.2: 2010 Indoor Air Testing Results
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BASF Corporation, Plainville Massachusetts

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Constituent	Units	USEPA Screening Level [a] ppbv	Sales Office 7/27/10	Sales Office 10/13/10	Corner Office 7/27/10	Corner Office 10/13/10	Former Production Area 7/27/10	Former Production Area 10/13/10	Former Maintenance Area 7/27/10	Former Maintenance Area 10/13/10	Ambient Outdoor 7/27/10	Ambient Outdoor 10/13/10
1,1,1-trichloroethane	ppbv	4000 [b]	0.29	0.48	0.28	0.43	0.66	0.53	0.44	0.45	ND	ND
1,1-dichloroethane	ppbv	1.9	ND	0.24	ND	0.21	0.44	0.45	0.28	ND	ND	ND
2-butanone	ppbv	7,500	0.72	0.55	0.70	0.49	0.85	0.36	1.3	0.46	0.26	ND
4-methyl-2-pentanone	ppbv	3,200	ND	ND	ND	ND	ND	ND	0.30	ND	ND	ND
acetone	ppbv	59,000	7.0	5.8	6.2	4.5	11	4.6	9.4	6.7	5.5	2.2
benzene	ppbv	0.50	ND	**0.99**	ND	**0.83**	ND	**1.6**	ND	**0.60**	ND	ND
cis-1,2-dichloroethene	ppbv	NA	ND	ND	ND	ND	0.21	0.24	ND	ND	ND	ND
ethylbenzene	ppbv	1.1	ND	ND	ND	ND	0.25	ND	0.24	0.37	ND	ND
m,p-xylene	ppbv	710	ND	ND	ND	ND	ND	0.52	0.96	1.31	ND	ND
methylene chloride	ppbv	7.5	1.5	1.7	2.9	1.5	1.9	ND	2.1	ND	2.1	ND
o-xylene	ppbv	710	ND	ND	ND	ND	0.31	ND	0.51	0.36	ND	ND
styrene	ppbv	1,000	ND	ND	ND	ND	ND	ND	0.44	ND	ND	ND
tetrachloroethylene	ppbv	0.30	**0.84**	**1.6**	**0.78**	**1.4**	**3.0**	**2.1**	**1.9**	**1.1**	ND	ND
toluene	ppbv	5,800	0.51	0.45	0.43	0.40	0.53	0.29	0.60	1.0	0.27	ND
trichloroethene	ppbv	1.1	0.24	0.32	ND	0.31	0.44	0.41	0.29	0.40	ND	ND

Notes

(a) USEPA Regional Screening Level (RSL) Industrial Air Supporting Table November 2010 - http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm
(b) all concentrations reported to two significant figures
Concentrations in bold typface exceed USEPA RSL

Table: 11-1a
Surface Water Ecological Screening Benchmarks
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Constituent	Units	Region 3 Freshwater Screening Benchmarks	Region 5 RCRA Ecological Screening	Region 4 Freshwater Chronic Criterion	Final Ecological Screening Benchmarks	Source	Notes
Aluminum	ug/L	87	NC	87	87	R3	
Antimony	ug/L	30	80	160	30	R3	
Arsenic	ug/L	5	148	NC	5	R3	
Barium	ug/L	4	220	NC	4	R3	
Cadmium	ug/L	0.09133	0.15	[Hardness]	0.0913	R3	(a)
Chromium, Total	ug/L	23.11	42	NC	23.1	R3	(a)
Copper	ug/L	2.655	1.58	[Hardness]	2.66	R3	(a)
Iron	ug/L	300	NC	1,000	300	R3	
Lead	ug/L	0.5191	1.17	[Hardness]	0.519	R3	(a)
Magnesium	ug/L	82,000	NC	NC	82,000	R3	
Manganese	ug/L	120	NC	NC	120	R3	
Mercury	ug/L	0.026	0.0013	0.012	0.026	R3	
Nickel	ug/L	15.6	28.9	[Hardness]	15.6	R3	(a)
Selenium	ug/L	1	5	5	1	R3	
Silver	ug/L	0.2783	0.12	0.012	0.278	R3	(a)
Zinc	ug/L	35.38	65.7	[Hardness]	35.4	R3	(a)
Bromomethane	ug/L	NC	16	110	16	R5	
Carbon Tetrachloride	ug/L	13.3	240	352	13.3	R3	
1,1-Dichloroethane	ug/L	47	47	NC	47	R3	
1,1-Dichloroethene	ug/L	25	65	303	25	R3	
Cis-1,2-Dichloroethene	ug/L	590	NC	NC	590	R3	(b)
Methyl Isobutyl Ketone	ug/L	170	170	NC	170	R3	
Methylene Chloride	ug/L	98.1	940	1,930	98.1	R3	
Tetrachloroethene	ug/L	111	45	84	111	R3	
1,1,1-Trichloroethane	ug/L	11	76	528	11	R3	
Trichloroethene	ug/L	21	47	NC	21	R3	
Calcium	ug/L	116,000	NC	NC	116,000	R3	
Cyanide	ug/L	NC	5.2	5.2	5.2	R5	
Potassium	ug/L	NC	NC	NC	NC		
Silica	ug/L	53,000	NC	NC	53,000	R3	
Sodium	ug/L	680,000	NC	NC	680,000	R3	
Ammonia	ug/L	6,395	NC	NC	6,395	USEPA	(c)
Chloride	ug/L	230,000	NC	230,000	230,000	R3	
Nitrate	ug/L	NC	NC	NC	NC		
Nitrogen	ug/L	NC	NC	NC	NC		
Nitrogen, Nitrate (As N)	ug/L	NC	NC	NC	NC		
Sulfate (SO4)	ug/L	NC	NC	NC	NC		

(a) Region 3 hardness-based critierion.
(b) Use 1,2-Dichloroethene (total) as a surrogate.
(c) Although Region 3 does provide a value for unionized ammonia, the ammonia data collected was for total ammonia. Value for total ammonia nitrogen calculated based on National Recommended Water Quality Criteria.
NC No criterion available.
R3 Region 3 criterion.
R4 Region 4 criterion.
R5 Region 5 criterion.
SU Standard units.
ug/L Micrograms per liter.
USEPA National Recommended Water Quality Criteria

Table: 11-1b
Calculated Surface Water Ecological Screening Benchmarks
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Constituent	Units	Value	Formula
Hardness	mg/L	24.1	= Site Average Hardness
Cadmium	ug/L	0.0913	=EXP(0.7409 *(LN(Hardness))-4.719)*(1.101672-(LN(Hardness)*(0.041838)))
Chromium III	ug/L	23.1	=(EXP(0.819*(LN(Hardness))+0.6848))*0.86
Copper	ug/L	2.65	=(EXP(0.8545*(LN(Hardness))-1.702))*0.96
Lead	ug/L	0.519	=(EXP(1.273*(LN(Hardness))-4.705))*(1.46203-(LN(Hardness)*(0.145712)))
Nickel	ug/L	15.6	=(EXP(0.846*(LN(Hardness))+0.0584))*0.997
Silver	ug/L	0.278	=(EXP(1.72*(LN(Hardness))-6.59))*0.85
Zinc	ug/L	35.4	=(EXP(0.8473*(LN(Hardness))+0.884))*0.986

Formulae from Mid-Atlantic Risk Assessment Freshwater Screening Benchmarks
http://www.epa.gov/reg3hwmd/risk/eco/btag/sbv/fw/screenbench.htm

Constituent	Units	Value	Formula
Temperature	C	14.6	= Site Average Temperature
pH	SU	6.71	= Site Average pH
Total Ammonia	ug/L	6,395	=((0.0577/(1+10^(7.688-pH)))+(2.487/(1+10^(pH-7.688))))*MIN(2.85,1.45*10^(0.028*(25-T)))

Formula from National Recommended Water Quality Criteria
http://water.epa.gov/scitech/swguidance/waterquality/standards/current/index.cfm#appendxc

ug/L	Micrograms per liter.
mg/L	Milligrams per liter.
EXP	Returns e raised to the power of number. The constant e equals 2.71828182845904, the base of the natural logarithm.
LN	Returns the natural logarithm of a number. Natural logarithms are based on the constant e (2.71828182845904).

Table: 11-1c
Sediment Ecological Screening Benchmarks
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BASF Corporation, Plainville, Massachusetts

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Constituent	Units	Region 3 Freshwater Sediment Screening Benchmarks	Region 5 RCRA Ecological Screening Levels	Region 4 Freshwater Sediment	Final Ecological Screening Benchmarks	Source	Notes
Aluminum	ug/kg	NC	NC	NC	NC		
Antimony	ug/kg	2,000	NC	12,000	2,000	R3	
Arsenic	ug/kg	9,800	9,790	7,240	9,800	R3	
Barium	ug/kg	NC	NC	NC	NC		
Beryllium	ug/kg	NC	NC	NC	NC		
Cadmium	ug/kg	990	990	1,000	990	R3	
Chromium, Total	ug/kg	43,400	43,400	52,300	43,400	R3	
Copper	ug/kg	31,600	31,600	18,700	31,600	R3	
Iron	ug/kg	20,000,000	NC	NC	20,000,000	R3	
Lead	ug/kg	35,800	35,800	30,200	35,800	R3	
Magnesium	ug/kg	NC	NC	NC	NC		
Mercury	ug/kg	180	174	130	180	R3	
Nickel	ug/kg	22,700	22,700	15,900	22,700	R3	
Selenium	ug/kg	2,000	NC	NC	2,000	R3	
Silver	ug/kg	1,000	500	2,000	1,000	R3	
Thallium	ug/kg	NC	NC	NC	NC		
Zinc	ug/kg	121,000	121,000	124,000	121,000	R3	
Acetone	ug/kg	NC	9.9	NC	9.9	R5	
Benzene	ug/kg	NC	142	NC	142	R5	
Carbon Disulfide	ug/kg	0.851	23.9	NC	23.9	R5	(a)
Chloroethane	ug/kg	31	19.4	NC	31	R3	(b)
Chloroform	ug/kg	NC	121	NC	121	R5	
1,1-Dichloroethane	ug/kg	31	19.4	NC	31	R3	(b)
1,1-Dichloroethene	ug/kg	31	19.4	NC	31	R3	
Total 1,2-Dichloroethene	ug/kg	1,050	654	NC	1,050	R3	(c)
Cis-1,2-Dichloroethene	ug/kg	1,050	654	NC	1,050	R3	(c)
Methyl Ethyl Ketone (2-Butanone)	ug/kg	NC	42.4	NC	42.4	R5	
Methylene Chloride	ug/kg	NC	159	NC	159	R5	
Tetrachloroethene	ug/kg	468	990	NC	468	R3	
Toluene	ug/kg	NC	1,220	NC	1,220	R5	

Table: 11-1c
Sediment Ecological Screening Benchmarks
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Constituent	Units	Region 3 Freshwater Sediment Screening Benchmarks	Region 5 RCRA Ecological Screening Levels	Region 4 Freshwater Sediment	Final Ecological Screening Benchmarks	Source	Notes
1,1,1-Trichloroethane	ug/kg	30.2	213	NC	30.2	R3	
Trichloroethene	ug/kg	96.9	112	NC	96.9	R3	
Vinyl Chloride	ug/kg	NC	202	NC	202	R5	
M,P-Xylene (Sum Of Isomers)	ug/kg	25.2	433	NC	25.2	R3	(d)
Benzoic Acid	ug/kg	650	NC	NC	650	R3	
Bis(2-Ethylhexyl) Phthalate	ug/kg	180	182	182	180	R3	
Di-N-Butyl Phthalate	ug/kg	6,470	1,114	NC	6,470	R3	
Di-N-Octylphthalate	ug/kg	NC	40,600	NC	40,600	R5	
P-Cymene (P-Isopropyltoluene)	ug/kg	NC	NC	NC	NC		
Acenaphthylene	ug/kg	5.9	5.87	330	5.9	R3	
Benzo(A)Anthracene	ug/kg	108	108	330	108	R3	
Benzo(A)Pyrene	ug/kg	150	150	330	150	R3	
Benzo(B)Fluoranthene	ug/kg	27.2	10,400	NC	27.2	R3	(e)
Benzo(G,H,I)Perylene	ug/kg	170	170	NC	170	R3	
Benzo(K)Fluoranthene	ug/kg	240	240	NC	240	R3	
Chrysene	ug/kg	166	166	330	166	R3	
Fluoranthene	ug/kg	423	423	330	423	R3	
Fluorene	ug/kg	77.4	77.4	330	77.4	R3	
Indeno(1,2,3-C,D)Pyrene	ug/kg	17	200	NC	17	R3	
Phenanthrene	ug/kg	204	204	330	204	R3	
Pyrene	ug/kg	195	195	330	195	R3	
Hardrocarbons C11-C22	ug/kg	NC	NC	NC	NC		
Hardrocarbons C11-C22, Adjusted	ug/kg	NC	NC	NC	NC		
Hydrocarbons C19-C36	ug/kg	NC	NC	NC	NC		
Hydrocarbons C9-C18	ug/kg	NC	NC	NC	NC		
PCB-1242 (Arochlor 1242)	ug/kg	59.8	59.8	33	59.8	R3	(f)
PCB-1248 (Arochlor 1248)	ug/kg	59.8	59.8	33	59.8	R3	(f)
PCB-1254 (Arochlor 1254)	ug/kg	59.8	59.8	33	59.8	R3	(f)
Calcium	ug/kg	NC	NC	NC	NC		

Table: 11-1c
Sediment Ecological Screening Benchmarks
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Constituent	Units	Region 3 Freshwater Sediment Screening Benchmarks	Region 5 RCRA Ecological Screening Levels	Region 4 Freshwater Sediment	Final Ecological Screening Benchmarks	Source	Notes

(a) Region 5 criterion is preferentially used.
(b) Use 1,1,-DCE as a surrogate.
(c) Use trans-1,2-Dichloroethene as a surrogate.
(d) For Region 3 value, use m-xylene as a surrogate.
(e) For Region 3 value, use benzo(b,k)fluoranthene as a surrogate.
(f) Use total PCBs as a surrogate.
NC No criterion available.
R3 Region 3 criterion.
R4 Region 4 criterion.
R5 Region 5 criterion.
ug/kg Micrograms per kilogram.
NC No criterion available.
R3 Region 3 criterion.
ug/kg Micrograms per kilogram.

Table: 11-1d
Surface Soil Ecological Screening Benchmarks
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Constituent	Units	Lowest USEPA Ecological Soil Screening Level	Region 5 RCRA Ecological Screening Levels	Region 4 Soil Screening Benchmarks	Final Ecological Screening Benchmarks	Source	Notes
Antimony	ug/kg	270	142	3,500	270	EcoSSL	
Arsenic	ug/kg	18,000	5,700	10,000	18,000	EcoSSL	
Barium	ug/kg	330,000	1,040	165,000	330,000	EcoSSL	
Beryllium	ug/kg	21,000	1,060	1,100	21,000	EcoSSL	
Cadmium	ug/kg	360	2.22	1,600	360	EcoSSL	
Chromium, Total	ug/kg	130,000	400	400	130,000	EcoSSL	(a)
Copper	ug/kg	28,000	5,400	40,000	28,000	EcoSSL	
Iron	ug/kg	NC	NC	200,000	200,000	R4	
Lead	ug/kg	11,000	53.7	50,000	11,000	EcoSSL	
Mercury	ug/kg	NC	100	100	100	R5	
Nickel	ug/kg	38,000	13,600	30,000	38,000	EcoSSL	
Selenium	ug/kg	520	27.6	810	520	EcoSSL	
Silver	ug/kg	4,200	4,040	2,000	4,200	EcoSSL	
Thallium	ug/kg	NC	56.9	1,000	56.9	R5	
Zinc	ug/kg	46,000	6,620	50,000	46,000	EcoSSL	
Acetone	ug/kg	NC	2,500	NC	2,500	R5	
Benzene	ug/kg	NC	255	50	255	R5	
1,1-Dichloroethane	ug/kg	NC	20,100	NC	20,100	R5	
1,1-Dichloroethene	ug/kg	NC	8,280	NC	8,280	R5	
Ethylbenzene	ug/kg	NC	5,160	50	5,160	R5	
Methyl Ethyl Ketone (2-Butanone)	ug/kg	NC	89,600	NC	89,600	R5	
Methylene Chloride	ug/kg	NC	4,050	2,000	4,050	R5	
Tetrachloroethene	ug/kg	NC	9,920	NC	9,920	R5	
Toluene	ug/kg	NC	5,450	NC	5,450	R5	
1,1,1-Trichloroethane	ug/kg	NC	29,800	NC	29,800	R5	
Trichloroethene	ug/kg	NC	12,400	NC	12,400	R5	
M,P-Xylene (Sum Of Isomers)	ug/kg	NC	10,000	NC	10,000	R5	
PCB-1248 (Arochlor 1248)	ug/kg	NC	0.332	20	0.332	R5	(b)
PCB-1254 (Arochlor 1254)	ug/kg	NC	0.332	20	0.332	R5	(b)
PCB-1260 (Arochlor 1260)	ug/kg	NC	0.332	20	0.332	R5	(b)

(a) For EcoSSL, use Chrome VI as a surrogate.
(b) Use total PCBs as a surrogate.
EcoSSL USEPA Ecological Soil Screening Level.
NC No criterion available.
R4 Region 4 criterion.
R5 Region 5 criterion.
ug/kg Micrograms per kilogram.

Table: 11-2a
SLERA Surface Water Data Summary and Screening
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Constituent	Units	Ecological Screening Benchmark	Source	All Non-Background Data		Retain in BERA?	Reason	All Background Data	
				Median	Max			Median	Max
Aluminum	ug/L	87	R3	68.5	805	**Yes**	Max > ESB	51.15	125
Antimony	ug/L	30	R3	1	8.4	No	Max < ESB	0.55	9
Arsenic	ug/L	5	R3	0.5	1.3	No	Max < ESB	1.5	0.6
Barium	ug/L	4	R3	18.85	22.6	**Yes**	Max > ESB	42.7	42.7
Cadmium	ug/L	0.0913	R3	0.5	54.4	**Yes**	Max > ESB		
Chromium, Total	ug/L	23.1	R3	0.5	169	**Yes**	Max > ESB	0.5	1.5
Copper	ug/L	2.66	R3	1	26.8	**Yes**	Max > ESB	0.75	1.5
Iron	ug/L	300	R3	496	2,320	**Yes**	Max > ESB	383.5	1,360
Lead	ug/L	0.5191	R3	1.425	24.7	**Yes**	Max > ESB	0.8	7
Magnesium	ug/L	82,000	R3	1,270	2,090	No	Max < ESB	1,415	2,300
Manganese	ug/L	120	R3	36.4	183	**Yes**	Max > ESB	36.75	134
Mercury	ug/L	0.026	R3	0.1	0.21	**Yes**	Max > ESB		
Nickel	ug/L	15.6	R3	1.5	229	**Yes**	Max > ESB	2.1	3.8
Selenium	ug/L	1	R3	0.75	1	**Yes**	Max < ESB	0.5	1
Silver	ug/L	0.278	R3	0.5	46.7	**Yes**	Max > ESB		
Zinc	ug/L	35.4	R3	12.9	127	**Yes**	Max > ESB	9.85	39.3
Bromomethane	ug/L	16	R5	5	1	No	Max < ESB		
Carbon Tetrachloride	ug/L	13.3	R3	2.5	19	**Yes**	Max > ESB		
1,1-Dichloroethane	ug/L	47	R3	2	7	No	Max < ESB		
1,1-Dichloroethene	ug/L	25	R3	2.5	5	No	Max < ESB		
Cis-1,2-Dichloroethene	ug/L	590	R3	0.91	18	No	Max < ESB		
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	ug/L	170	R3	5	1	No	Max < ESB		
Methylene Chloride	ug/L	98.1	R3	1	1	No	Max < ESB	2.5	3
Tetrachloroethene	ug/L	111	R3	2.5	210	**Yes**	Max > ESB		
1,1,1-Trichloroethane	ug/L	11	R3	2.5	130	**Yes**	Max > ESB		
Trichloroethene	ug/L	21	R3	2	33	**Yes**	Max > ESB		
Calcium	ug/L	116,000	R3	5,830	9,190	No	Max < ESB	8,060	11,400
Cyanide	ug/L	5.200	R5	5	22	**Yes**	Max > ESB		
Potassium	ug/L	NC		687	1,380	**Yes**	No ESB	852.5	1,420
Silica	ug/L	53,000	R3	2,000	11,400	No	Max < ESB	2,000	11,200

Table: 11-2a
SLERA Surface Water Data Summary and Screening
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BASF Corporation, Plainville, Massachusetts

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Constituent	Units	Ecological Screening Benchmark	Source	All Non-Background Data		Retain in BERA?	Reason	All Background Data	
				Median	Max			Median	Max
Sodium	ug/L	680,000	R3	19,400	29,400	No	Max < ESB	22,150	34,400
Ammonia	ug/L	6,395	USEPA	25	1,170	No	Max < ESB	67	190
Chloride	ug/L	230,000	R3	35,750	53,000	No	Max < ESB	49,650	66,000
Nitrate	ug/L	NC		50	2,620	**Yes**	No ESB	50	1,340
Nitrogen	ug/L	NC		24	910	**Yes**	No ESB	52	150
Nitrogen, Nitrate (As N)	ug/L	NC		2.5	11	**Yes**	No ESB	4.25	35

The background data are presented for comparison, and are not being used for screening purposes in this step.

BERA Baseline ecological risk assessment.
ESB Ecological Screening Benchmark.
Freq. Frequency, the number of times the constituent was detected and the number of samples where that constituent was analyzed (including duplicates).
Max Maximum concentration.
R3 Region 3 criterion.
ug/L Micrograms per liter.

Table: 11-2b
SLERA Sediment Data Summary and Screening
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Units	Ecological Screening Benchmark	Source	All Non-Background Data		Retain in BERA?	Reason	Background Data	
				Median	Max			Median	Max
Aluminum	ug/kg	NC		8,570,000	22,700,000	**Yes**	No ESB	4,810,000	6,170,000
Antimony	ug/kg	2,000	R3	4,850	12,000	**Yes**	Max > ESB	6,000	1,100
Arsenic	ug/kg	9,800	R3	4,000	17,000	**Yes**	Max > ESB	3,000	6,290
Barium	ug/kg	NC		105,000	161,000	**Yes**	No ESB	136,700	188,000
Beryllium	ug/kg	NC		900	3,300	**Yes**	No ESB	1,734	6,800
Cadmium	ug/kg	990	R3	15,580	780,600	**Yes**	Max > ESB	1,450	26,670
Chromium, Total	ug/kg	43,400	R3	18,850	112,000	**Yes**	Max > ESB	15,000	25,000
Copper	ug/kg	31,600	R3	21,600	300,000	**Yes**	Max > ESB	16,800	54,000
Iron	ug/kg	20,000,000	R3	5,600,000	23,600,000	**Yes**	Max > ESB	6,320,000	6,890,000
Lead	ug/kg	35,800	R3	49,050	270,000	**Yes**	Max > ESB	42,800	320,000
Magnesium	ug/kg	NC		1,040,000	3,900,000	**Yes**	No ESB	556,000	1,480,000
Mercury	ug/kg	180	R3	193.5	5,000	**Yes**	Max > ESB	190	181
Nickel	ug/kg	22,700	R3	15,150	75,800	**Yes**	Max > ESB	13,000	52,500
Selenium	ug/kg	2,000	R3	3,950	12,800	**Yes**	Max > ESB	3,890	3,890
Silver	ug/kg	1,000	R3	2,950	326,000	**Yes**	Max > ESB	1,400	5,670
Thallium	ug/kg	NC		3,875	208.6	**Yes**	No ESB		
Zinc	ug/kg	121,000	R3	47,575	550,000	**Yes**	Max > ESB	29,000	380,000
Acetone	ug/kg	9.9	R5	370	1,800	**Yes**	Max > ESB	337.5	1,300
Benzene	ug/kg	142	R5	4.05	21	No	Max < ESB		
Carbon Disulfide	ug/kg	23.9	R5	45.5	200	**Yes**	Max > ESB		
Chloroethane	ug/kg	31	R3	7.25	180	**Yes**	Max > ESB		
Chloroform	ug/kg	121	R5	4.95	25	No	Max < ESB		
1,1-Dichloroethane	ug/kg	31	R3	13	1,700	**Yes**	Max > ESB		
1,1-Dichloroethene	ug/kg	31	R3	3.7	130	**Yes**	Max > ESB		
1,2-Dichloroethene	ug/kg	1,050	R3	6	85	No	Max < ESB		
Cis-1,2-Dichloroethene	ug/kg	1,050	R3	24.5	1,900	**Yes**	Max > ESB		
Methyl Ethyl Ketone (2-Butanone)	ug/kg	42.4	R5	83	360	**Yes**	Max > ESB	33.5	310
Methylene Chloride	ug/kg	159	R5	32.75	92	No	Max < ESB		
Tetrachloroethene	ug/kg	468	R3	17.5	19,000	**Yes**	Max > ESB		
Toluene	ug/kg	1,220	R5	14	170	No	Max < ESB	15.5	29

Table: 11-2b
SLERA Sediment Data Summary and Screening
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BASF Corporation, Plainville, Massachusetts

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Constituent	Units	Ecological Screening Benchmark	Source	All Non-Background Data		Retain in BERA?	Reason	Background Data	
				Median	Max			Median	Max
1,1,1-Trichloroethane	ug/kg	30.2	R3	6	3,100	**Yes**	Max > ESB		
Trichloroethene	ug/kg	96.9	R3	15	3,500	**Yes**	Max > ESB		
Vinyl Chloride	ug/kg	202	R5	6.75	340	**Yes**	Max > ESB		
M,P-Xylene (Sum Of Isomers)	ug/kg	25.2	R3	8	34	**Yes**	Max > ESB		
Benzoic Acid	ug/kg	650	R3	255	400	No	Max < ESB		
Bis(2-Ethylhexyl) Phthalate	ug/kg	180	R3	1,250	120	No	Max < ESB		
Di-N-Butyl Phthalate	ug/kg	6,470	R3	922.5	100	No	Max < ESB		
Di-N-Octylphthalate	ug/kg	40,600	R5	1,350	48	No	Max < ESB		
P-Cymene (P-Isopropyltoluene)	ug/kg	NC		6	340	**Yes**	No ESB	11	520
Acenaphthylene	ug/kg	5.9	R3	188	21	**Yes**	Max > ESB		
Benzo(A)Anthracene	ug/kg	108	R3	188	878	**Yes**	Max > ESB		
Benzo(A)Pyrene	ug/kg	150	R3	197	1,060	**Yes**	Max > ESB		
Benzo(B)Fluoranthene	ug/kg	27.2	R3	230	1,200	**Yes**	Max > ESB		
Benzo(G,H,I)Perylene	ug/kg	170	R3	395	944	**Yes**	Max > ESB		
Benzo(K)Fluoranthene	ug/kg	240	R3	268	1,450	**Yes**	Max > ESB		
Chrysene	ug/kg	166	R3	188	1,580	**Yes**	Max > ESB	354.5	475
Fluoranthene	ug/kg	423	R3	638	2,680	**Yes**	Max > ESB	546.5	859
Fluorene	ug/kg	77.4	R3	188	16	No	Max < ESB		
Indeno(1,2,3-C,D)Pyrene	ug/kg	17	R3	395	784	**Yes**	Max > ESB		
Phenanthrene	ug/kg	204	R3	171	813	**Yes**	Max > ESB	277	320
Pyrene	ug/kg	195	R3	476	2,220	**Yes**	Max > ESB	426.5	619
Hardrocarbons C11-C22	ug/kg	NC		122,000	276,000	**Yes**	No ESB	130,250	202,000
Hardrocarbons C11-C22, Adjusted	ug/kg	NC		120,000	262,000	**Yes**	No ESB	129,250	200,000
Hydrocarbons C19-C36	ug/kg	NC		171,000	316,000	**Yes**	No ESB	215,750	373,000
Hydrocarbons C9-C18	ug/kg	NC		42,750	113,000	**Yes**	No ESB		
PCB-1242 (Arochlor 1242)	ug/kg	59.8	R3	107.5	52,000	**Yes**	Max > ESB		
PCB-1248 (Arochlor 1248)	ug/kg	59.8	R3	154.5	27,100	**Yes**	Max > ESB	179	
PCB-1254 (Arochlor 1254)	ug/kg	59.8	R3	129.5	44,000	**Yes**	Max > ESB	179	
Calcium	ug/kg	NC		1,800,000	12,000,000	**Yes**	No ESB	3,810,000	6,080,000

Table: 11-2b
SLERA Sediment Data Summary and Screening
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BASF Corporation, Plainville, Massachusetts

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Constituent	Units	Ecological Screening Benchmark	Source	All Non-Background Data		Retain in BERA?	Reason	Background Data	
				Median	Max			Median	Max

The background data are presented for comparison, and are not being used for screening purposes in this step.

BERA	Baseline ecological risk assessment.
ESB	Ecological Screening Benchmark.
Freq.	Frequency, the number of times the constituent was detected and the number of samples where that constituent was analyzed (including duplicates).
Max	Maximum concentration.
NC	No criterion available.
R3	Region 3 criterion.
R4	Region 4 criterion.
R5	Region 5 criterion.
ug/kg	Micrograms per kilogram.

Table: 11-2c
SLERA Floodplain Soil Data Summary and Screening
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Units	Ecological Screening Benchmark	Source	Floodplain Soil 2010 Data		Retain in BERA?	Reason	Floodplain Soil Background 2010 Data	
				Median	Max			Median	Max
Antimony	ug/kg	270	EcoSSL	257	398	**Yes**	Max > ESB	1,290	1,340
Arsenic	ug/kg	18,000	EcoSSL	1,885	2,900	No	Max < ESB	1,760	2,210
Barium	ug/kg	330,000	EcoSSL	47,750	89,700	No	Max < ESB	45,850	48,600
Beryllium	ug/kg	21,000	EcoSSL	883.95	1,687	No	Max < ESB	345.075	614.6
Cadmium	ug/kg	360	EcoSSL	4,141	14,160	**Yes**	Max > ESB	10,890	13,920
Chromium, Total	ug/kg	130,000	EcoSSL	11,000	24,800	No	Max < ESB	4,855	5,090
Lead	ug/kg	11,000	EcoSSL	48,700	83,500	**Yes**	Max > ESB	114,000	124,000
Mercury	ug/kg	100	R5	148.5	281	**Yes**	Max > ESB	486	606
Nickel	ug/kg	38,000	EcoSSL	6,380	9,860	No	Max < ESB	15,200	19,000
Selenium	ug/kg	520	EcoSSL	1,457	2,290	**Yes**	Max > ESB	1,700	1,900
Silver	ug/kg	4,200	EcoSSL	1,485	2,820	No	Max < ESB	22,950	25,200
Thallium	ug/kg	56.9	R5	106.15	160.5	**Yes**	Max > ESB		
Zinc	ug/kg	46,000	EcoSSL	29,400	80,700	**Yes**	Max > ESB	35,450	39,300

The background data are presented for comparison, and are not being used for screening purposes in this step.

BERA Baseline ecological risk assessment.
EcoSSL USEPA Ecological Soil Screening Level.
ESB Ecological Screening Benchmark.
Freq. Frequency, the number of times the constituent was detected and the number of samples where that constituent was analyzed.
Max Maximum concentration.
R5 Region 5 criterion.
ug/kg Micrograms per kilogram.

Table: 11-2d
SLERA Facility Soil Data Summary and Screening
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Units	Ecological Screening Benchmark	Source	Facility Soil Phase I/II RFI Data 1995-2004		Retain in BERA?	Reason	Facility Soil Background Phase I/II RFI Data 1995-2004	
				Median	Max			Median	Max
Antimony	ug/kg	270	EcoSSL	617.5	840	**Yes**	Max > ESB		
Arsenic	ug/kg	18,000	EcoSSL	2550	5,400	No	Max < ESB	3,400	7,500
Beryllium	ug/kg	21,000	EcoSSL	315	460	No	Max < ESB	400	540
Cadmium	ug/kg	360	EcoSSL	50500	3,270,000	**Yes**	Max > ESB	840	4,400
Chromium, Total	ug/kg	130,000	EcoSSL	14500	131,000	**Yes**	Max > ESB	11,500	15,300
Copper	ug/kg	28,000	EcoSSL	44650	2,220,000	**Yes**	Max > ESB	6,600	14,700
Iron	ug/kg	200,000	R4	10500000	14,500,000	**Yes**	Max > ESB	14,650,000	17,200,000
Lead	ug/kg	11,000	EcoSSL	30850	814,000	**Yes**	Max > ESB	18,700	78,400
Mercury	ug/kg	100	R5	85	280	**Yes**	Max > ESB	210	1,200
Nickel	ug/kg	38,000	EcoSSL	7200	12,100	No	Max < ESB	6,800	11,200
Selenium	ug/kg	520	EcoSSL	1150	2,000	**Yes**	Max > ESB	1,700	2,400
Silver	ug/kg	4,200	EcoSSL	13500	82,000	**Yes**	Max > ESB	700	11,400
Zinc	ug/kg	46,000	EcoSSL	64100	606,000	**Yes**	Max > ESB	23,600	40,300
Acetone	ug/kg	2,500	R5		260	No	Max < ESB		
Benzene	ug/kg	255	R5	8	88	No	Max < ESB		
1,1-Dichloroethane	ug/kg	20,100	R5		180	No	Max < ESB		
1,1-Dichloroethene	ug/kg	8,280	R5		1.6	No	Max < ESB		
Ethylbenzene	ug/kg	5,160	R5	2.5	2	No	Max < ESB		
Methyl Ethyl Ketone (2-Butanone)	ug/kg	89,600	R5		72	No	Max < ESB		
Methylene Chloride	ug/kg	4,050	R5	2.5	2	No	Max < ESB		
Tetrachloroethene	ug/kg	9,920	R5	7	50	No	Max < ESB		
Toluene	ug/kg	5,450	R5	2.5	6	No	Max < ESB		
1,1,1-Trichloroethane	ug/kg	29,800	R5	2.5	2,300	No	Max < ESB		
Trichloroethene	ug/kg	12,400	R5	2.5	180	No	Max < ESB		
M,P-Xylene (Sum Of Isomers)	ug/kg	10,000	R5	2.5	0.9	No	Max < ESB		
PCB-1248 (Arochlor 1248)	ug/kg	0.332	R5		59.4	**Yes**	Max > ESB		
PCB-1254 (Arochlor 1254)	ug/kg	0.332	R5	19.15	840	**Yes**	Max > ESB		
PCB-1260 (Arochlor 1260)	ug/kg	0.332	R5	18.95	130	**Yes**	Max > ESB		

Table: 11-2d
SLERA Facility Soil Data Summary and Screening
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Units	Ecological Screening Benchmark	Source	Facility Soil Phase I/II RFI Data 1995-2004		Retain in BERA?	Reason	Facility Soil Background Phase I/II RFI Data 1995-2004	
				Median	Max			Median	Max

The background data are presented for comparison, and are not being used for screening purposes in this step.

BERA	Baseline ecological risk assessment.
EcoSSL	USEPA Ecological Soil Screening Level.
ESB	Ecological Screening Benchmark.
Freq.	Frequency, the number of times the constituent was detected and the number of samples where that constituent was analyzed.
Max	Maximum concentration.
R4	Region 4 criterion.
R5	Region 5 criterion.
ug/kg	Micrograms per kilogram.

Table: 11-3
COPECs Carried Into the BERA
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Retain as a Constituent of Potential Ecological Concern for:			
	Surface Water	Sediment	Floodplain Soil	Facility Soil
Aluminum	**Yes**	**Yes**	No	No
Antimony	No	**Yes**	**Yes**	**Yes**
Arsenic	No	**Yes**	No	No
Barium	**Yes**	**Yes**	No	No
Beryllium	No	**Yes**	No	No
Cadmium	**Yes**	**Yes**	**Yes**	**Yes**
Chromium, Total	**Yes**	**Yes**	No	**Yes**
Copper	**Yes**	**Yes**	No	**Yes**
Iron	**Yes**	**Yes**	No	**Yes**
Lead	**Yes**	**Yes**	**Yes**	**Yes**
Magnesium	No	**Yes**	No	No
Manganese	**Yes**	No	No	No
Mercury	**Yes**	**Yes**	**Yes**	**Yes**
Nickel	**Yes**	**Yes**	No	No
Selenium	**Yes**	**Yes**	**Yes**	**Yes**
Silver	**Yes**	**Yes**	No	**Yes**
Thallium	No	**Yes**	**Yes**	No
Zinc	**Yes**	**Yes**	**Yes**	**Yes**
Acetone	No	**Yes**	No	No
Carbon Disulfide	No	**Yes**	No	No
Carbon Tetrachloride	**Yes**	No	No	No
Chloroethane	No	**Yes**	No	No
1,1-Dichloroethane	No	**Yes**	No	No
1,1-Dichloroethene	No	**Yes**	No	No
Cis-1,2-Dichloroethene	No	**Yes**	No	No
Methyl Ethyl Ketone (2-Butanone)	No	**Yes**	No	No
Tetrachloroethene	**Yes**	**Yes**	No	No
1,1,1-Trichloroethane	**Yes**	**Yes**	No	No
Trichloroethene	**Yes**	**Yes**	No	No
Vinyl Chloride	No	**Yes**	No	No
M,P-Xylene (Sum Of Isomers)	No	**Yes**	No	No
P-Cymene (P-Isopropyltoluene)	No	**Yes**	No	No
Acenaphthylene	No	**Yes**	No	No
Benzo(A)Anthracene	No	**Yes**	No	No
Benzo(A)Pyrene	No	**Yes**	No	No
Benzo(B)Fluoranthene	No	**Yes**	No	No
Benzo(G,H,I)Perylene	No	**Yes**	No	No
Benzo(K)Fluoranthene	No	**Yes**	No	No
Chrysene	No	**Yes**	No	No
Fluoranthene	No	**Yes**	No	No
Indeno(1,2,3-C,D)Pyrene	No	**Yes**	No	No
Phenanthrene	No	**Yes**	No	No
Pyrene	No	**Yes**	No	No
Hardrocarbons, Aromatic C11-C22	No	**Yes**	No	No
Hardrocarbons, Aromatic C11-C22, Adjusted	No	**Yes**	No	No

Table: 11-3
COPECs Carried Into the BERA
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Retain as a Constituent of Potential Ecological Concern for:			
	Surface Water	**Sediment**	**Floodplain Soil**	**Facility Soil**
Hydrocarbons, Aliphatic C19-C36	No	**Yes**	No	No
Hydrocarbons, Aliphatic C9-C18	No	**Yes**	No	No
PCB-1242 (Arochlor 1242)	No	**Yes**	No	No
PCB-1248 (Arochlor 1248)	No	**Yes**	No	**Yes**
PCB-1254 (Arochlor 1254)	No	**Yes**	No	**Yes**
PCB-1260 (Arochlor 1260)	No	No	No	**Yes**
Calcium	No	**Yes**	No	No
Cyanide	**Yes**	No	No	No
Potassium	**Yes**	No	No	No
Nitrate	**Yes**	No	No	No
Nitrogen	**Yes**	No	No	No
Nitrogen, Nitrate (As N)	**Yes**	No	No	No

Table: 11-4a
BERA Surface Water Refinement of COPECs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Units	Ecological Screening Benchmark	Source	All Non Background Data				All Background Data				Retain from Screening?	Reason	Keep b/c Site > BKG?	Keep b/c not a nutrient?	Keep b/c freqency?	Retain as COPEC in BERA?	Reason
				Freq.		Median	Max	Freq.		Median	Max							
Aluminum	ug/L	87	R3	17	39	68.5	805	6	10	51.15	125	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Antimony	ug/L	30	R3	21	63	1	8.4	5	15	0.55	9	No	Max < ESB				No	Max<ESB
Arsenic	ug/L	5	R3	13	63	0.5	1.3	1	15	1.5	0.6	No	Max < ESB				No	Max<ESB
Barium	ug/L	4	R3	4	4	18.85	22.6	1	1	42.7	42.7	**Yes**	Max > ESB	no			No	Bkg
Cadmium	ug/L	0.09133	R3	24	63	0.5	54.4	0	15			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Chromium, Total	ug/L	23.11	R3	27	63	0.5	169	6	15	0.5	1.5	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Copper	ug/L	2.655	R3	31	59	1	26.8	6	14	0.75	1.5	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Iron	ug/L	300	R3	38	39	496	2,320	9	10	383.5	1,360	**Yes**	Max > ESB	**Yes**	no		No	Nutrient
Lead	ug/L	0.5191	R3	41	63	1.425	24.7	7	15	0.8	7	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Magnesium	ug/L	82,000	R3	29	39	1,270	2,090	9	10	1,415	2,300	No	Max < ESB				No	Max<ESB
Manganese	ug/L	120	R3	39	39	36.4	183	10	10	36.75	134	**Yes**	Max > ESB	no			No	Bkg
Mercury	ug/L	0.026	R3	1	63	0.1	0.21	0	15			**Yes**	Max > ESB	**Yes**	**Yes**	no	No	Freq
Nickel	ug/L	15.6	R3	38	63	1.5	229	11	15	2.1	3.8	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Selenium	ug/L	1	R3	5	63	0.75	1	2	15	0.5	1	**Yes**	Max < ESB	**Yes**	**Yes**	no	No	Freq
Silver	ug/L	0.2783	R3	5	63	0.5	46.7	0	15			**Yes**	Max > ESB	**Yes**	**Yes**	no	No	Freq
Zinc	ug/L	35.38	R3	28	63	12.9	127	7	15	9.85	39.3	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Bromomethane	ug/L	16	R5	1	41	5	1	0	5			No	Max < ESB				No	Max<ESB
Carbon Tetrachloride	ug/L	13.3	R3	1	41	2.5	19	0	5			**Yes**	Max > ESB	**Yes**	**Yes**	no	No	Freq
1,1-Dichloroethane	ug/L	47	R3	5	41	2	7	0	5			No	Max < ESB				No	Max<ESB
1,1-Dichloroethene	ug/L	25	R3	3	41	2.5	5	0	5			No	Max < ESB				No	Max<ESB
Cis-1,2-Dichloroethene	ug/L	590	R3	11	19	0.91	18	0	2			No	Max < ESB				No	Max<ESB
Methyl Isobutyl Ketone	ug/L	170	R3	1	41	5	1	0	5			No	Max < ESB				No	Max<ESB
Methylene Chloride	ug/L	98.1	R3	1	41	1	1	1	5	2.5	3	No	Max < ESB				No	Max<ESB
Tetrachloroethene	ug/L	111	R3	24	41	2.5	210	0	5			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
1,1,1-Trichloroethane	ug/L	11	R3	22	41	2.5	130	0	5			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Trichloroethene	ug/L	21	R3	19	41	2	33	0	5			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Calcium	ug/L	116,000	R3	29	39	5,830	9,190	10	10	8,060	11,400	No	Max < ESB				No	Max<ESB
Cyanide	ug/L	5.2	R5	1	22	5	22	0	2			**Yes**	Max > ESB	**Yes**	**Yes**	no	No	Freq
Potassium	ug/L	NC		29	39	687	1,380	9	10	852.5	1,420	**Yes**	No ESB	no			No	Bkg
Silica	ug/L	53,000	R3	6	39	2,000	11,400	4	10	2,000	11,200	No	Max < ESB				No	Max<ESB
Sodium	ug/L	680,000	R3	39	39	19,400	29,400	10	10	22,150	34,400	No	Max < ESB				No	Max<ESB
Ammonia	ug/L	6,395	USEPA	8	39	25	1,170	6	10	67	190	No	Max < ESB				No	Max<ESB
Chloride	ug/L	230,000	R3	39	39	35,750	53,000	10	10	49,650	66,000	No	Max < ESB				No	Max<ESB
Nitrate	ug/L	NC		14	39	50	2,620	3	10	50	1,340	**Yes**	No ESB	**Yes**	no		No	Nutrient
Nitrogen	ug/L	NC		4	17	24	910	5	8	52	150	**Yes**	No ESB	**Yes**	no		No	Nutrient
Nitrogen, Nitrate (As N)	ug/L	NC		10	39	2.5	11	5	10	4.25	35	**Yes**	No ESB	no			No	Bkg

Table: 11-4a
BERA Surface Water Refinement of COPECs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Constituent	Units	Ecological Screening Benchmark	Source	All Non Background Data			All Background Data			Retain from Screening?	Reason	Keep b/c Site > BKG?	Keep b/c not a nutrient?	Keep b/c freqency?	Retain as COPEC in BERA?	Reason
				Freq.	Median	Max	Freq.	Median	Max							

BERA	Baseline ecological risk assessment.
BKG	Background.
COPEC	Constituent of potential ecological concernt.
ESB	Ecological Screening Benchmark.
Freq.	Frequency, the number of times the constituent was detected and the number of samples where that constituent was analyzed (including duplicates).
Max	Maximum concentration.
R3	Region 3 criterion.
R5	Region 5 critieron.
SLERA	Screening level ecological risk assessment.
ug/L	Micrograms per liter.

Table: 11-4b
BERA Sediment Refinement of COPECs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Units	Ecological Screening Benchmark	Source	All Non Background Data				All Background Data				Retain from Screening?	Reason	Keep b/c Site > BKG?	Keep b/c not a nutrient?	Keep b/c freqency?	Retain as COPEC in BERA?	Reason
				Freq.		Median	Max	Freq.		Median	Max							
Aluminum	ug/kg	NC		35	35	8,570,000	22,700,000	3	3	4,810,000	6,170,000	**Yes**	No ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Antimony	ug/kg	2,000	R3	15	98	4,850	12,000	2	11	6,000	1,100	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Arsenic	ug/kg	9,800	R3	76	98	4,000	17,000	9	11	3,000	6,290	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Barium	ug/kg	NC		11	11	105,000	161,000	2	2	136,700	188,000	**Yes**	No ESB	no			No	Bkg
Beryllium	ug/kg	NC		49	98	900	3,300	7	11	1,734	6,800	**Yes**	No ESB	no			No	Bkg
Cadmium	ug/kg	990	R3	83	98	15,580	780,600	7	11	1,450	26,670	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Chromium, Total	ug/kg	43,400	R3	98	98	18,850	112,000	11	11	15,000	25,000	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Copper	ug/kg	31,600	R3	86	87	21,600	300,000	9	9	16,800	54,000	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Iron	ug/kg	20,000,000	R3	42	42	5,600,000	23,600,000	5	5	6,320,000	6,890,000	**Yes**	Max > ESB	**Yes**	no		No	Nutrient
Lead	ug/kg	35,800	R3	90	98	49,050	270,000	10	11	42,800	320,000	**Yes**	Max > ESB	no			No	Bkg
Magnesium	ug/kg	NC		35	35	1,040,000	3,900,000	3	3	556,000	1,480,000	**Yes**	No ESB	**Yes**	no		No	Nutrient
Mercury	ug/kg	180	R3	15	98	193.5	5,000	2	11	190	181	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Nickel	ug/kg	22,700	R3	88	98	15,150	75,800	10	11	13,000	52,500	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Selenium	ug/kg	2,000	R3	29	98	3,950	12,800	5	11	3,890	3,890	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Silver	ug/kg	1,000	R3	55	98	2,950	326,000	2	11	1,400	5,670	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Thallium	ug/kg	NC		2	98	3,875	208.6	0	11			**Yes**	No ESB	**Yes**	**Yes**	no	No	Freq
Zinc	ug/kg	121,000	R3	61	98	47,575	550,000	8	11	29,000	380,000	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Acetone	ug/kg	9.9	R5	61	75	370	1,800	5	6	337.5	1,300	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Benzene	ug/kg	142	R5	7	92	4.05	21	0	10			No	Max < ESB				No	Max<ESB
Carbon Disulfide	ug/kg	23.9	R5	22	75	45.5	200	0	6			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Chloroethane	ug/kg	31	R3	12	84	7.25	180	0	7			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Chloroform	ug/kg	121	R5	1	84	4.95	25	0	7			No	Max < ESB				No	Max<ESB
1,1-Dichloroethane	ug/kg	31	R3	38	84	13	1,700	0	7			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
1,1-Dichloroethene	ug/kg	31	R3	9	84	3.7	130	0	7			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
1,2-Dichloroethene	ug/kg	1,050	R3	1	5	6	85	0	1			No	Max < ESB				No	Max<ESB
Cis-1,2-Dichloroethene	ug/kg	1,050	R3	61	80	24.5	1,900	0	7			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Methyl Ethyl Ketone (2-Butanone)	ug/kg	42.4	R5	45	75	83	360	1	6	33.5	310	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Methylene Chloride	ug/kg	159	R5	3	84	32.75	92	0	7			No	Max < ESB				No	Max<ESB
Tetrachloroethene	ug/kg	468	R3	56	84	17.5	19,000	0	7			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Toluene	ug/kg	1,220	R5	37	92	14	170	3	10	15.5	29	No	Max < ESB				No	Max<ESB
1,1,1-Trichloroethane	ug/kg	30.2	R3	37	84	6	3,100	0	7			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Trichloroethene	ug/kg	96.9	R3	63	84	15	3,500	0	7			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Vinyl Chloride	ug/kg	202	R5	8	84	6.75	340	0	7			**Yes**	Max > ESB	**Yes**	**Yes**	no	No	Freq
M,P-Xylene (Sum Of Isomers)	ug/kg	25.2	R3	2	83	8	34	0	9			**Yes**	Max > ESB	**Yes**	**Yes**	no	No	Freq
Benzoic Acid	ug/kg	650	R3	4	4	255	400	0	0			No	Max < ESB				No	Max<ESB
Bis(2-Ethylhexyl) Phthalate	ug/kg	180	R3	1	4	1,250	120	0	0			No	Max < ESB				No	Max<ESB
Di-N-Butyl Phthalate	ug/kg	6,470	R3	1	4	922.5	100	0	0			No	Max < ESB				No	Max<ESB
Di-N-Octylphthalate	ug/kg	40,600	R5	1	4	1,350	48	0	0			No	Max < ESB				No	Max<ESB
P-Cymene (P-Isopropyltoluene)	ug/kg	NC		22	75	6	340	2	6	11	520	**Yes**	No ESB	no			No	Bkg
Acenaphthylene	ug/kg	5.9	R3	1	9	188	21	0	2			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Benzo(A)Anthracene	ug/kg	108	R3	3	9	188	878	0	2			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Benzo(A)Pyrene	ug/kg	150	R3	3	9	197	1,060	0	2			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Benzo(B)Fluoranthene	ug/kg	27.2	R3	3	9	230	1,200	0	2			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Benzo(G,H,I)Perylene	ug/kg	170	R3	1	9	395	944	0	2			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	

Table: 11-4b
BERA Sediment Refinement of COPECs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Constituent	Units	Ecological Screening Benchmark	Source	All Non Background Data				All Background Data				Retain from Screening?	Reason	Keep b/c Site > BKG?	Keep b/c not a nutrient?	Keep b/c freqency?	Retain as COPEC in BERA?	Reason
				Freq.		Median	Max	Freq.		Median	Max							
Benzo(K)Fluoranthene	ug/kg	240	R3	3	9	268	1,450	0	2			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Chrysene	ug/kg	166	R3	4	9	188	1,580	1	2	354.5	475	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Fluoranthene	ug/kg	423	R3	8	9	638	2,680	1	2	546.5	859	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Fluorene	ug/kg	77.4	R3	1	9	188	16	0	2			No	Max < ESB				No	Max<ESB
Indeno(1,2,3-C,D)Pyrene	ug/kg	17	R3	1	9	395	784	0	2			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Phenanthrene	ug/kg	204	R3	3	9	171	813	1	2	277	320	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Pyrene	ug/kg	195	R3	8	9	476	2,220	1	2	426.5	619	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Hardrocarbons C11-C22	ug/kg	NC		5	5	122,000	276,000	1	2	130,250	202,000	**Yes**	No ESB	no			No	Bkg
Hardrocarbons C11-C22, Adjusted	ug/kg	NC		5	5	120,000	262,000	1	2	129,250	200,000	**Yes**	No ESB	no			No	Bkg
Hydrocarbons C19-C36	ug/kg	NC		5	5	171,000	316,000	1	2	215,750	373,000	**Yes**	No ESB	no			No	Bkg
Hydrocarbons C9-C18	ug/kg	NC		1	5	42,750	113,000	0	2			**Yes**	No ESB	**Yes**	**Yes**	**Yes**	**Yes**	
PCB-1242 (Arochlor 1242)	ug/kg	59.8	R3	1	4	107.5	52,000	0	0			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
PCB-1248 (Arochlor 1248)	ug/kg	59.8	R3	3	22	154.5	27,100	0	3	179		**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
PCB-1254 (Arochlor 1254)	ug/kg	59.8	R3	6	22	129.5	44,000	0	3	179		**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Calcium	ug/kg	NC		35	35	1,800,000	12,000,000	3	3	3,810,000	6,080,000	**Yes**	No ESB	**Yes**	no		No	Nutrient

BERA	Baseline ecological risk assessment.
BKG	Background.
COPEC	Constituent of potential ecological concernt.
ESB	Ecological Screening Benchmark.
Freq.	Frequency, the number of times the constituent was detected and the number of samples where that constituent was analyzed (including duplicates).
Max	Maximum concentration.
R3	Region 3 criterion.
R5	Region 5 critieron.
SLERA	Screening level ecological risk assessment.
ug/kg	Micrograms per kilogram.

Table: 11-4c
BERA Floodplain Soil Refinement of COPECs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Units	Ecological Screening Benchmark	Source	Floodplain Soil 2010				Floodplain Background 2010				Retain From screening?	Reason	Keep b/c Site > BKG?	Keep b/c not a nutrient?	Keep b/c freqenc	Retain as COPEC in BERA?	Reason
				Freq.		Median	Max	Freq.		Median	Max							
Antimony	ug/kg	270	EcoSSL	4	4	257	398	2	2	1,290	1,340	**Yes**	Max > ESB	no			No	Bkg
Arsenic	ug/kg	18,000	EcoSSL	4	4	1,885	2,900	2	2	1,760	2,210	No	Max < ESB				No	Max<ESB
Barium	ug/kg	330,000	EcoSSL	4	4	47,750	89,700	2	2	45,850	48,600	No	Max < ESB				No	Max<ESB
Beryllium	ug/kg	21,000	EcoSSL	4	4	883.95	1,687	1	2	345.075	614.6	No	Max < ESB				No	Max<ESB
Cadmium	ug/kg	360	EcoSSL	4	4	4,141	14,160	2	2	10,890	13,920	**Yes**	Max > ESB	no			**Yes**	(a)
Chromium, Total	ug/kg	130,000	EcoSSL	4	4	11,000	24,800	2	2	4,855	5,090	No	Max < ESB				No	Max<ESB
Lead	ug/kg	11,000	EcoSSL	4	4	48,700	83,500	2	2	114,000	124,000	**Yes**	Max > ESB	no			No	Bkg
Mercury	ug/kg	100	R5	4	4	148.5	281	2	2	486	606	**Yes**	Max > ESB	no			No	Bkg
Nickel	ug/kg	38,000	EcoSSL	4	4	6,380	9,860	2	2	15,200	19,000	No	Max < ESB				No	Max<ESB
Selenium	ug/kg	520	EcoSSL	4	4	1,457	2,290	2	2	1,700	1,900	**Yes**	Max > ESB	no			No	Bkg
Silver	ug/kg	4,200	EcoSSL	4	4	1,485	2,820	2	2	22,950	25,200	No	Max < ESB				No	Max<ESB
Thallium	ug/kg	56.9	R5	4	4	106.15	160.5	0	2			**Yes**	Max > ESB		**Yes**	**Yes**	**Yes**	
Zinc	ug/kg	46,000	EcoSSL	4	4	29,400	80,700	2	2	35,450	39,300	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	

(a)	Even though cadmium levels in the floodplain are less than background, it is retained as a COPEC because it is Site-related
BERA	Baseline ecological risk assessment.
BKG	Background.
COPEC	Constituent of potential ecological concernt.
ESB	Ecological Screening Benchmark.
Freq.	Frequency, the number of times the constituent was detected and the number of samples where that constituent was analyzed (including duplicates).
Max	Maximum concentration.
EcoSSL	Ecological soil screening level.
R5	Region 5 critieron.
SLERA	Screening level ecological risk assessment.
ug/kg	Micrograms per kilogram.

Table: 11-4d
BERA Facility Soil Refinement of COPECs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Units	Ecological Screening Benchmark	Source	Facility Soil				Facility Background				Retain from screening?	Reason	Keep b/c Site > BKG?	Keep b/c not a nutrient?	Keep b/c freqency?	Retain as COPEC in BERA?	Reason
				Phase I/II RFI Data 1995-2004				Phase I/II RFI Data 1995-2004										
				Freq.		Median	Max	Freq.		Median	Max							
Antimony	ug/kg	270	EcoSSL	1	14	617.5	840	0	11			**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Arsenic	ug/kg	18,000	EcoSSL	14	14	2,550	5,400	11	11	3,400	7,500	No	Max < ESB				No	Max<ESB
Beryllium	ug/kg	21,000	EcoSSL	14	14	315	460	11	11	400	540	No	Max < ESB				No	Max<ESB
Cadmium	ug/kg	360	EcoSSL	38	38	50,500	3,270,000	11	11	840	4,400	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Chromium, Total	ug/kg	130,000	EcoSSL	38	38	14,500	131,000	11	11	11,500	15,300	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Copper	ug/kg	28,000	EcoSSL	38	38	44,650	2,220,000	11	11	6,600	14,700	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Iron	ug/kg	200,000	R4	13	13	10,500,000	14,500,000	10	10	14,650,000	17,200,000	**Yes**	Max > ESB	no			No	Bkg
Lead	ug/kg	11,000	EcoSSL	38	38	30,850	814,000	11	11	18,700	78,400	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Mercury	ug/kg	100	R5	10	14	85	280	8	11	210	1,200	**Yes**	Max > ESB	no			No	Bkg
Nickel	ug/kg	38,000	EcoSSL	14	14	7,200	12,100	11	11	6,800	11,200	No	Max < ESB				No	Max<ESB
Selenium	ug/kg	520	EcoSSL	14	14	1,150	2,000	11	11	1,700	2,400	**Yes**	Max > ESB	no			No	Bkg
Silver	ug/kg	4,200	EcoSSL	37	38	13,500	82,000	9	11	700	11,400	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Zinc	ug/kg	46,000	EcoSSL	38	38	64,100	606,000	11	11	23,600	40,300	**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
Acetone	ug/kg	2,500	R5									No	Max < ESB				No	Max<ESB
Benzene	ug/kg	255	R5	14	14	8	88					No	Max < ESB				No	Max<ESB
1,1-Dichloroethane	ug/kg	20,100	R5	0	14							No	Max < ESB				No	Max<ESB
1,1-Dichloroethene	ug/kg	8,280	R5	0	14							No	Max < ESB				No	Max<ESB
Ethylbenzene	ug/kg	5,160	R5	2	14	2.5	2					No	Max < ESB				No	Max<ESB
Methyl Ethyl Ketone	ug/kg	89,600	R5									No	Max < ESB				No	Max<ESB
Methylene Chloride	ug/kg	4,050	R5	4	14	2.5	2					No	Max < ESB				No	Max<ESB
Tetrachloroethene	ug/kg	9,920	R5	13	14	7	50					No	Max < ESB				No	Max<ESB
Toluene	ug/kg	5,450	R5	7	14	2.5	6					No	Max < ESB				No	Max<ESB
1,1,1-Trichloroethane	ug/kg	29,800	R5	5	14	2.5	6					No	Max < ESB				No	Max<ESB
Trichloroethene	ug/kg	12,400	R5	1	14	2.5	2					No	Max < ESB				No	Max<ESB
M,P-Xylene (Sum Of Isomers)	ug/kg	10,000	R5	1	14	2.5	0.9					No	Max < ESB				No	Max<ESB
PCB-1248 (Arochlor 1248)	ug/kg	0.332	R5	0	15							No	Max < ESB				No	Max<ESB
PCB-1254 (Arochlor 1254)	ug/kg	0.332	R5	12	15	19.15	840					**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	
PCB-1260 (Arochlor 1260)	ug/kg	0.332	R5	6	15	18.95	130					**Yes**	Max > ESB	**Yes**	**Yes**	**Yes**	**Yes**	

BERA	Baseline ecological risk assessment.
BKG	Background.
COPEC	Constituent of potential ecological concernt.
ESB	Ecological Screening Benchmark.
Freq.	Frequency, the number of times the constituent was detected and the number of samples where that constituent was analyzed (including duplicates).
Max	Maximum concentration.
EcoSSL	Ecological soil screening level.
R4	Region 4 criterion.
R5	Region 5 critieron.
SLERA	Screening level ecological risk assessment.
ug/kg	Micrograms per kilogram.

Table: 11-4e
BERA Fish Tissue Identification of COPECs
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Constituent	Units	All Non-Background 1995-1996						Southeast Embayment 1995-1996						Private Impoundment 1995-1996						Background 1995-1996						Keep b/c Site > BKG?
		Freq.		Mean	Median	95% UCL	Max	Freq.		Mean	Median	95% UCL	Max	Freq.		Mean	Median	95% UCL	Max	Freq.		Mean	Median	95% UCL	Max	
Aluminum	mg/kg ww	6	23	3	0.95	5.5	16.014	1	16	1.6	0.83138	2.3	11.039	5	7	6.3	6.3	31	16.014	4	15	2	0.9445	3.8	7.6	**Yes**
Arsenic	mg/kg ww	1	23	0.087	0.08475	0.098	0.272	1	16	0.097	0.09	0.11	0.272	0	7	ND	0.06	ND	–	1	15	0.082	0.075	0.096	0.19125	**Yes**
Barium	mg/kg ww	23	23	1.1	0.98	2	2.9	16	16	0.92	0.59305	1.9	2.9	7	7	1.6	1.6	3.9	2.4	15	15	1.6	1.5	2.4	3.0496	no
Cadmium	mg/kg ww	16	23	0.2	0.1153	0.47	1	9	16	0.16	0.064	0.42	1	7	7	0.28	0.27	0.52	0.4707	3	15	0.012	0.01	0.015	0.01	**Yes**
Chromium	mg/kg ww	20	23	0.24	0.26	0.32	0.48	13	16	0.23	0.21253	0.36	0.48	7	7	0.27	0.28	0.31	0.32	14	15	0.21	0.2125	0.28	0.34	**Yes**
Cobalt	mg/kg ww	1	23	0.024	0.0235	0.026	0.044	1	16	0.024	0.02075	0.026	0.044	0	7	ND	0.025	ND	–	1	15	0.024	0.025	0.026	0.03875	no
Copper	mg/kg ww	22	23	0.63	0.5196	0.86	2.146	15	16	0.54	0.445	0.79	2.146	7	7	0.84	0.7	1.2	1.3097	13	15	0.49	0.42	0.61	1.37375	**Yes**
Lead	mg/kg ww	7	23	0.12	0.073	0.15	0.8921	2	16	0.078	0.06805	0.099	0.174	5	7	0.21	0.11	0.9	0.8921	2	15	0.082	0.0746	0.12	0.2075	**Yes**
Mercury	mg/kg ww	23	23	0.15	0.08	0.22	0.689	16	16	0.18	0.107	0.31	0.689	7	7	0.089	0.08	0.2	0.1876	15	15	0.11	0.08	0.17	0.2716	**Yes**
Nickel	mg/kg ww	7	23	0.17	0.0435	0.18	2.2701	4	16	0.059	0.04614	0.074	0.1325	3	7	0.42	0.04	16	2.2701	7	15	0.15	0.04165	0.3	0.94	**Yes**
Selenium	mg/kg ww	17	23	0.5	0.4138	0.59	0.9805	10	16	0.43	0.34	0.53	0.9805	7	7	0.65	0.63	0.68	0.6958	11	15	0.56	0.57	0.74	0.9552	no
Silver	mg/kg ww	9	23	0.058	0.03	0.073	0.198	7	16	0.052	0.03	0.069	0.198	2	7	0.071	0.03	0.2	0.07	2	15	0.032	0.02695	0.037	0.0805	**Yes**
Vanadium	mg/kg ww	21	23	0.12	0.0965	0.18	0.5919	14	16	0.082	0.05663	0.13	0.21	7	7	0.2	0.17	0.43	0.5919	12	15	0.074	0.08	0.1	0.13	**Yes**
Zinc	mg/kg ww	23	23	16	18.7	20	27.9	16	16	14	10.2875	19	27.9	7	7	21	20.3	22	25.07	15	15	18	12.792	26	45.796	no
Aroclor 1242	mg/kg ww	11	23	0.029	0.01023	0.075	0.129	10	16	0.034	0.00689	0.17	0.129	1	7	0.02	0.015	0.036	0.0086	5	15	0.004	0.00242	0.0067	0.00453	**Yes**
Aroclor 1254	mg/kg ww	23	23	0.11	0.05	0.21	0.5625	16	16	0.12	0.0577	0.34	0.5625	7	7	0.089	0.039	0.28	0.3241	14	15	0.011	0.00855	0.017	0.026	**Yes**
Aroclor 1260	mg/kg ww	21	23	0.048	0.026	0.08	0.32	14	16	0.036	0.02691	0.071	0.1038	7	7	0.075	0.026	0.59	0.32	14	15	0.009	0.0087	0.014	0.0206	**Yes**
Percent Lipids	mg/kg ww	23	23	1.7	1.55	2.3	4.2	16	16	1.5	1.12	2.3	4.2	7	7	2	2.02	2.6	2.97	15	15	1.3	0.956	1.7	2.83	**Yes**

COPEC	Constituent of potential ecological concernt.
Freq.	Frequency, the number of times the constituent was detected and the number of samples where that constituent was analyzed (including duplicates).
Max	Maximum concentration.
mg/kg ww	Miligrams per kilogram wet weight.

Table: 11-5a
Location Specific Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	386013	602016	971130A-15	SW-06_19970910	L0506096-01	386014	386015	602015
	Area		**Lake**	**Lake**	**Lake**	**Lake**	**Lake**	**Lake**	**Lake**	**Lake**
	Date		04/10/95	05/18/95	05/20/97	09/10/97	06/03/05	04/10/95	04/10/95	05/18/95
	Location ID		**SW-06**	**SW-06**	**SW-06**	**SW-06**	**SW-06**	**SW-07**	**SW-07**	**SW-07**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	192 UJ	149 U	**46**	**805**	NS	70.1 UJ	105 UJ	149 U
Yes	Cadmium	0.09133	1 U	1 U	1 U	**54.4**	0.5 U	1 U	1 U	**1.9**
Yes	Chromium, Total	23.11	**169**	1 U	1 U	**5.9**	1 U	1 UJ	1 U	1 U
Yes	Copper	2.655	**26.8**	2 U	**1.3**	**26.4**	**1**	2 U	2 U	2 U
Yes	Lead	0.5191	**4.9**	4.9 UJ	1 U	**24.7**	0.5 U	**1.4**	**1.7**	**19.7**
Yes	Nickel	15.6	**229**	2.5 U	**6.9**	**6.4**	1 U	1 UJ	1 U	**13.4**
Yes	Zinc	35.38	30.9 U	36.8 U	**16.3**	**64.9**	5 U	25.8 U	**27.8**	29.8 U
Yes	Tetrachloroethene	111	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	21	NS	NS	NS	NS	NS	NS	NS	NS
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	ND	ND	0.5	**9**	NS	ND	ND	ND
Yes	Cadmium	0.09133	ND	ND	ND	**600**	ND	ND	ND	**20**
Yes	Chromium, Total	23.11	**7**	ND	ND	0.3	ND	ND	ND	ND
Yes	Copper	2.655	**10**	ND	0.5	**10**	0.4	ND	ND	ND
Yes	Lead	0.5191	**9**	ND	ND	**50**	ND	**3**	**3**	**40**
Yes	Nickel	15.6	**10**	ND	0.4	0.4	ND	ND	ND	0.9
Yes	Zinc	35.38	ND	ND	0.5	**2**	ND	ND	0.8	ND
Yes	Tetrachloroethene	111	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	21	NS	NS	NS	NS	NS	NS	NS	NS

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

Table: 11-5a
Location Specific Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	971130A-06	SW-07_19970910	L0506096-18	0386016-19950413	0386016-19950417	0602014-19950523	0602014-19950531	971130A-05-19970522
	Area		**Lake**	**Lake**	**Lake**	**Lake**	**Lake**	**Lake**	**Lake**	**Lake**
	Date		05/19/97	09/10/97	06/03/05	04/10/95	04/10/95	05/18/95	05/18/95	05/19/97
	Location ID		**SW-07**	**SW-07**	**SW-07**	**SW-08**	**SW-08**	**SW-08**	**SW-08**	**SW-08**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	**156**	**39.6**	NS	165 UJ	NS	NS	153 U	NS
Yes	Cadmium	0.09133	1 U	1 U	0.5 U	1 U	NS	NS	1 U	NS
Yes	Chromium, Total	23.11	1 U	**1.3**	1 U	1 UJ	NS	NS	1 U	NS
Yes	Copper	2.655	**1.4**	1 UJ	**1.1**	2 U	NS	NS	2 U	NS
Yes	Lead	0.5191	**3.3**	**2.7**	0.5 U	**1.3**	NS	NS	4 UJ	NS
Yes	Nickel	15.6	**1.9**	**4.2**	1 U	1 UJ	NS	NS	5.1 U	NS
Yes	Zinc	35.38	**12.1**	6 U	5.7 U	21.1 U	NS	NS	12.7 U	NS
Yes	Tetrachloroethene	111	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	21	NS	NS	NS	NS	NS	NS	NS	NS
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	**2**	0.5	NS	ND	NS	NS	ND	NS
Yes	Cadmium	0.09133	ND	ND	ND	ND	NS	NS	ND	NS
Yes	Chromium, Total	23.11	ND	0.06	ND	ND	NS	NS	ND	NS
Yes	Copper	2.655	0.5	ND	0.4	ND	NS	NS	ND	NS
Yes	Lead	0.5191	**6**	**5**	ND	**3**	NS	NS	ND	NS
Yes	Nickel	15.6	0.1	0.3	ND	ND	NS	NS	ND	NS
Yes	Zinc	35.38	0.3	ND	ND	ND	NS	NS	ND	NS
Yes	Tetrachloroethene	111	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	21	NS	NS	NS	NS	NS	NS	NS	NS

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

Table: 11-5a
Location Specific Surface Water Hazard Quotients
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BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	971130A-05-19970529	971130A-05-19970603	971130A-05-19970604	SW-08_19970910-	L0506096-15	L0506096-16	386009	602001
	Area		**Lake**	**Lake**	**Lake**	**Lake**	**Lake**	**Lake**	**Lake**	**Lake**
	Date		05/19/97	05/19/97	05/19/97	09/10/97	06/03/05	06/03/05	04/05/95	05/15/95
	Location ID		**SW-08**	**SW-08**	**SW-08**	**SW-08**	**SW-08**	**SW-08**	**SW-09**	**SW-09**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	NS	NS	**48**	32 U	NS	NS	**210**	**685**
Yes	Cadmium	0.09133	NS	NS	1 U	1 U	0.5 U	0.5 U	1 U	1 U
Yes	Chromium, Total	23.11	NS	NS	1 U	**1.1**	**1.1**	**1.2**	**6.9**	**1.5**
Yes	Copper	2.655	NS	NS	1 U	1 U	**1.3**	**1**	**4.2**	**3.6**
Yes	Lead	0.5191	NS	NS	1 U	**1.8**	0.5 U	0.5 U	**3.5**	**12.4**
Yes	Nickel	15.6	NS	NS	**3.8**	**3.8**	1 U	1 U	**12.1**	3.1 U
Yes	Zinc	35.38	NS	NS	**21.2**	6 U	5.2 U	5.4 U	44.6 U	42.4 U
Yes	Tetrachloroethene	111	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	21	NS	NS	NS	NS	NS	NS	NS	NS
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	NS	NS	0.6	ND	NS	NS	**2**	**8**
Yes	Cadmium	0.09133	NS	NS	ND	ND	ND	ND	ND	ND
Yes	Chromium, Total	23.11	NS	NS	ND	0.05	0.05	0.05	0.3	0.06
Yes	Copper	2.655	NS	NS	ND	ND	0.5	0.4	**2**	1
Yes	Lead	0.5191	NS	NS	ND	**3**	ND	ND	**7**	**20**
Yes	Nickel	15.6	NS	NS	0.2	0.2	ND	ND	0.8	ND
Yes	Zinc	35.38	NS	NS	0.6	ND	ND	ND	ND	ND
Yes	Tetrachloroethene	111	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	21	NS	NS	NS	NS	NS	NS	NS	NS

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

Table: 11-5a
Location Specific Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	386010	602002	971130A-03	SW-09A_19970910	L0506096-02	971130A-01	972216A-01	971130A-02
	Area		**Lake**	**Lake**	**Lake Bkg**	**Lake Bkg**	**Lake Bkg**	**Lake Bkg**	**Lake Bkg**	**Lake Bkg**
	Date		04/05/95	05/15/95	05/19/97	09/10/97	06/03/05	05/19/97	09/10/97	05/19/97
	Location ID		**SW-10**	**SW-10**	**SW-09A**	**SW-09A**	**SW-09A**	**SW-10A**	**SW-10A**	**SW-12**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	116 UJ	149 U	**77.2**	**112**	NS	**47.7**	32 U	**50.3**
Yes	Cadmium	0.09133	1 U	1 U	1 U	1 U	0.5 U	1 U	1 U	1 U
Yes	Chromium, Total	23.11	1 UJ	1 U	1 U	**1.1**	**1.5**	1 U	**1.1**	1 U
Yes	Copper	2.655	2 U	2 U	1 U	1 U	**1.5**	1 U	**1.3**	1 U
Yes	Lead	0.5191	**2**	2.1 UJ	**2.1**	**2.9**	**0.8**	1 U	1 U	**1**
Yes	Nickel	15.6	1 UJ	1.9 U	**2.1**	**3.7**	1 U	**3.4**	**2.1**	**2.7**
Yes	Zinc	35.38	38.8 U	32.1 U	**18.8**	6 U	19.7 U	**39.3**	6 U	**9.1**
Yes	Tetrachloroethene	111	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	21	NS	NS	NS	NS	NS	NS	NS	NS
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	ND	ND	0.9	1	NS	0.5	ND	0.6
Yes	Cadmium	0.09133	ND	ND	ND	ND	ND	ND	ND	ND
Yes	Chromium, Total	23.11	ND	ND	ND	0.05	0.06	ND	0.05	ND
Yes	Copper	2.655	ND	ND	ND	ND	0.6	ND	0.5	ND
Yes	Lead	0.5191	**4**	ND	**4**	**6**	**2**	ND	ND	**2**
Yes	Nickel	15.6	ND	ND	0.1	0.2	ND	0.2	0.1	0.2
Yes	Zinc	35.38	ND	ND	0.5	ND	ND	1	ND	0.3
Yes	Tetrachloroethene	111	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	21	NS	NS	NS	NS	NS	NS	NS	NS

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

Table: 11-5a
Location Specific Surface Water Hazard Quotients
Revised Draft RFI Report
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Keep in BERA?	Lab ID	Criterion	972216A-02	L0506096-17	971130A-04	386001	602005	602010	971130A-08	972216A-09
	Area		**Lake Bkg**	**Lake Bkg**	**Lake Bkg**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**
	Date		09/10/97	06/03/05	05/19/97	03/31/95	05/17/95	05/17/95	05/19/97	09/11/97
	Location ID		**SW-12**	**SW-12**	**SW-13**	**SW-01**	**SW-01**	**SW-01**	**SW-01**	**SW-01**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	32 U	NS	**59.2**	42.9 UJ	93.4 U	**155**	**140**	32 U
Yes	Cadmium	0.09133	1 U	0.5 U	1 U	1 U	1 U	1 U	**1.6**	1 U
Yes	Chromium, Total	23.11	1 U	**1.1**	1 U	1 UJ	1 U	1 U	1 U	1 U
Yes	Copper	2.655	1 U	**1**	**1.4**	2 U	2 U	2 U	**1.8**	1 UJ
Yes	Lead	0.5191	**7**	0.5 U	**1.3**	**1.5**	2.9 UJ	2.8 UJ	**3**	**1.2**
Yes	Nickel	15.6	**3.8**	1 U	**3.2**	1 UJ	2.1 U	2.1 U	**1.7**	**3**
Yes	Zinc	35.38	6 U	6.9 U	**12.9**	37.8 U	**68.7**	31.8 U	**11.2**	6 U
Yes	Tetrachloroethene	111	NS	NS	NS	**4**	5 U	**5**	**10**	**25**
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	**4**	**6**	**6**	**10**	**17**
Yes	Trichloroethene	21	NS	NS	NS	5 U	**0.8**	**1**	**2**	**5**
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	ND	NS	0.7	ND	ND	**2**	**2**	ND
Yes	Cadmium	0.09133	ND	ND	ND	ND	ND	ND	**20**	ND
Yes	Chromium, Total	23.11	ND	0.05	ND	ND	ND	ND	ND	ND
Yes	Copper	2.655	ND	0.4	0.5	ND	ND	ND	0.7	ND
Yes	Lead	0.5191	**10**	ND	**3**	**3**	ND	ND	**6**	**2**
Yes	Nickel	15.6	0.2	ND	0.2	ND	ND	ND	0.1	0.2
Yes	Zinc	35.38	ND	ND	0.4	ND	**2**	ND	0.3	ND
Yes	Tetrachloroethene	111	NS	NS	NS	0.04	ND	0.05	0.09	0.2
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	0.4	0.5	0.5	0.9	**2**
Yes	Trichloroethene	21	NS	NS	NS	ND	0.04	0.05	0.1	0.2

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

Table: 11-5a
Location Specific Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	L0505867-10	386004	602006	971130A-11	972216A-10	L0505937-19	386006	602008
	Area		**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**
	Date		05/31/05	04/03/95	05/17/95	05/20/97	09/11/97	06/01/05	04/03/95	05/17/95
	Location ID		**SW-01**	**SW-02**	**SW-02**	**SW-02**	**SW-02**	**SW-02**	**SW-04**	**SW-04**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	NS	39 U	92.2 U	**67.6**	**170**	NS	39 U	117 U
Yes	Cadmium	0.09133	**0.5**	1 U	1 U	**1.4**	**1.4**	**0.6**	1 U	1 U
Yes	Chromium, Total	23.11	**0.8**	1 UJ	1 U	1 U	**1.5**	**0.9**	1 UJ	1 U
Yes	Copper	2.655	**0.9**	2 U	2 U	1 U	1 UJ	**1.2**	2 U	2 U
Yes	Lead	0.5191	**0.5**	1 U	3.4 UJ	**2**	**2.5**	**0.9**	1 U	3.1 UJ
Yes	Nickel	15.6	**1.3**	1 UJ	3.4 U	**2.9**	**4.4**	**1.5**	1 UJ	3.6 U
Yes	Zinc	35.38	**10.2**	19.2 U	**127**	**11.6**	**28.3**	**14.8**	21.8 U	29.5 U
Yes	Tetrachloroethene	111	**2.3**	**4**	**6**	**8**	**210**	**5.4**	5 U	5 U
Yes	1,1,1-Trichloroethane	11	**2**	**3**	**6**	**6**	**130**	**2.4**	5 U	5 U
Yes	Trichloroethene	21	**0.67**	5 U	**1**	**2**	**33**	**1.5**	5 U	5 U
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	NS	ND	ND	0.8	**2**	NS	ND	ND
Yes	Cadmium	0.09133	**5**	ND	ND	**20**	**20**	**7**	ND	ND
Yes	Chromium, Total	23.11	0.03	ND	ND	ND	0.06	0.04	ND	ND
Yes	Copper	2.655	0.3	ND	ND	ND	ND	0.5	ND	ND
Yes	Lead	0.5191	1	ND	ND	**4**	**5**	**2**	ND	ND
Yes	Nickel	15.6	0.08	ND	ND	0.2	0.3	0.1	ND	ND
Yes	Zinc	35.38	0.3	ND	**4**	0.3	0.8	0.4	ND	ND
Yes	Tetrachloroethene	111	0.02	0.04	0.05	0.07	**2**	0.05	ND	ND
Yes	1,1,1-Trichloroethane	11	0.2	0.3	0.5	0.5	**10**	0.2	ND	ND
Yes	Trichloroethene	21	0.03	ND	0.05	0.1	**2**	0.07	ND	ND

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

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Location Specific Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	971130A-13	972216A-11	SW-04D_19970911	L0505996-01	L0505996-03	386007	571002	602009
	Area		**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**
	Date		05/20/97	09/11/97	09/11/97	06/02/05	06/02/05	04/03/95	05/08/95	05/17/95
	Location ID		**SW-04**	**SW-04**	**SW-04**	**SW-04**	**SW-04**	**SW-05**	**SW-05**	**SW-05**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	**124**	**201**	**99.2**	NS	NS	66.3 UJ	NS	149 U
Yes	Cadmium	0.09133	**2.2**	**4.3**	**3.1**	**1**	NS	1 U	NS	1 U
Yes	Chromium, Total	23.11	1 U	**1.7**	**1.5**	**1.5**	NS	1 UJ	NS	1 U
Yes	Copper	2.655	**1.1**	1.3J	1 UJ	**1.3**	NS	2 U	NS	**12.4**
Yes	Lead	0.5191	**2.4**	**4.7**	**3.4**	**2.3**	NS	1 U	NS	3.3 UJ
Yes	Nickel	15.6	**2.8**	**4.4**	**3.5**	1 U	NS	1 UJ	NS	**10.6**
Yes	Zinc	35.38	**14.9**	6 U	6 U	**11.3**	NS	19.6 U	NS	35 U
Yes	Tetrachloroethene	111	5 U	5 U	5 U	0.5 U	0.5 U	NS	5 U	5 U
Yes	1,1,1-Trichloroethane	11	5 U	5 U	5 U	0.5 U	0.5 U	NS	5 U	5 U
Yes	Trichloroethene	21	5 U	5 U	5 U	0.5 U	0.5 U	NS	5 U	5 U
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	1	**2**	1	NS	NS	ND	NS	ND
Yes	Cadmium	0.09133	**20**	**50**	**30**	**10**	NS	ND	NS	ND
Yes	Chromium, Total	23.11	ND	0.07	0.06	0.06	NS	ND	NS	ND
Yes	Copper	2.655	0.4	ND	ND	0.5	NS	ND	NS	**5**
Yes	Lead	0.5191	**5**	**9**	**7**	**4**	NS	ND	NS	ND
Yes	Nickel	15.6	0.2	0.3	0.2	ND	NS	ND	NS	0.7
Yes	Zinc	35.38	0.4	ND	ND	0.3	NS	ND	NS	ND
Yes	Tetrachloroethene	111	ND	ND	ND	ND	ND	NS	ND	ND
Yes	1,1,1-Trichloroethane	11	ND	ND	ND	ND	ND	NS	ND	ND
Yes	Trichloroethene	21	ND	ND	ND	ND	ND	NS	ND	ND

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

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Location Specific Surface Water Hazard Quotients
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Keep in BERA?	Lab ID	Criterion	971130A-14	971324A-01	L0505996-19	0386002-19950411	0386002-19950413	0386002-19950417	0602003-19950523	0602003-19950524
	Area		**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**
	Date		05/20/97	06/05/97	06/02/05	03/31/95	03/31/95	03/31/95	05/15/95	05/15/95
	Location ID		**SW-05**	**SW-05**	**SW-05**	**SW-11**	**SW-11**	**SW-11**	**SW-11**	**SW-11**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	**67.2**	NS	NS	NS	93.1 UJ	NS	NS	NS
Yes	Cadmium	0.09133	**4.2**	NS	0.5 U	NS	1 U	NS	NS	NS
Yes	Chromium, Total	23.11	1 U	NS	0.5 U	NS	1 UJ	NS	NS	NS
Yes	Copper	2.655	1 U	NS	**0.7**	NS	2 U	NS	NS	NS
Yes	Lead	0.5191	**1.3**	NS	0.5 U	NS	**2.1**	NS	NS	NS
Yes	Nickel	15.6	**2**	NS	1 U	NS	1 UJ	NS	NS	NS
Yes	Zinc	35.38	**23.1**	NS	5 U	NS	22.2 U	NS	NS	NS
Yes	Tetrachloroethene	111	NS	5 U	0.5 U	**2**	NS	NS	NS	**2**
Yes	1,1,1-Trichloroethane	11	NS	5 U	0.5 U	5 U	NS	NS	NS	**2**
Yes	Trichloroethene	21	NS	5 U	0.5 U	5 U	NS	NS	NS	5 U
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	0.8	NS	NS	NS	ND	NS	NS	NS
Yes	Cadmium	0.09133	**50**	NS	ND	NS	ND	NS	NS	NS
Yes	Chromium, Total	23.11	ND	NS	ND	NS	ND	NS	NS	NS
Yes	Copper	2.655	ND	NS	0.3	NS	ND	NS	NS	NS
Yes	Lead	0.5191	**3**	NS	ND	NS	**4**	NS	NS	NS
Yes	Nickel	15.6	0.1	NS	ND	NS	ND	NS	NS	NS
Yes	Zinc	35.38	0.7	NS	ND	NS	ND	NS	NS	NS
Yes	Tetrachloroethene	111	NS	ND	ND	0.02	NS	NS	NS	0.02
Yes	1,1,1-Trichloroethane	11	NS	ND	ND	ND	NS	NS	NS	0.2
Yes	Trichloroethene	21	NS	ND	ND	ND	NS	NS	NS	ND

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

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Keep in BERA?	Lab ID	Criterion	0602003-19950531	971130A-07-19970522	971130A-07-19970529	971130A-07-19970601	971130A-07-19970603	971130A-07-19970604	971130A-09-19970522	971130A-09-19970529
	Area		**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**
	Date		05/15/95	05/19/97	05/19/97	05/19/97	05/19/97	05/19/97	05/19/97	05/19/97
	Location ID		**SW-11**	**SW-11**	**SW-11**	**SW-11**	**SW-11**	**SW-11**	**SW-11**	**SW-11**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	137 U	NS	NS	NS	NS	**87.6**	NS	NS
Yes	Cadmium	0.09133	1 U	NS	NS	NS	NS	1 U	NS	NS
Yes	Chromium, Total	23.11	1 U	NS	NS	NS	NS	1 U	NS	NS
Yes	Copper	2.655	**3.7**	NS	NS	NS	NS	1 U	NS	NS
Yes	Lead	0.5191	2.8 UJ	NS	NS	NS	NS	**1.9**	NS	NS
Yes	Nickel	15.6	3.6 U	NS	NS	NS	NS	**2.5**	NS	NS
Yes	Zinc	35.38	46 U	NS	NS	NS	NS	**11**	NS	NS
Yes	Tetrachloroethene	111	NS	NS	NS	1 UJ	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	1 UJ	NS	NS	NS	NS
Yes	Trichloroethene	21	NS	NS	NS	5 U	NS	NS	NS	NS
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	ND	NS	NS	NS	NS	1	NS	NS
Yes	Cadmium	0.09133	ND	NS	NS	NS	NS	ND	NS	NS
Yes	Chromium, Total	23.11	ND	NS	NS	NS	NS	ND	NS	NS
Yes	Copper	2.655	1	NS	NS	NS	NS	ND	NS	NS
Yes	Lead	0.5191	ND	NS	NS	NS	NS	**4**	NS	NS
Yes	Nickel	15.6	ND	NS	NS	NS	NS	0.2	NS	NS
Yes	Zinc	35.38	ND	NS	NS	NS	NS	0.3	NS	NS
Yes	Tetrachloroethene	111	NS	NS	NS	ND	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	NS	NS	NS	ND	NS	NS	NS	NS
Yes	Trichloroethene	21	NS	NS	NS	ND	NS	NS	NS	NS

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

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Location Specific Surface Water Hazard Quotients
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BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	971130A-09-19970601	971130A-09-19970603	971130A-09-19970604	972216A-07-19970919	972216A-07-19970922	L0505996-14	L0505996-09	L0505996-07
	Area		**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**
	Date		05/19/97	05/19/97	05/19/97	09/10/97	09/10/97	06/02/05	06/02/05	06/02/05
	Location ID		**SW-11**	**SW-11**	**SW-11**	**SW-11**	**SW-11**	**SW-11**	**SW-14**	**SW-15**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	NS	NS	**85.5**	NS	32 U	NS	NS	NS
Yes	Cadmium	0.09133	NS	NS	1 U	NS	1 U	0.5 U	**0.7**	**1.1**
Yes	Chromium, Total	23.11	NS	NS	1 U	NS	1 U	**0.6**	**1.4**	**0.9**
Yes	Copper	2.655	NS	NS	1 U	NS	1 U	**0.7**	**1**	**1.5**
Yes	Lead	0.5191	NS	NS	**2.5**	NS	NS	**0.5**	**0.9**	**0.8**
Yes	Nickel	15.6	NS	NS	**1.6**	NS	**2.2**	1 U	**1.6**	**1.8**
Yes	Zinc	35.38	NS	NS	**12.3**	NS	**8.4**	5 U	**21.3**	**14.7**
Yes	Tetrachloroethene	111	**1**	NS	NS	**1**	NS	0.5 U	**4.8**	**62**
Yes	1,1,1-Trichloroethane	11	**2**	NS	NS	5 U	NS	0.5 U	0.5 U	**20**
Yes	Trichloroethene	21	**1**	NS	NS	5 U	NS	0.5 U	**1.3**	**13**
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	NS	NS	1	NS	ND	NS	NS	NS
Yes	Cadmium	0.09133	NS	NS	ND	NS	ND	ND	**8**	**10**
Yes	Chromium, Total	23.11	NS	NS	ND	NS	ND	0.03	0.06	0.04
Yes	Copper	2.655	NS	NS	ND	NS	ND	0.3	0.4	0.6
Yes	Lead	0.5191	NS	NS	**5**	NS	NS	1	**2**	**2**
Yes	Nickel	15.6	NS	NS	0.1	NS	0.1	ND	0.1	0.1
Yes	Zinc	35.38	NS	NS	0.3	NS	0.2	ND	0.6	0.4
Yes	Tetrachloroethene	111	0.009	NS	NS	0.009	NS	ND	0.04	0.6
Yes	1,1,1-Trichloroethane	11	0.2	NS	NS	ND	NS	ND	ND	**2**
Yes	Trichloroethene	21	0.05	NS	NS	ND	NS	ND	0.06	0.6

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

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Location Specific Surface Water Hazard Quotients
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Keep in BERA?	Lab ID	Criterion	L0505937-03	L0505867-07	L0505996-16	L0505996-18	L0505937-27	L0505937-30	L0505937-24	L0505937-21
	Area		**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**
	Date		05/31/05	05/31/05	06/02/05	06/02/05	06/01/05	06/01/05	06/01/05	06/01/05
	Location ID		**SW-16**	**SW-17**	**SW-18**	**SW-19**	**SW-201**	**SW-202**	**SW-203**	**SW-204**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	0.09133	0.5 U	**1.2**	0.5 U	**1.4**	**0.5**	**0.8**	NS	**0.6**
Yes	Chromium, Total	23.11	**1**	**1.5**	**1.3**	**2.3**	**0.9**	**0.9**	NS	**0.8**
Yes	Copper	2.655	**1.4**	**1.8**	**0.9**	**2.1**	**1**	**1.1**	NS	**1.3**
Yes	Lead	0.5191	0.5 U	**2.4**	**0.5**	**4**	**0.6**	**0.6**	NS	**0.6**
Yes	Nickel	15.6	**1.4**	**1.9**	**1**	**1**	**1.4**	**1.5**	NS	**1.4**
Yes	Zinc	35.38	**14.3**	**11.5**	**27.3**	**25.5**	**17.9**	**14.6**	NS	**14.6**
Yes	Tetrachloroethene	111	**2.6**	**2.9**	**1.1**	0.5 U	0.5 U	**61**	**2.4**	**11**
Yes	1,1,1-Trichloroethane	11	**1.3**	**1.3**	**0.95**	0.5 U	0.5 U	**20**	**1.2**	**4.1**
Yes	Trichloroethene	21	**0.79**	**0.84**	0.5 U	0.5 U	0.5 U	**17**	**0.68**	**3.1**
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	0.09133	ND	**10**	ND	**20**	**5**	**9**	NS	**7**
Yes	Chromium, Total	23.11	0.04	0.06	0.06	0.1	0.04	0.04	NS	0.03
Yes	Copper	2.655	0.5	0.7	0.3	0.8	0.4	0.4	NS	0.5
Yes	Lead	0.5191	ND	**5**	1	**8**	1	1	NS	1
Yes	Nickel	15.6	0.09	0.1	0.06	0.06	0.09	0.1	NS	0.09
Yes	Zinc	35.38	0.4	0.3	0.8	0.7	0.5	0.4	NS	0.4
Yes	Tetrachloroethene	111	0.02	0.03	0.01	ND	ND	0.5	0.02	0.1
Yes	1,1,1-Trichloroethane	11	0.1	0.1	0.09	ND	ND	**2**	0.1	0.4
Yes	Trichloroethene	21	0.04	0.04	ND	ND	ND	0.8	0.03	0.1

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

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Keep in BERA?	Lab ID	Criterion	L0505937-18	L0505937-10	L0505937-35	L1008325-08	L1008325-06	L1008325-10	L1008325-12	386005
	Area		**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream**	**Stream Bkg**
	Date		06/01/05	06/01/05	05/31/05	06/03/10	06/03/10	06/03/10	06/03/10	04/03/95
	Location ID		**SW-205**	**SW-206**	**SW-207**	**SW-47**	**SW-48**	**SW-61**	**SW-60**	**SW-03**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	NS	NS	NS	NS	NS	NS	NS	39 U
Yes	Cadmium	0.09133	NS	**0.6**	**0.5**	**1.3**	**0.5**	**0.6**	0.5 U	1 U
Yes	Chromium, Total	23.11	NS	**0.7**	**0.8**	**1**	1 U	1 U	1 U	1 UJ
Yes	Copper	2.655	NS	**1.1**	**1**	NS	NS	NS	NS	2 U
Yes	Lead	0.5191	NS	0.5 U	**1.1**	**4**	**1**	**2**	**1**	1 U
Yes	Nickel	15.6	NS	**1.5**	**1.9**	**2**	**1.3**	**1.3**	**1.2**	1 UJ
Yes	Zinc	35.38	NS	**25.3**	5 U	10 U	10 U	10 U	10 U	13.6 U
Yes	Tetrachloroethene	111	0.5 U	**5.1**	**3.8**	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	0.5 U	**2.2**	**1.6**	NS	NS	NS	NS	NS
Yes	Trichloroethene	21	0.5 U	**1.6**	**1.1**	NS	NS	NS	NS	NS
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	NS	NS	NS	NS	NS	NS	NS	ND
Yes	Cadmium	0.09133	NS	**7**	**5**	**10**	**5**	**7**	ND	ND
Yes	Chromium, Total	23.11	NS	0.03	0.03	0.04	ND	ND	ND	ND
Yes	Copper	2.655	NS	0.4	0.4	NS	NS	NS	NS	ND
Yes	Lead	0.5191	NS	ND	**2**	**8**	**2**	**4**	**2**	ND
Yes	Nickel	15.6	NS	0.1	0.1	0.1	0.08	0.08	0.08	ND
Yes	Zinc	35.38	NS	0.7	ND	ND	ND	ND	ND	ND
Yes	Tetrachloroethene	111	ND	0.05	0.03	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	11	ND	0.2	0.1	NS	NS	NS	NS	NS
Yes	Trichloroethene	21	ND	0.08	0.05	NS	NS	NS	NS	NS

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

Table: 11-5a
Location Specific Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Keep in BERA?	Lab ID	Criterion	571001	602007	971130A-12	L0505996-10	L0505996-12	L1008325-16
	Area		**Stream Bkg**	**Stream Bkg**	**Stream Bkg**	**Stream Bkg**	**Stream Bkg**	**Stream Bkg**
	Date		05/08/95	05/17/95	05/20/97	06/02/05	06/02/05	06/01/10
	Location ID		**SW-03**	**SW-03**	**SW-03**	**SW-03**	**SW-03**	**SW-TRIB**
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Aluminum	87	NS	104 U	**125**	NS	NS	NS
Yes	Cadmium	0.09133	NS	1 U	1 U	0.5 U	0.5 U	0.5 U
Yes	Chromium, Total	23.11	NS	1 U	1 U	**1.3**	**0.9**	1 U
Yes	Copper	2.655	NS	2 U	1 U	**0.8**	**0.7**	NS
Yes	Lead	0.5191	NS	2.4 UJ	**1.3**	0.5 U	0.5 U	1 U
Yes	Nickel	15.6	NS	3.3 U	**2.4**	**1.5**	**1.2**	**2**
Yes	Zinc	35.38	NS	27.8 U	**15.3**	**20.8**	**26.4**	10 U
Yes	Tetrachloroethene	111	5 U	5 U	5 U	0.5 U	0.5 U	NS
Yes	1,1,1-Trichloroethane	11	5 U	5 U	5 U	0.5 U	0.5 U	NS
Yes	Trichloroethene	21	5 U	5 U	5 U	0.5 U	0.5 U	NS
		HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	87	NS	ND	1	NS	NS	NS
Yes	Cadmium	0.09133	NS	ND	ND	ND	ND	ND
Yes	Chromium, Total	23.11	NS	ND	ND	0.06	0.04	ND
Yes	Copper	2.655	NS	ND	ND	0.3	0.3	NS
Yes	Lead	0.5191	NS	ND	**3**	ND	ND	ND
Yes	Nickel	15.6	NS	ND	0.2	0.1	0.08	0.1
Yes	Zinc	35.38	NS	ND	0.4	0.6	0.7	ND
Yes	Tetrachloroethene	111	ND	ND	ND	ND	ND	NS
Yes	1,1,1-Trichloroethane	11	ND	ND	ND	ND	ND	NS
Yes	Trichloroethene	21	ND	ND	ND	ND	ND	NS

	Sample collected in 1995 or 1997.
	Sample collected in 2005 or 2010.
Bold	HQ greater than 1 (rounded to one significant figure).
J	Estimated concentration.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
Lake Bkg	Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
U	Not detected, detection limit shown.
ug/L	Micrograms per liter.

Table: 11-5b
Location Specific Dissolved Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Keep in BERA?	Lab ID	Criterion	L0506096-01	L0506096-18	L0506096-15	L0506096-16	L0506096-02	L0506096-17	L0505867-10
	Area		Lake	Lake	Lake	Lake	Lake Bkg	Lake Bkg	Stream
	Date		06/03/05	06/03/05	06/03/05	06/03/05	06/03/05	06/03/05	05/31/05
	Location ID		SW-06	SW-07	SW-08	SW-08 DUP	SW-09A	SW-12	SW-01
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Cadmium, Dissolved	0.09133	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Yes	Chromium, Dissolved	23.11	<1	<1	<1	<1	<1	<1	<0.5
Yes	Copper, Dissolved	2.655	**1**	**0.9**	**0.9**	**0.9**	**1.1**	**0.9**	**0.8**
Yes	Lead, Dissolved	0.5191	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Yes	Nickel, Dissolved	15.6	<1	<1	<1	<1	<1	<1	**1**
Yes	Zinc, Dissolved	35.38	**12.9**	<5	**9.8**	<5	**12.5**	<5	<5
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Cadmium, Dissolved	0.09133	ND	ND	ND	ND	ND	ND	ND
Yes	Chromium, Dissolved	23.11	ND	ND	ND	ND	ND	ND	ND
Yes	Copper, Dissolved	2.655	0.4	0.3	0.3	0.3	0.4	0.3	0.3
Yes	Lead, Dissolved	0.5191	ND	ND	ND	ND	ND	ND	ND
Yes	Nickel, Dissolved	15.6	ND	ND	ND	ND	ND	ND	0.06
Yes	Zinc, Dissolved	35.38	0.4	ND	0.3	ND	0.4	ND	ND

Bold	HQ greater than 1 (rounded to one significant figure).
<	Not detected, detection limit shown.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, or Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
Lake Bkg	Sample from the Turnpike Lake background reference.
ug/L	Micrograms per liter.

Table: 11-5b
Location Specific Dissolved Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505937-19	L0505996-01	L0505996-19	L0505996-14	L0505996-09	L0505996-07	L0505937-03
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		06/01/05	06/02/05	06/02/05	06/02/05	06/02/05	06/02/05	05/31/05
	Location ID		SW-02	SW-04	SW-05	SW-11	SW-14	SW-15	SW-16
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Cadmium, Dissolved	0.09133	**0.6**	<0.5	<0.5	<0.5	<0.5	**0.8**	<0.5
Yes	Chromium, Dissolved	23.11	<0.5	**0.5**	**0.6**	**0.5**	**0.5**	**0.6**	<0.5
Yes	Copper, Dissolved	2.655	**0.6**	**0.6**	**0.6**	**0.5**	<0.5	**0.9**	**0.7**
Yes	Lead, Dissolved	0.5191	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Yes	Nickel, Dissolved	15.6	**1.1**	<1	<1	<1	**1.2**	**1.5**	**1**
Yes	Zinc, Dissolved	35.38	<5	<5	<5	<5	<5	**5.5**	<5
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Cadmium, Dissolved	0.09133	**7**	ND	ND	ND	ND	**9**	ND
Yes	Chromium, Dissolved	23.11	ND	0.02	0.03	0.02	0.02	0.03	ND
Yes	Copper, Dissolved	2.655	0.2	0.2	0.2	0.2	ND	0.3	0.3
Yes	Lead, Dissolved	0.5191	ND	ND	ND	ND	ND	ND	ND
Yes	Nickel, Dissolved	15.6	0.07	ND	ND	ND	0.08	0.1	0.06
Yes	Zinc, Dissolved	35.38	ND	ND	ND	ND	ND	0.2	ND

Bold	HQ greater than 1 (rounded to one significant figure).
<	Not detected, detection limit shown.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, or Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
Lake Bkg	Sample from the Turnpike Lake background reference.
ug/L	Micrograms per liter.

Table: 11-5b
Location Specific Dissolved Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505867-07	L0505996-16	L0505996-18	L0505937-27	L0505937-30	L0505937-21	L0505937-10
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		05/31/05	06/02/05	06/02/05	06/01/05	06/01/05	06/01/05	06/01/05
	Location ID		SW-17	SW-18	SW-19	SW-201	SW-202	SW-204	SW-206
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Cadmium, Dissolved	0.09133	<0.5	<0.5	**0.6**	<0.5	**0.7**	<0.5	<0.5
Yes	Chromium, Dissolved	23.11	<0.5	**0.5**	<0.5	<0.5	**0.6**	<0.5	<0.5
Yes	Copper, Dissolved	2.655	**0.8**	**0.8**	**0.7**	**0.8**	**0.8**	**0.6**	**0.6**
Yes	Lead, Dissolved	0.5191	<0.5	**0.6**	<0.5	<0.5	<0.5	<0.5	<0.5
Yes	Nickel, Dissolved	15.6	**1.4**	**1.3**	<1	**1**	**1.4**	**1.1**	**1.1**
Yes	Zinc, Dissolved	35.38	<5	<5	<5	<5	**6.4**	**6.2**	<5
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Cadmium, Dissolved	0.09133	ND	ND	**7**	ND	**8**	ND	ND
Yes	Chromium, Dissolved	23.11	ND	0.02	ND	ND	0.03	ND	ND
Yes	Copper, Dissolved	2.655	0.3	0.3	0.3	0.3	0.3	0.2	0.2
Yes	Lead, Dissolved	0.5191	ND	1	ND	ND	ND	ND	ND
Yes	Nickel, Dissolved	15.6	0.09	0.08	ND	0.06	0.09	0.07	0.07
Yes	Zinc, Dissolved	35.38	ND	ND	ND	ND	0.2	0.2	ND

Bold	HQ greater than 1 (rounded to one significant figure).
<	Not detected, detection limit shown.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, or Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
Lake Bkg	Sample from the Turnpike Lake background reference.
ug/L	Micrograms per liter.

Table: 11-5b
Location Specific Dissolved Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505937-35	L1008325-08	L1008325-06	L1008325-06	L1008325-10	L1008325-12	L1008325-16
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream Bkd
	Date		05/31/05	06/03/10	06/03/10	06/03/10	06/03/10	06/03/10	06/01/10
	Location ID		SW-207	SW-47	SW-48	SW-48	SW-61	SW-60	SW-TRIB
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Yes	Cadmium, Dissolved	0.09133	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Yes	Chromium, Dissolved	23.11	**0.6**	<1	<1	<1	<1	<1	<1
Yes	Copper, Dissolved	2.655	**0.5**	NS	NS	NS	NS	NS	NS
Yes	Lead, Dissolved	0.5191	<0.5	<1	<1	<1	<1	<1	<1
Yes	Nickel, Dissolved	15.6	**1.1**	**0.8**	**0.9**	**0.9**	**0.9**	**0.9**	**1.6**
Yes	Zinc, Dissolved	35.38	<5	<10	<10	<10	<10	<10	<10
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Cadmium, Dissolved	0.09133	ND	ND	ND	ND	ND	ND	ND
Yes	Chromium, Dissolved	23.11	0.03	ND	ND	ND	ND	ND	ND
Yes	Copper, Dissolved	2.655	0.2	NS	NS	NS	NS	NS	NS
Yes	Lead, Dissolved	0.5191	ND	ND	ND	ND	ND	ND	ND
Yes	Nickel, Dissolved	15.6	0.07	0.05	0.06	0.06	0.06	0.06	0.1
Yes	Zinc, Dissolved	35.38	ND	ND	ND	ND	ND	ND	ND

Bold	HQ greater than 1 (rounded to one significant figure).
<	Not detected, detection limit shown.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, or Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
Lake Bkg	Sample from the Turnpike Lake background reference.
ug/L	Micrograms per liter.

Table: 11-5b
Location Specific Dissolved Surface Water Hazard Quotients
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Keep in BERA?	Lab ID	Criterion	L1008325-16	L0505996-10	L0505996-12
	Area		Stream Bkd	Stream Bkg	Stream Bkg
	Date		06/01/10	06/02/05	06/02/05
	Location ID		SW-TRIB	SW-03	SW-03 DUP
		ug/L	ug/L	ug/L	ug/L
Yes	Cadmium, Dissolved	0.09133	<0.5	<0.5	<0.5
Yes	Chromium, Dissolved	23.11	<1	<0.5	<0.5
Yes	Copper, Dissolved	2.655	NS	<0.5	<0.5
Yes	Lead, Dissolved	0.5191	<1	<0.5	<0.5
Yes	Nickel, Dissolved	15.6	**1.7**	**1.1**	**1.3**
Yes	Zinc, Dissolved	35.38	<10	<5	<5
		ug/L	HQ	HQ	HQ
Yes	Cadmium, Dissolved	0.09133	ND	ND	ND
Yes	Chromium, Dissolved	23.11	ND	ND	ND
Yes	Copper, Dissolved	2.655	NS	ND	ND
Yes	Lead, Dissolved	0.5191	ND	ND	ND
Yes	Nickel, Dissolved	15.6	0.1	0.07	0.08
Yes	Zinc, Dissolved	35.38	ND	ND	ND

Bold	HQ greater than 1 (rounded to one significant figure).
<	Not detected, detection limit shown.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
Lake	Sample from Turnpike Lake.
ND	Not detected.
NS	Not sampled.
Stream	Private impoundment, wetlands, or Sawmill/Turtle Brook
Stream Bkg	Wetland background reference.
Lake Bkg	Sample from the Turnpike Lake background reference.
ug/L	Micrograms per liter.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	Source	429002	429004	632007	632008	632019	632020	632021	970826A-06	632022	632023	632024	632030
	Area			Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake
	Date			04/10/95	04/10/95	05/22/95	05/22/95	05/26/95	05/26/95	05/26/95	04/15/97	05/26/95	05/26/95	05/26/95	05/30/95
	Location ID			SD-06	SD-06	SD-07	SD-08	SD-12	SD-13	SD-14	SD-14	SD-15	SD-16	SD-17	SD-18
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Aluminum	NC		**13,100,000**	**17,900,000**	**14,800,000**	**6,490,000**	**8,570,000**	**3,980,000**	**7,830,000**	NS	**5,270,000**	**5,120,000**	**7,360,000**	**13,400,000**
Yes	Antimony	2,000	R3	3300U	3800U	28000U	19800U	28900U	6200U	42900U	**990**	27000U	11700U	6600U	7200U
Yes	Arsenic	9,800	R3	**1,500**	**1,900**	14000U	**2,200**	14500U	**500**	**3,200**	**980**	1200U	300U	**600**	400U
Yes	Cadmium	990	R3	**7,800**	**18,200**	2800U	2000U	**58,400**	**8,800**	**28,900**	**12,800**	2400U	**12,900**	**56,800**	**1,300**
Yes	Chromium, Total	43,400	R3	**18,700**	**18,100**	**21,600**	**12,100**	**23,000**	**6,700**	**22,700**	**8,800**	**7,800**	**5,800**	**18,000**	**11,800**
Yes	Copper	31,600	R3	**44,700**	**26,600**	**10,800**	**12,500**	**30,600**	**7,200**	**77,400**	**12,400**	**21,600**	**5,700**	**27,700**	**5,800**
Yes	Mercury	180	R3	480U	580U	640U	430U	630U	100U	1000U	100U	540U	170U	150U	180U
Yes	Nickel	22,700	R3	9600U	11700U	10400U	**16,600**	**18,900**	**6,800**	20100U	**4,000**	12300U	**5,600**	**11,000**	**6,100**
Yes	Selenium	2,000	R3	**4,200**	3800U	14000U	9900U	5800U	1000U	4300U	**1,200**	6000U	700U	700U	**4,000**
Yes	Silver	1,000	R3	6000UJ	7400UJ	4200UJ	3000UJ	**11,100**	780UJ	22400U	**3,200**	3600U	1500U	**6,900**	1300U
Yes	Zinc	121,000	R3	94300U	63800U	46200U	89900U	107000U	31800U	303000U	**24,700**	40100U	55200U	86500U	42400U
Yes	Acetone	99	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Carbon Disulfide	239	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chloroethane	310	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethane	310	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethene	194	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cis-1,2-Dichloroethene	6,540	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Methyl Ethyl Ketone	424	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Tetrachloroethene	42,000	EqP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	33,000	EqP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	33,000	EqP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Acenaphthylene	5.9	R3	2900U	2500U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	R3	2900U	2500U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	R3	2900UJ	2500U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	R3	2900UJ	2500U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	R3	2900UJ	2500U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	R3	2900UJ	2500U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	R3	2900U	**62**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	R3	2900U	**110**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	R3	2900UJ	2500U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	R3	2900U	**38**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	R3	2900U	**93**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons, Aliphatic C9-C	NC		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	F	140UJ	250UJ	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	F	140UJ	**120**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	F	**88**	**76**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one significant figure).
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	Source	429002	429004	632007	632008	632019	632020	632021	970826A-06	632022	632023	632024	632030
	Area			Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake
	Date			04/10/95	04/10/95	05/22/95	05/22/95	05/26/95	05/26/95	05/26/95	04/15/97	05/26/95	05/26/95	05/26/95	05/30/95
	Location ID			SD-06	SD-06	SD-07	SD-08	SD-12	SD-13	SD-14	SD-14	SD-15	SD-16	SD-17	SD-18
		ug/L		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	NC		NC	NC	NC	NC	NC	NC	NC	NS	NC	NC	NC	NC
Yes	Antimony	2,000	R3	ND	ND	ND	ND	ND	ND	ND	0.5	ND	ND	ND	ND
Yes	Arsenic	9,800	R3	0.2	0.2	ND	0.2	ND	0.05	0.3	0.1	ND	ND	0.06	ND
Yes	Cadmium	990	R3	**8**	**20**	ND	ND	**60**	**9**	**30**	**10**	ND	**10**	**60**	1
Yes	Chromium, Total	43,400	R3	0.4	0.4	0.5	0.3	0.5	0.2	0.5	0.2	0.2	0.1	0.4	0.3
Yes	Copper	31,600	R3	1	0.8	0.3	0.4	1	0.2	**2**	0.4	0.7	0.2	0.9	0.2
Yes	Mercury	180	R3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Yes	Nickel	22,700	R3	ND	ND	ND	0.7	0.8	0.3	ND	0.2	ND	0.2	0.5	0.3
Yes	Selenium	2,000	R3	**2**	ND	ND	ND	ND	ND	ND	0.6	ND	ND	ND	**2**
Yes	Silver	1,000	R3	ND	ND	ND	ND	**10**	ND	ND	**3**	ND	ND	**7**	ND
Yes	Zinc	121,000	R3	ND	ND	ND	ND	ND	ND	ND	0.2	ND	ND	ND	ND
Yes	Acetone	99	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Carbon Disulfide	239	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chloroethane	310	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethane	310	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethene	194	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cis-1,2-Dichloroethene	6,540	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Methyl Ethyl Ketone	424	R5 10%TOC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Tetrachloroethene	42,000	EqP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	33,000	EqP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	33,000	EqP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Acenaphthylene	5.9	R3	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	R3	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	R3	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	R3	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	R3	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	R3	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	R3	ND	0.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	R3	ND	0.3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	R3	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	R3	ND	0.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	R3	ND	0.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons C9-C18	NC		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	F	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	F	ND	0.005	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	F	0.001	0.001	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one significant figure).
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	632031	429003	429001	632032	970826A-07	632033	632034	632035	632025	970826A-05	632036	632037	632038
	Area		Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake
	Date		05/30/95	04/10/95	04/10/95	05/30/95	04/15/97	05/30/95	05/30/95	05/30/95	05/26/95	04/15/97	05/30/95	05/30/95	05/30/95
	Location ID	Criterion	SD-19	SD-20	SD-21	SD-22	SD-22	SD-23	SD-24	SD-24	SD-25	SD-25	SD-26	SD-27	SD-28
		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Aluminum	NC	**6,130,000**	**8,830,000**	**6,690,000**	**2,300,000**	NS	**4,520,000**	**7,270,000**	**8,230,000**	**3,440,000**	NS	**7,900,000**	**9,970,000**	**8,880,000**
Yes	Antimony	2,000	7600U	3900U	1200U	28400U	1300U	21600U	5900U	11400U	30300U	1000U	6100U	7000U	12600U
Yes	Arsenic	9,800	**2,500**	1100U	**2,200**	14200U	**1,700**	1100UJ	**2,600**	**2,800**	1500U	**1,600**	300UJ	**500**	5400U
Yes	Cadmium	990	**20,500**	**15,900**	**53,500**	2800U	**6,500**	**9,000**	**34,600**	**20,200**	3000U	**4,000**	**740**	**10,600**	**260,000**
Yes	Chromium, Total	43,400	**16,400**	**15,900**	**18,600**	**4,200**	**5,400**	**6,400**	**37,500**	**22,400**	**8,600**	**7,500**	**6,700**	**18,600**	**97,100**
Yes	Copper	31,600	**15,800**	**30,800**	**85,500**	**9,700**	**19,100**	**16,300**	**93,800**	**38,200**	**18,800**	**21,400**	**770**	**13,100**	**248,000**
Yes	Mercury	180	110U	430U	**270**	680U	100U	450U	110U	110U	690U	**100**	130U	130U	260U
Yes	Nickel	22,700	**8,600**	7700U	**12,100**	20900U	**4,700**	7100U	**13,900**	**11,000**	23100U	**4,400**	3400U	**5,400**	**75,800**
Yes	Selenium	2,000	**500**	**3,900**	1200U	**12,800**	**3,000**	5400U	**500**	**640**	7600U	**4,200**	**600**	400U	**1,300**
Yes	Silver	1,000	**6,200**	7600UJ	**28,600**	4300U	**2,300**	5000U	**12,500**	**11,300**	5200U	**1,100**	910U	5700U	**41,400**
Yes	Zinc	121,000	66800U	43600U	106000U	86600U	**20,300**	50400U	64200U	53600U	104000U	**16,100**	15400U	31300U	237000U
Yes	Acetone	99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Carbon Disulfide	239	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chloroethane	310	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethane	310	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethene	194	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cis-1,2-Dichloroethene	6,540	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Methyl Ethyl Ketone	424	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Tetrachloroethene	42,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	33,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	33,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Acenaphthylene	5.9	NS	3700U	**21**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	3700U	**76**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	3700UJ	**120**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	3700UJ	**230**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	3700UJ	790UJ	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	3700UJ	**160**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	3700U	**140**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	**73**	**200**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	3700UJ	790UJ	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	3700U	**66**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	**78**	**220**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons, Aliphatic C9-C	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	180UJ	**52,000**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	**180**	16000UJ	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	**120**	**44,000**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one significant figure).
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	632031	429003	429001	632032	970826A-07	632033	632034	632035	632025	970826A-05	632036	632037	632038
	Area		Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake
	Date		05/30/95	04/10/95	04/10/95	05/30/95	04/15/97	05/30/95	05/30/95	05/30/95	05/26/95	04/15/97	05/30/95	05/30/95	05/30/95
	Location ID	Criterion	SD-19	SD-20	SD-21	SD-22	SD-22	SD-23	SD-24	SD-24	SD-25	SD-25	SD-26	SD-27	SD-28
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	NC	NC	NC	NC	NC	NS	NC	NC	NC	NC	NS	NC	NC	NC
Yes	Antimony	2,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Yes	Arsenic	9,800	0.3	ND	0.2	ND	0.2	ND	0.3	0.3	ND	0.2	ND	0.05	ND
Yes	Cadmium	990	**20**	**20**	**50**	ND	**7**	**9**	**30**	**20**	ND	**4**	0.7	**10**	**300**
Yes	Chromium, Total	43,400	0.4	0.4	0.4	0.1	0.1	0.1	0.9	0.5	0.2	0.2	0.2	0.4	**2**
Yes	Copper	31,600	0.5	1	**3**	0.3	0.6	0.5	**3**	1	0.6	0.7	0.02	0.4	**8**
Yes	Mercury	180	ND	ND	**2**	ND	ND	ND	ND	ND	ND	0.6	ND	ND	ND
Yes	Nickel	22,700	0.4	ND	0.5	ND	0.2	ND	0.6	0.5	ND	0.2	ND	0.2	**3**
Yes	Selenium	2,000	0.3	**2**	ND	**6**	**2**	ND	0.3	0.3	ND	**2**	0.3	ND	0.7
Yes	Silver	1,000	**6**	ND	**30**	ND	**2**	ND	**10**	**10**	ND	1	ND	ND	**40**
Yes	Zinc	121,000	ND	ND	ND	ND	0.2	ND	ND	ND	ND	0.1	ND	ND	ND
Yes	Acetone	99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Carbon Disulfide	239	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chloroethane	310	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethane	310	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethene	194	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cis-1,2-Dichloroethene	6,540	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Methyl Ethyl Ketone	424	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Tetrachloroethene	42,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	33,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	33,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Acenaphthylene	5.9	NS	ND	**4**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	ND	0.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	ND	0.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	ND	**8**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	ND	0.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	ND	0.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	0.2	0.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	ND	0.3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	0.4	1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons C9-C18	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	ND	**5**	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	0.007	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	0.002	0.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one significant figure).
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	632009	632010	632011	632012	632013	632014	632015	632026	970826A-04	L0506096-05	L0506096-06	L0506096-07	L0506096-07-LD	L0506096-08
	Area		Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake
	Date		05/22/95	05/22/95	05/22/95	05/22/95	05/22/95	05/22/95	05/22/95	05/26/95	04/15/97	06/03/05	06/03/05	06/03/05	06/03/05	06/03/05
	Location ID		SD-29	SD-30	SD-31	SD-32	SD-33	SD-34	SD-35	SD-37	SD-38	SD-41	SD-41	SD-42	SD-42	SD-43
		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Aluminum	NC	**20,700,000**	**11,000,000**	**9,710,000**	**10,400,000**	**14,100,000**	**17,600,000**	**22,700,000**	**4,760,000**	NS	NS	NS	NS	NS	NS
Yes	Antimony	2,000	7000U	5200U	18900U	6000U	10700U	7800U	**7,400**	8800U	1000U	26000U	25000U	28000UJ	NS	29000U
Yes	Arsenic	9,800	**1,000**	300U	9400U	3000U	5300U	3900U	1200U	4400U	**1,500**	**6,300**	**7,400**	**8,600**	NS	**6,300**
Yes	Cadmium	990	700U	520U	**4,200**	600U	1100U	780U	500U	**2,900**	**8,800**	**110,000**	**70,000**	**85,000**	NS	**400,000**
Yes	Chromium, Total	43,400	**13,000**	**6,500**	**23,200**	**10,500**	**17,500**	**15,600**	**14,500**	**6,500**	**10,200**	**61,000**	**30,000**	**34,000**	NS	**50,000**
Yes	Copper	31,600	**5,000**	520UJ	**20,100**	**1,900**	**8,400**	**1,700**	**3,100**	**4,400**	**25,600**	**130,000**	**58,000**	**64,000**	NS	**300,000**
Yes	Mercury	180	150U	110U	450U	140U	240U	170U	120U	160U	90U	960U	980U	1200U	NS	1000U
Yes	Nickel	22,700	**12,000**	**6,800**	**15,400**	**8,100**	**8,200**	**11,500**	**14,900**	**6,800**	**5,000**	**20,000**	**23,000**	**23,000**	NS	**37,000**
Yes	Selenium	2,000	1400U	1000U	18900U	1200U	**2,200**	1600U	1000U	2200U	**3,500**	26000U	25000U	28000U	NS	29000U
Yes	Silver	1,000	1000UJ	780UJ	2800UJ	890UJ	1600UJ	1200UJ	750UJ	1800U	**2,900**	**44,000**	**17,000**	**19,000**	NS	**170,000**
Yes	Zinc	121,000	37700U	24000U	52400U	31600U	19600U	18400U	33300U	25400U	**22,600**	**240,000**	**240,000**	**270,000**	NS	**400,000**
Yes	Acetone	99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Carbon Disulfide	239	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chloroethane	310	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethane	310	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethene	194	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cis-1,2-Dichloroethene	6,540	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Methyl Ethyl Ketone	424	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Tetrachloroethene	42,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	33,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	33,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	342U	342U	376U	NS	386U
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	342U	342U	376U	NS	**878**
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	342U	342U	376U	NS	**1,060**
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	342U	342U	376U	NS	**1,200**
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	342U	342U	376U	NS	**944**
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	342U	342U	376U	NS	**1,450**
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	342U	342U	376U	NS	**1,580**
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	**638**	**682**	**698**	NS	**2,680**
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	342U	342U	376U	NS	**784**
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	342U	342U	376U	NS	**813**
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	**476**	**533**	**527**	NS	**2,220**
Yes	Hydrocarbons, Aliphatic C9-C	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	85500U	85500U	**113,000**	NS	96600U
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	427U	427U	469U	NS	**27,100**
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	427U	427U	**490**	NS	**20,000**

Bold	HQ greater than 1 (rounded to one significant figure).
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	632009	632010	632011	632012	632013	632014	632015	632026	970826A-04	L0506096-05	L0506096-06	L0506096-07	L0506096-07-LD	L0506096-08
	Area		Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake
	Date		05/22/95	05/22/95	05/22/95	05/22/95	05/22/95	05/22/95	05/22/95	05/26/95	04/15/97	06/03/05	06/03/05	06/03/05	06/03/05	06/03/05
	Location ID		SD-29	SD-30	SD-31	SD-32	SD-33	SD-34	SD-35	SD-37	SD-38	SD-41	SD-41	SD-42	SD-42	SD-43
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	NC	NC	NC	NC	NC	NC	NC	NC	NC	NS	NS	NS	NS	NS	NS
Yes	Antimony	2,000	ND	ND	ND	ND	ND	ND	**4**	ND	ND	ND	ND	ND	NS	ND
Yes	Arsenic	9,800	0.1	ND	ND	ND	ND	ND	ND	ND	0.2	0.6	0.8	0.9	NS	0.6
Yes	Cadmium	990	ND	ND	**4**	ND	ND	ND	ND	**3**	**9**	**100**	**70**	**90**	NS	**400**
Yes	Chromium, Total	43,400	0.3	0.1	0.5	0.2	0.4	0.4	0.3	0.1	0.2	1	0.7	0.8	NS	1
Yes	Copper	31,600	0.2	ND	0.6	0.06	0.3	0.05	0.1	0.1	0.8	**4**	**2**	**2**	NS	**9**
Yes	Mercury	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
Yes	Nickel	22,700	0.5	0.3	0.7	0.4	0.4	0.5	0.7	0.3	0.2	0.9	1	1	NS	**2**
Yes	Selenium	2,000	ND	ND	ND	ND	1	ND	ND	ND	**2**	ND	ND	ND	NS	ND
Yes	Silver	1,000	ND	ND	ND	ND	ND	ND	ND	ND	**3**	**40**	**20**	**20**	NS	**200**
Yes	Zinc	121,000	ND	ND	ND	ND	ND	ND	ND	ND	0.2	**2**	**2**	**2**	NS	**3**
Yes	Acetone	99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Carbon Disulfide	239	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chloroethane	310	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethane	310	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1-Dichloroethene	194	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cis-1,2-Dichloroethene	6,540	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Methyl Ethyl Ketone	424	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Tetrachloroethene	42,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	1,1,1-Trichloroethane	33,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Trichloroethene	33,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	NS	ND
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	NS	**8**
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	NS	**7**
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	NS	**40**
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	NS	**6**
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	NS	**6**
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	NS	**10**
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	**2**	**2**	**2**	NS	**6**
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	NS	**50**
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	NS	**4**
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	**2**	**3**	**3**	NS	**10**
Yes	Hydrocarbons C9-C18	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	NC	NS	ND
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	ND	NS	1
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND	ND	0.007	NS	0.3

Bold	HQ greater than 1 (rounded to one significant figure).
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0506096-08-LD	L1008325-01	L0506096-19	L0506096-19-LD	L1008325-02	632028	970826A-02	L0506096-03	L0506096-03-LD	L1008325-03	632029	970826A-01	L0506096-04	632001	L0505996-04
	Area		Lake	Lake	Lake	Lake	Lake	Lake Bkg	Lake Bkg	Lake Bkg	Lake Bkg	Lake Bkg	Lake Bkg	Lake Bkg	Lake Bkg	Stream	Stream
	Date		06/03/05	06/02/10	06/03/05	06/03/05	06/02/10	05/30/95	04/15/97	06/03/05	06/03/05	06/02/10	05/30/95	04/15/97	06/03/05	05/19/95	06/02/05
	Location ID		SD-43	SD-43	SD-44	SD-44	SD-44	SD-09	SD-09A	SD-09A	SD-09A	SD-09A	SD-10	SD-10A	SD-10A	SD-01	SD-01
		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Aluminum	NC	NS	NS	NS	NS	NS	**4,050,000**	NS	NS	NS	NS	**4,810,000**	NS	NS	**5,900,000**	NS
Yes	Antimony	2,000	NS	**1,680**	12000U	NS	**1,020**	6300U	810U	35000U	NS	**1,100**	29200U	800U	21000U	44700U	20000U
Yes	Arsenic	9,800	NS	**6,460**	2500U	NS	**6,100**	**1,000**	**3,200**	7000U	NS	**6,290**	**1,600**	**2,600**	**4,400**	**3,200**	**10,000**
Yes	Cadmium	990	NS	**780,600**	**57,000**	NS	**169,600**	**950**	**410**	**13,000**	NS	**26,270**	2900U	**510**	4200U	**45,700**	**100,000**
Yes	Chromium, Total	43,400	NS	**112,000**	**26,000**	NS	**42,100**	**6,000**	**5,600**	**15,000**	NS	**22,300**	**10,700**	**9,300**	**13,000**	**21,000**	**22,000**
Yes	Copper	31,600	NS	NS	**44,000**	NS	NS	**4,100**	**16,800**	**51,000**	NS	NS	**4,600**	**5,900**	**54,000**	**35,300**	**51,000**
Yes	Mercury	180	NS	**434**	460U	NS	**832**	160U	100U	1400U	NS	**162**	660U	100U	840U	960U	820U
Yes	Nickel	22,700	NS	**45,600**	**8,900**	NS	**25,000**	**5,800**	**5,100**	**19,000**	NS	**28,000**	15700U	**4,400**	**13,000**	**42,500**	**32,000**
Yes	Selenium	2,000	NS	**4,040**	12000U	NS	**3,150**	**1,000**	**2,900**	35000U	NS	**3,800**	7300U	**2,600**	21000U	21100U	20000U
Yes	Silver	1,000	NS	**326,000**	**28,000**	NS	**43,800**	940U	70UJ	7000U	NS	**5,660**	4400U	70UJ	4200U	6300UJ	**7,000**
Yes	Zinc	121,000	NS	**550,000**	**75,000**	NS	**318,000**	45400U	**15,500**	**380,000**	NS	**378,000**	77200U	**11,000**	**100,000**	145000U	**210,000**
Yes	Acetone	99	NS	**1,700**	NS	NS	**1,800**	NS	NS	NS	NS	730UJ	NS	NS	NS	NS	**440**
Yes	Carbon Disulfide	239	NS	1400UJ	NS	NS	610UJ	NS	NS	NS	NS	1000U	NS	NS	NS	NS	91U
Yes	Chloroethane	310	NS	54U	NS	NS	24U	NS	NS	NS	NS	41U	NS	NS	NS	**110**	**140**
Yes	1,1-Dichloroethane	310	NS	41U	NS	NS	18U	NS	NS	NS	NS	30U	NS	NS	NS	**35**	**37**
Yes	1,1-Dichloroethene	194	NS	27U	NS	NS	12U	NS	NS	NS	NS	20U	NS	NS	NS	50UJ	9.1U
Yes	Cis-1,2-Dichloroethene	6,540	NS	27U	NS	NS	12U	NS	NS	NS	NS	20U	NS	NS	NS	**68**	**34**
Yes	Methyl Ethyl Ketone	424	NS	**280**	NS	NS	**360**	NS	NS	NS	NS	200U	NS	NS	NS	NS	**130**
Yes	Tetrachloroethene	42,000	NS	27U	NS	NS	12U	NS	NS	NS	NS	20U	NS	NS	NS	50UJ	**14**
Yes	1,1,1-Trichloroethane	33,000	NS	27U	NS	NS	12U	NS	NS	NS	NS	20U	NS	NS	NS	50UJ	9.1U
Yes	Trichloroethene	33,000	NS	27U	NS	NS	12U	NS	NS	NS	NS	20U	NS	NS	NS	50UJ	**11**
Yes	Acenaphthylene	5.9	NS	NS	167U	NS	NS	NS	NS	468U	NS	NS	NS	NS	287U	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	**187**	NS	NS	NS	NS	468U	NS	NS	NS	NS	287U	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	**197**	NS	NS	NS	NS	234U	NS	NS	NS	NS	287U	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	**203**	NS	NS	NS	NS	468U	NS	NS	NS	NS	287U	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	167U	NS	NS	NS	NS	468U	NS	NS	NS	NS	287U	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	**268**	NS	NS	NS	NS	468U	NS	NS	NS	NS	287U	NS	NS
Yes	Chrysene	166	NS	NS	**304**	NS	NS	NS	NS	468U	NS	NS	NS	NS	**475**	NS	NS
Yes	Fluoranthene	423	NS	NS	**585**	NS	NS	NS	NS	468U	NS	NS	NS	NS	**859**	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	167U	NS	NS	NS	NS	468U	NS	NS	NS	NS	287U	NS	NS
Yes	Phenanthrene	204	NS	NS	167U	NS	NS	NS	NS	468U	NS	NS	NS	NS	**320**	NS	NS
Yes	Pyrene	195	NS	NS	**415**	NS	NS	NS	NS	468U	NS	NS	NS	NS	**619**	NS	NS
Yes	Hydrocarbons, Aliphatic C9-C	NC	NS	NS	41700U	NS	NS	NS	NS	117000U	NS	NS	NS	NS	71700U	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	625U	NS	NS	NS	NS	585U	NS	NS	NS	NS	358U	NS	340U
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	625U	NS	NS	NS	NS	585U	NS	NS	NS	NS	358U	NS	340U

Bold	HQ greater than 1 (rounded to one significant
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0506096-08-LD	L1008325-01	L0506096-19	L0506096-19-LD	L1008325-02	632028	970826A-02	L0506096-03	L0506096-03-LD	L1008325-03	632029	970826A-01	L0506096-04	632001	L0505996-04
	Area		Lake	Lake	Lake	Lake	Lake	Lake Bkg	Lake Bkg	Lake Bkg	Lake Bkg	Lake Bkg	Lake Bkg	Lake Bkg	Lake Bkg	Stream	Stream
	Date		06/03/05	06/02/10	06/03/05	06/03/05	06/02/10	05/30/95	04/15/97	06/03/05	06/03/05	06/02/10	05/30/95	04/15/97	06/03/05	05/19/95	06/02/05
	Location ID		SD-43	SD-43	SD-44	SD-44	SD-44	SD-09	SD-09A	SD-09A	SD-09A	SD-09A	SD-10	SD-10A	SD-10A	SD-01	SD-01
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	NC	NS	NS	NS	NS	NS	NC	NS	NS	NS	NS	NC	NS	NS	NC	NS
Yes	Antimony	2,000	NS	0.8	ND	NS	0.5	ND	ND	ND	NS	0.6	ND	ND	ND	ND	ND
Yes	Arsenic	9,800	NS	0.7	ND	NS	0.6	0.1	0.3	ND	NS	0.6	0.2	0.3	0.4	0.3	1
Yes	Cadmium	990	NS	**800**	**60**	NS	**200**	1	0.4	**10**	NS	**30**	ND	0.5	ND	**50**	**100**
Yes	Chromium, Total	43,400	NS	**3**	0.6	NS	1	0.1	0.1	0.3	NS	0.5	0.2	0.2	0.3	0.5	0.5
Yes	Copper	31,600	NS	NS	1	NS	NS	0.1	0.5	**2**	NS	NS	0.1	0.2	**2**	1	**2**
Yes	Mercury	180	NS	**2**	ND	NS	**5**	ND	ND	ND	NS	0.9	ND	ND	ND	ND	ND
Yes	Nickel	22,700	NS	**2**	0.4	NS	1	0.3	0.2	0.8	NS	1	ND	0.2	0.6	**2**	1
Yes	Selenium	2,000	NS	**2**	ND	NS	**2**	0.5	1	ND	NS	**2**	ND	1	ND	ND	ND
Yes	Silver	1,000	NS	**300**	**30**	NS	**40**	ND	ND	ND	NS	**6**	ND	ND	ND	ND	**7**
Yes	Zinc	121,000	NS	**5**	0.6	NS	**3**	ND	0.1	**3**	NS	**3**	ND	0.09	0.8	ND	**2**
Yes	Acetone	99	NS	**20**	NS	NS	**20**	NS	NS	NS	NS	ND	NS	NS	NS	NS	**4**
Yes	Carbon Disulfide	239	NS	ND	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND
Yes	Chloroethane	310	NS	ND	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	0.4	0.5
Yes	1,1-Dichloroethane	310	NS	ND	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	0.1	0.1
Yes	1,1-Dichloroethene	194	NS	ND	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	ND	ND
Yes	Cis-1,2-Dichloroethene	6,540	NS	ND	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	0.01	0.005
Yes	Methyl Ethyl Ketone	424	NS	0.7	NS	NS	0.8	NS	NS	NS	NS	ND	NS	NS	NS	NS	0.3
Yes	Tetrachloroethene	42,000	NS	ND	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	ND	0.0003
Yes	1,1,1-Trichloroethane	33,000	NS	ND	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	ND	ND
Yes	Trichloroethene	33,000	NS	ND	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	ND	0.0003
Yes	Acenaphthylene	5.9	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	**2**	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	1	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	**7**	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	1	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS
Yes	Chrysene	166	NS	NS	**2**	NS	NS	NS	NS	ND	NS	NS	NS	NS	**3**	NS	NS
Yes	Fluoranthene	423	NS	NS	1	NS	NS	NS	NS	ND	NS	NS	NS	NS	**2**	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS
Yes	Phenanthrene	204	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	NS	**2**	NS	NS
Yes	Pyrene	195	NS	NS	**2**	NS	NS	NS	NS	ND	NS	NS	NS	NS	**3**	NS	NS
Yes	Hydrocarbons C9-C18	NC	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND	NS	ND
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	ND	NS	NS	NS	NS	ND	NS	NS	NS	NS	ND	NS	ND

Bold	HQ greater than 1 (rounded to one significant
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505996-04-LD	L0505996-05	L0505996-05-LD	632002	970826A-09	L0505937-20	L050593 7-20-LD	632004	L0505996-02	632017	632018	L0505996-20	L050593 7-28	L050593 7-28-LD	L050593 7-29	L0505937-31
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		06/02/05	06/02/05	06/02/05	05/19/95	04/15/97	06/01/05	06/01/05	05/19/95	06/02/05	05/26/95	05/26/95	06/02/05	06/01/05	06/01/05	06/01/05	06/01/05
	Location ID		SD-01	SD-01	SD-01	SD-02	SD-02	SD-02	SD-02	SD-04	SD-04	SD-05	SD-05	SD-05	SD-201	SD-201	SD-201	SD-202
		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Aluminum	NC	NS	NS	NS	**10,800,000**	NS	NS	NS	**8,620,000**	NS	**7,300,000**	NS	NS	NS	NS	NS	NS
Yes	Antimony	2,000	NS	20000U	NS	23200U	**720**	8900U	NS	10000U	2400U	**12,000**	8200U	3000U	20000U	NS	10000U	20000U
Yes	Arsenic	9,800	NS	**10,000**	NS	**12,800**	**470**	**5,900**	NS	**4,000**	**1,300**	**700**	2000U	610U	4000U	NS	**5,000**	**6,800**
Yes	Cadmium	990	NS	**120,000**	NS	**25,400**	60UJ	**47,000**	NS	**24,800**	**1,100**	**23,400**	**25,300**	**9,700**	**32,000**	NS	**2,200**	**46,000**
Yes	Chromium, Total	43,400	NS	**22,000**	NS	**38,900**	**12,300**	**34,000**	NS	**25,700**	**3,000**	**14,000**	**11,500**	**7,500**	**17,000**	NS	**21,000**	**28,000**
Yes	Copper	31,600	NS	**50,000**	NS	**71,000**	**5,000**	**45,000**	NS	**23,400**	**3,200**	**15,100**	**7,800**	**8,700**	**21,000**	NS	**20,000**	**46,000**
Yes	Mercury	180	NS	790U	NS	580U	90U	370U	NS	240U	99U	180U	180U	110U	720U	NS	360U	790U
Yes	Nickel	22,700	NS	**33,000**	NS	**34,400**	**8,400**	**25,000**	NS	**12,900**	**2,300**	**8,200**	**12,200**	**3,200**	**20,000**	NS	**13,000**	**31,000**
Yes	Selenium	2,000	NS	20000U	NS	11600U	**320**	8900U	NS	5000U	2400U	1600U	1600U	3000U	20000U	NS	10000U	20000U
Yes	Silver	1,000	NS	**7,300**	NS	**6,300**	60UJ	**8,200**	NS	**2,400**	490U	**4,000**	**1,200**	**18,000**	4000U	NS	**5,000**	**8,300**
Yes	Zinc	121,000	NS	**210,000**	NS	163000U	**32,600**	**160,000**	NS	82800U	**18,000**	54600U	59900U	**25,000**	**71,000**	NS	**26,000**	**130,000**
Yes	Acetone	99	**360**	**430**	**330**	NS	NS	**480**	**290**	NS	**12**	NS	NS	**39**	**460**	9700U	4400U	9700U
Yes	Carbon Disulfide	239	100U	94U	93U	NS	NS	**57**	40U	NS	6.7U	NS	NS	11U	**97**	9700U	4400U	9700U
Yes	Chloroethane	310	**120**	**120**	**180**	210U	NS	8U	8U	24U	1.3U	18U	18U	2.3U	19U	1900U	870U	1900U
Yes	1,1-Dichloroethane	310	**22**	14U	14U	**1,700**	NS	6U	6U	12U	1U	9U	9U	1.7U	**47**	1400U	650U	1400U
Yes	1,1-Dichloroethene	194	10U	9.4U	9.3U	100U	NS	4U	4U	12U	0.67U	9U	9U	1.1U	**26**	970U	440U	970U
Yes	Cis-1,2-Dichloroethene	6,540	**29**	**22**	**18**	**1,900**	NS	**24**	**21**	12U	0.67U	9U	9U	1.1U	**460**	970U	440U	**1,400**
Yes	Methyl Ethyl Ketone	424	100U	**110**	93U	NS	NS	**90**	**68**	NS	6.7U	NS	NS	11U	94U	9700U	4400U	9700U
Yes	Tetrachloroethene	42,000	**16**	**12**	**9.6**	100U	NS	**16**	**18**	12U	0.67U	9U	9U	1.1U	**3,400**	**3,400**	**14,000**	**19,000**
Yes	1,1,1-Trichloroethane	33,000	10U	9.4U	9.3U	**3,100**	NS	4U	4U	12U	0.67U	9U	9U	1.1U	**200**	970U	**2,000**	**2,900**
Yes	Trichloroethene	33,000	10U	**13**	9.3U	**80**	NS	**15**	**11**	12U	0.67U	9U	9U	1.1U	**410**	970U	**1,300**	**3,500**
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons, Aliphatic C9-C	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	NS	152U	NS	NS	41.2U	NS	NS	51.3U	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	NS	152U	NS	NS	41.2U	NS	NS	51.3U	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one significant figure).
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505996-04-LD	L0505996-05	L0505996-05-LD	632002	970826A-09	L0505937-20	L0505937-20-LD	632004	L0505996-02	632017	632018	L0505996-20	L0505937-28	L0505937-28-LD	L0505937-29	L0505937-31
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		06/02/05	06/02/05	06/02/05	05/19/95	04/15/97	06/01/05	06/01/05	05/19/95	06/02/05	05/26/95	05/26/95	06/02/05	06/01/05	06/01/05	06/01/05	06/01/05
	Location ID		SD-01	SD-01	SD-01	SD-02	SD-02	SD-02	SD-02	SD-04	SD-04	SD-05	SD-05	SD-05	SD-201	SD-201	SD-201	SD-202
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	NC	NS	NS	NS	NC	NS	NS	NS	NC	NS	NC	NS	NS	NS	NS	NS	NS
Yes	Antimony	2,000	NS	ND	NS	ND	0.4	ND	NS	ND	ND	**6**	ND	ND	ND	NS	ND	ND
Yes	Arsenic	9,800	NS	1	NS	1	0.05	0.6	NS	0.4	0.1	0.07	ND	ND	ND	NS	0.5	0.7
Yes	Cadmium	990	NS	**100**	NS	**30**	ND	**50**	NS	**30**	1	**20**	**30**	**10**	**30**	NS	**2**	**50**
Yes	Chromium, Total	43,400	NS	0.5	NS	0.9	0.3	0.8	NS	0.6	0.07	0.3	0.3	0.2	0.4	NS	0.5	0.6
Yes	Copper	31,600	NS	**2**	NS	**2**	0.2	1	NS	0.7	0.1	0.5	0.2	0.3	0.7	NS	0.6	1
Yes	Mercury	180	NS	ND	NS	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND	NS	ND	ND
Yes	Nickel	22,700	NS	1	NS	**2**	0.4	1	NS	0.6	0.1	0.4	0.5	0.1	0.9	NS	0.6	1
Yes	Selenium	2,000	NS	ND	NS	ND	0.2	ND	NS	ND	ND	ND	ND	ND	ND	NS	ND	ND
Yes	Silver	1,000	NS	**7**	NS	**6**	ND	**8**	NS	**2**	ND	**4**	1	**20**	ND	NS	**5**	**8**
Yes	Zinc	121,000	NS	**2**	NS	ND	0.3	1	NS	ND	0.1	ND	ND	0.2	0.6	NS	0.2	1
Yes	Acetone	99	**4**	**4**	**3**	NS	NS	**5**	**3**	NS	0.1	NS	NS	0.4	**5**	ND	ND	ND
Yes	Carbon Disulfide	239	ND	ND	ND	NS	NS	0.2	ND	NS	ND	NS	NS	ND	0.4	ND	ND	ND
Yes	Chloroethane	310	0.4	0.4	0.6	ND	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Yes	1,1-Dichloroethane	310	0.07	ND	ND	**5**	NS	ND	ND	ND	ND	ND	ND	ND	0.2	ND	ND	ND
Yes	1,1-Dichloroethene	194	ND	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND	ND	0.1	ND	ND	ND
Yes	Cis-1,2-Dichloroethene	6,540	0.004	0.003	0.003	0.3	NS	0.004	0.003	ND	ND	ND	ND	ND	0.07	ND	ND	0.2
Yes	Methyl Ethyl Ketone	424	ND	0.3	ND	NS	NS	0.2	0.2	NS	ND	NS	NS	ND	ND	ND	ND	ND
Yes	Tetrachloroethene	42,000	0.0004	0.0003	0.0002	ND	NS	0.0004	0.0004	ND	ND	ND	ND	ND	0.08	0.08	0.3	0.5
Yes	1,1,1-Trichloroethane	33,000	ND	ND	ND	0.09	NS	ND	ND	ND	ND	ND	ND	ND	0.006	ND	0.06	0.09
Yes	Trichloroethene	33,000	ND	0.0004	ND	0.002	NS	0.0005	0.0003	ND	ND	ND	ND	ND	0.01	ND	0.04	0.1
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons C9-C18	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one significant figure).
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

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Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505937-32	L100832 5-23	L050593 7-25	L050593 7-25-LD	L050593 7-26	L0505937-22	L050593 7-22-LD	L0505937-23	L050593 7-23-LD	L050593 7-16	L050593 7-16-LD	L050593 7-17	L050593 7-17-LD	L0505937-09	L050593 7-09-LD	L050593 7-11	L050593 7-11-LD	L050593 7-08
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		06/01/05	06/04/10	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05
	Location ID		SD-202	SD-202	SD-203	SD-203	SD-203	SD-204	SD-204	SD-204	SD-204	SD-205	SD-205	SD-205	SD-205	SD-206	SD-206	SD-206	SD-206	SD-207
		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Aluminum	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Antimony	2,000	7900U	**342**	7700U	NS	6400U	14000U	NS	12000U	NS	NS	NS	NS	NS	13000U	NS	11000U	NS	16000U
Yes	Arsenic	9,800	**2,000**	**5,460**	**3,000**	NS	**2,400**	**6,300**	NS	**11,000**	NS	NS	NS	NS	NS	**4,300**	NS	**9,500**	NS	**6,500**
Yes	Cadmium	990	**2,000**	**18,350**	**36,000**	NS	**36,000**	**61,000**	NS	**15,000**	NS	NS	NS	NS	NS	**45,000**	NS	**12,000**	NS	**35,000**
Yes	Chromium, Total	43,400	**11,000**	**22,400**	**15,000**	NS	**14,000**	**25,000**	NS	**27,000**	NS	NS	NS	NS	NS	**34,000**	NS	**24,000**	NS	**21,000**
Yes	Copper	31,600	**11,000**	NS	**22,000**	NS	**19,000**	**37,000**	NS	**38,000**	NS	NS	NS	NS	NS	**40,000**	NS	**19,000**	NS	**24,000**
Yes	Mercury	180	320U	**86**	310U	NS	240U	580U	NS	480U	NS	NS	NS	NS	NS	570U	NS	530U	NS	650U
Yes	Nickel	22,700	**9,800**	**17,100**	**19,000**	NS	**30,000**	**23,000**	NS	**20,000**	NS	NS	NS	NS	NS	**27,000**	NS	**26,000**	NS	**27,000**
Yes	Selenium	2,000	7900U	**1,330**	7700U	NS	6400U	14000U	NS	12000U	NS	NS	NS	NS	NS	13000U	NS	11000U	NS	16000U
Yes	Silver	1,000	1600U	**6,050**	**3,800**	NS	**4,200**	**8,000**	NS	2300U	NS	NS	NS	NS	NS	**9,500**	NS	2300U	NS	**5,100**
Yes	Zinc	121,000	**24,000**	**87,300**	**64,000**	NS	**48,000**	**150,000**	NS	**140,000**	NS	NS	NS	NS	NS	**150,000**	NS	**82,000**	NS	**91,000**
Yes	Acetone	99	3600U	**280**	**140**	3400U	2600U	**420**	63U	**310**	55U	**430**	**380**	**500**	**410**	**490**	60U	**200**	58U	**440**
Yes	Carbon Disulfide	239	3600U	260UJ	35U	3400U	2600U	60U	63U	**110**	55U	89U	87U	87U	89U	66U	60U	60U	58U	82U
Yes	Chloroethane	310	710U	10U	7U	680U	520U	12U	12U	**94**	**99**	18U	17U	17U	18U	13U	12U	12U	12U	16U
Yes	1,1-Dichloroethane	310	530U	**42**	**140**	510U	390U	**150**	**100**	**80**	**74**	13U	**16**	13U	13U	9.9U	9.1U	**13**	**13**	12U
Yes	1,1-Dichloroethene	194	360U	**36**	**3.8**	340U	260U	**12**	**9.9**	5.9U	5.5U	8.9U	8.7U	8.7U	8.9U	6.6U	6U	6U	5.8U	8.2U
Yes	Cis-1,2-Dichloroethene	6,540	**610**	**200**	**36**	340U	260U	**400**	**270**	**190**	**140**	**29**	**26**	**8.8**	8.9U	**21**	**11**	**14**	**9.8**	**42**
Yes	Methyl Ethyl Ketone	424	3600U	**86**	**39**	3400U	2600U	**63**	63U	**95**	**78**	**160**	**130**	**120**	**100**	**110**	**90**	**74**	**98**	82U
Yes	Tetrachloroethene	42,000	**19,000**	**1,800**	**160**	340U	**1,400**	**490**	**490**	**38**	**24**	**120**	**110**	**16**	**12**	**46**	36R	**8.3**	**15**	**290**
Yes	1,1,1-Trichloroethane	33,000	**2,400**	**440**	**1,200**	**1,200**	**1,800**	**48**	**69**	**7.2**	**5.5**	**45**	**54**	8.7U	8.9U	**25**	**37**	6U	**19**	**41**
Yes	Trichloroethene	33,000	**2,700**	**920**	**86**	340U	**290**	**430**	**300**	**46**	**41**	**57**	**57**	**13**	**9.8**	**26**	**12**	**11**	**10**	**73**
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons, Aliphatic C9-C	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505937-32	L1008325-23	L0505937-25	L0505937-25-LD	L0505937-26	L0505937-22	L0505937-22-LD	L0505937-23	L0505937-23-LD	L0505937-16	L0505937-16-LD	L0505937-17	L0505937-17-LD	L0505937-09	L0505937-09-LD	L0505937-11	L0505937-11-LD	L0505937-08
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		06/01/05	06/04/10	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05
	Location ID		SD-202	SD-202	SD-203	SD-203	SD-203	SD-204	SD-204	SD-204	SD-204	SD-205	SD-205	SD-205	SD-205	SD-206	SD-206	SD-206	SD-206	SD-207
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Antimony	2,000	ND	0.2	ND	NS	ND	ND	NS	ND	NS	NS	NS	NS	NS	ND	NS	ND	NS	ND
Yes	Arsenic	9,800	0.2	0.6	0.3	NS	0.2	0.6	NS	1	NS	NS	NS	NS	NS	0.4	NS	1	NS	0.7
Yes	Cadmium	990	**2**	**20**	**40**	NS	**40**	**60**	NS	**20**	NS	NS	NS	NS	NS	**50**	NS	**10**	NS	**40**
Yes	Chromium, Total	43,400	0.3	0.5	0.3	NS	0.3	0.6	NS	0.6	NS	NS	NS	NS	NS	0.8	NS	0.6	NS	0.5
Yes	Copper	31,600	0.3	NS	0.7	NS	0.6	1	NS	1	NS	NS	NS	NS	NS	1	NS	0.6	NS	0.8
Yes	Mercury	180	ND	0.5	ND	NS	ND	ND	NS	ND	NS	NS	NS	NS	NS	ND	NS	ND	NS	ND
Yes	Nickel	22,700	0.4	0.8	0.8	NS	1	1	NS	0.9	NS	NS	NS	NS	NS	1	NS	1	NS	1
Yes	Selenium	2,000	ND	0.7	ND	NS	ND	ND	NS	ND	NS	NS	NS	NS	NS	ND	NS	ND	NS	ND
Yes	Silver	1,000	ND	**6**	**4**	NS	**4**	**8**	NS	ND	NS	NS	NS	NS	NS	**10**	NS	ND	NS	**5**
Yes	Zinc	121,000	0.2	0.7	0.5	NS	0.4	1	NS	1	NS	NS	NS	NS	NS	1	NS	0.7	NS	0.8
Yes	Acetone	99	ND	**3**	1	ND	ND	**4**	ND	**3**	ND	**4**	**4**	**5**	**4**	**5**	ND	**2**	ND	**4**
Yes	Carbon Disulfide	239	ND	ND	ND	ND	ND	ND	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Yes	Chloroethane	310	ND	ND	ND	ND	ND	ND	ND	0.3	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
Yes	1,1-Dichloroethane	310	ND	0.1	0.5	ND	ND	0.5	0.3	0.3	0.2	ND	0.05	ND	ND	ND	ND	0.04	0.04	ND
Yes	1,1-Dichloroethene	194	ND	0.2	0.02	ND	ND	0.06	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Yes	Cis-1,2-Dichloroethene	6,540	0.09	0.03	0.006	ND	ND	0.06	0.04	0.03	0.02	0.004	0.004	0.001	ND	0.003	0.002	0.002	0.001	0.006
Yes	Methyl Ethyl Ketone	424	ND	0.2	0.09	ND	ND	0.1	ND	0.2	0.2	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.2	ND
Yes	Tetrachloroethene	42,000	0.5	0.04	0.004	ND	0.03	0.01	0.01	0.0009	0.0006	0.003	0.003	0.0004	0.0003	0.001	ND	0.0002	0.0004	0.007
Yes	1,1,1-Trichloroethane	33,000	0.07	0.01	0.04	0.04	0.05	0.001	0.002	0.0002	0.0002	0.001	0.002	ND	ND	0.0008	0.001	ND	0.0006	0.001
Yes	Trichloroethene	33,000	0.08	0.03	0.003	ND	0.009	0.01	0.009	0.001	0.001	0.002	0.002	0.0004	0.0003	0.0008	0.0004	0.0003	0.0003	0.002
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons C9-C18	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
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Lake Bkg	Sample from the Turnpike Lake background reference.
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Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505937-08-LD	L050593 7-12	L050593 7-12-LD	L050593 7-07	L050593 7-07-LD	L050593 7-13	L050593 7-13-LD	L0505937-06	L050593 7-06-LD	L0505937-14	L050593 7-14-LD	L0505937-05	L050593 7-05-LD	L0505937-15	L050593 7-15-LD	L050593 7-01	L050593 7-01-LD
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	05/31/05	05/31/05
	Location ID		SD-207	SD-207	SD-207	SD-208	SD-208	SD-208	SD-208	SD-209	SD-209	SD-209	SD-209	SD-210	SD-210	SD-210	SD-210	SD-211	SD-211
		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Aluminum	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Antimony	2,000	NS	13000U	NS	18000U	NS	13000U	NS	9400U	NS	11000U	NS	7400U	NS	9100U	NS	16000U	NS
Yes	Arsenic	9,800	NS	**4,400**	NS	**5,200**	NS	**7,200**	NS	**7,200**	NS	**7,200**	NS	**7,200**	NS	**8,200**	NS	**6,200**	NS
Yes	Cadmium	990	NS	**5,300**	NS	**22,000**	NS	**7,400**	NS	**46,000**	NS	**99,000**	NS	**58,000**	NS	**18,000**	NS	**29,000**	NS
Yes	Chromium, Total	43,400	NS	**17,000**	NS	**18,000**	NS	**63,000**	NS	**25,000**	NS	**31,000**	NS	**34,000**	NS	**33,000**	NS	**20,000**	NS
Yes	Copper	31,600	NS	**12,000**	NS	**20,000**	NS	**31,000**	NS	**33,000**	NS	**55,000**	NS	**60,000**	NS	**64,000**	NS	**26,000**	NS
Yes	Mercury	180	NS	590U	NS	650U	NS	590U	NS	380U	NS	510U	NS	300U	NS	390U	NS	630U	NS
Yes	Nickel	22,700	NS	**13,000**	NS	**25,000**	NS	**32,000**	NS	**23,000**	NS	**23,000**	NS	**19,000**	NS	**25,000**	NS	**23,000**	NS
Yes	Selenium	2,000	NS	13000U	NS	18000U	NS	13000U	NS	9400U	NS	11000U	NS	7400U	NS	9100U	NS	16000U	NS
Yes	Silver	1,000	NS	2600U	NS	3600U	NS	2700U	NS	**9,100**	NS	**17,000**	NS	**16,000**	NS	**5,700**	NS	**3,600**	NS
Yes	Zinc	121,000	NS	**42,000**	NS	**71,000**	NS	**44,000**	NS	**77,000**	NS	**140,000**	NS	**130,000**	NS	**160,000**	NS	**88,000**	NS
Yes	Acetone	99	**380**	**230**	**640**	**370**	**320**	**450**	70U	**570**	**400**	**310**	**230**	**230**	**210**	**610**	**420**	**460**	69UJ
Yes	Carbon Disulfide	239	77U	66U	66U	**140**	**200**	66U	70U	45U	**96**	**68**	59U	**50**	**59**	**120**	**91**	**110**	69UJ
Yes	Chloroethane	310	15U	13U	13U	17U	17U	13U	14U	9U	9.2U	12U	12U	7.9U	7.7U	10U	9.7U	17U	14U
Yes	1,1-Dichloroethane	310	12U	**20**	**19**	13U	13U	**14**	**29**	6.7U	6.9U	8.8U	8.8U	**15**	**12**	**24**	**35**	**78**	**30**
Yes	1,1-Dichloroethene	194	7.7U	6.6U	6.6U	8.4U	8.6U	6.6U	7U	4.5U	4.6U	5.9U	5.9U	3.9U	3.8U	5.1U	4.8U	8.7U	6.9U
Yes	Cis-1,2-Dichloroethene	6,540	**39**	**38**	**25**	**17**	**17**	**16**	**23**	4.5U	4.6U	**13**	**16**	**19**	**16**	**79**	**84**	**64**	**37**
Yes	Methyl Ethyl Ketone	424	77U	**83**	**110**	84U	86U	**160**	**270**	**90**	**64**	**68**	59U	**64**	**66**	**210**	**140**	87U	69U
Yes	Tetrachloroethene	42,000	**200**	6.6U	**11**	**36**	**51**	**8.1**	**14**	**23**	**17**	**27**	**24**	3.9U	3.8U	5.1U	4.8U	**100**	**210**
Yes	1,1,1-Trichloroethane	33,000	**34**	6.6U	**19**	**10**	8.6U	**21**	**46**	4.5U	4.6U	5.9U	5.9U	3.9U	3.8U	5.1U	4.8U	**36**	**40**
Yes	Trichloroethene	33,000	**58**	**18**	**11**	**23**	**20**	**22**	**27**	**8.1**	**5.1**	**15**	**14**	**8.8**	**9**	**12**	**16**	**42**	**69**
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons, Aliphatic C9-C	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505937-08-LD	L050593 7-12	L050593 7-12-LD	L050593 7-07	L050593 7-07-LD	L050593 7-13	L050593 7-13-LD	L0505937-06	L050593 7-06-LD	L0505937-14	L050593 7-14-LD	L0505937-05	L050593 7-05-LD	L0505937-15	L050593 7-15-LD	L050593 7-01	L050593 7-01-LD
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	06/01/05	05/31/05	05/31/05
	Location ID		SD-207	SD-207	SD-207	SD-208	SD-208	SD-208	SD-208	SD-209	SD-209	SD-209	SD-209	SD-210	SD-210	SD-210	SD-210	SD-211	SD-211
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Antimony	2,000	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS
Yes	Arsenic	9,800	NS	0.4	NS	0.5	NS	0.7	NS	0.7	NS	0.7	NS	0.7	NS	0.8	NS	0.6	NS
Yes	Cadmium	990	NS	**5**	NS	**20**	NS	**7**	NS	**50**	NS	**100**	NS	**60**	NS	**20**	NS	**30**	NS
Yes	Chromium, Total	43,400	NS	0.4	NS	0.4	NS	1	NS	0.6	NS	0.7	NS	0.8	NS	0.8	NS	0.5	NS
Yes	Copper	31,600	NS	0.4	NS	0.6	NS	1	NS	1	NS	**2**	NS	**2**	NS	**2**	NS	0.8	NS
Yes	Mercury	180	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS
Yes	Nickel	22,700	NS	0.6	NS	1	NS	1	NS	1	NS	1	NS	0.8	NS	1	NS	1	NS
Yes	Selenium	2,000	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS
Yes	Silver	1,000	NS	ND	NS	ND	NS	ND	NS	**9**	NS	**20**	NS	**20**	NS	**6**	NS	**4**	NS
Yes	Zinc	121,000	NS	0.3	NS	0.6	NS	0.4	NS	0.6	NS	1	NS	1	NS	1	NS	0.7	NS
Yes	Acetone	99	**4**	**2**	**6**	**4**	**3**	**5**	ND	**6**	**4**	**3**	**2**	**2**	**2**	**6**	**4**	**5**	ND
Yes	Carbon Disulfide	239	ND	ND	ND	0.6	0.8	ND	ND	ND	0.4	0.3	ND	0.2	0.2	0.5	0.4	0.5	ND
Yes	Chloroethane	310	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Yes	1,1-Dichloroethane	310	ND	0.06	0.06	ND	ND	0.05	0.09	ND	ND	ND	ND	0.05	0.04	0.08	0.1	0.3	0.1
Yes	1,1-Dichloroethene	194	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Yes	Cis-1,2-Dichloroethene	6,540	0.006	0.006	0.004	0.003	0.003	0.002	0.004	ND	ND	0.002	0.002	0.003	0.002	0.01	0.01	0.01	0.006
Yes	Methyl Ethyl Ketone	424	ND	0.2	0.3	ND	ND	0.4	0.6	0.2	0.2	0.2	ND	0.2	0.2	0.5	0.3	ND	ND
Yes	Tetrachloroethene	42,000	0.005	ND	0.0003	0.0009	0.001	0.0002	0.0003	0.0005	0.0004	0.0006	0.0006	ND	ND	ND	ND	0.002	0.005
Yes	1,1,1-Trichloroethane	33,000	0.001	ND	0.0006	0.0003	ND	0.0006	0.001	ND	ND	ND	ND	ND	ND	ND	ND	0.001	0.001
Yes	Trichloroethene	33,000	0.002	0.0005	0.0003	0.0007	0.0006	0.0007	0.0008	0.0002	0.0002	0.0005	0.0004	0.0003	0.0003	0.0004	0.0005	0.001	0.002
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons C9-C18	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505937-02	L0505937-02-LD	L0505867-01	L0505867-01-LD	L0505867-02	L0505867-02-LD	L0505867-03	L0505867-03-LD	L0505867-04	L0505867-04-LD	L0505867-05	L0505867-05-LD	L0505867-06	L0505867-06-LD	L1008325-24	632005	970826A-11
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	06/04/10	05/19/95	04/15/97
	Location ID		SD-211	SD-211	SD-212	SD-212	SD-212	SD-212	SD-213	SD-213	SD-213	SD-213	SD-214	SD-214	SD-214	SD-214	SD-214	SD-36	SD-39
		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Aluminum	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**9,580,000**	NS
Yes	Antimony	2,000	15000U	NS	13000U	NS	7900U	NS	12000U	NS	12000U	NS	13000U	NS	20000U	NS	**401**	10800U	1100U
Yes	Arsenic	9,800	**9,200**	NS	**8,800**	NS	**4,800**	NS	**5,300**	NS	**4,600**	NS	**8,100**	NS	**17,000**	NS	**14,600**	**4,100**	**3,600**
Yes	Cadmium	990	**87,000**	NS	**7,500**	NS	**3,300**	NS	**29,000**	NS	2300U	NS	**6,400**	NS	4000U	NS	**3,483**	**2,100**	**10,100**
Yes	Chromium, Total	43,400	**21,000**	NS	**19,000**	NS	**12,000**	NS	**23,000**	NS	**20,000**	NS	**18,000**	NS	**49,000**	NS	**20,700**	**72,000**	**7,700**
Yes	Copper	31,600	**27,000**	NS	**33,000**	NS	**9,200**	NS	**23,000**	NS	**16,000**	NS	**25,000**	NS	**28,000**	NS	NS	**176,000**	**10,500**
Yes	Mercury	180	570U	NS	520U	NS	320U	NS	490U	NS	460U	NS	480U	NS	780U	NS	**179**	**5,000**	**100**
Yes	Nickel	22,700	**26,000**	NS	**21,000**	NS	**9,500**	NS	**16,000**	NS	**9,300**	NS	**16,000**	NS	**18,000**	NS	**19,600**	**34,600**	**9,400**
Yes	Selenium	2,000	15000U	NS	13000U	NS	7900U	NS	12000U	NS	12000U	NS	13000U	NS	20000U	NS	**4,050**	4100U	**3,900**
Yes	Silver	1,000	**6,300**	NS	2600U	NS	1600U	NS	**2,800**	NS	2300U	NS	2600U	NS	4000U	NS	**484**	**25,400**	340B
Yes	Zinc	121,000	**120,000**	NS	**120,000**	NS	**37,000**	NS	**64,000**	NS	**14,000**	NS	**81,000**	NS	**46,000**	NS	**143,000**	155000U	**38,500**
Yes	Acetone	99	**280**	**220**	**210**	**190**	**98**	**73**	**320**	**280**	**380**	**230**	**180**	**140**	**480**	**810**	NS	NS	NS
Yes	Carbon Disulfide	239	**83**	**150**	62U	65U	29U	37U	**120**	**100**	54U	62U	58U	**72**	**140**	**200**	NS	NS	NS
Yes	Chloroethane	310	**33**	**80**	12U	13U	5.8U	7.4U	13U	12U	11U	12U	**47**	**320**	24U	23U	NS	NS	10U
Yes	1,1-Dichloroethane	310	**150**	**150**	9.2U	9.8U	4.3U	5.6U	10U	8.7U	8.2U	**15**	**200**	**100**	**740**	**680**	NS	NS	**2**
Yes	1,1-Dichloroethene	194	8U	7.2U	6.2U	6.5U	2.9U	3.7U	6.6U	5.8U	5.4U	6.2U	**6.2**	5U	**130**	**100**	NS	NS	5U
Yes	Cis-1,2-Dichloroethene	6,540	**120**	**100**	6.2U	6.5U	**5.1**	**4.4**	**24**	**12**	**18**	**18**	**170**	**77**	**1,000**	**900**	NS	NS	NS
Yes	Methyl Ethyl Ketone	424	80U	72U	**64**	65U	**30**	37U	**96**	**98**	**190**	**86**	**69**	**53**	**180**	**270**	NS	NS	NS
Yes	Tetrachloroethene	42,000	**32**	**32**	**15**	**30**	**12**	3.7U	**56**	**11**	5.4U	6.2U	**12**	**43**	12U	12U	NS	NS	5U
Yes	1,1,1-Trichloroethane	33,000	**120**	**74**	6.2U	6.5U	2.9U	3.7U	**14**	5.8U	5.4U	6.2U	5.8U	**8**	**85**	**18**	NS	NS	5U
Yes	Trichloroethene	33,000	**26**	**25**	**8.3**	**10**	**4.3**	3.7U	**38**	**9.6**	5.4U	6.2U	**12**	**22**	**92**	**70**	NS	NS	**1**
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons, Aliphatic C9-C	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Bold	HQ
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505937-02	L0505937-02-LD	L0505867-01	L0505867-01-LD	L0505867-02	L0505867-02-LD	L0505867-03	L0505867-03-LD	L0505867-04	L0505867-04-LD	L0505867-05	L0505867-05-LD	L0505867-06	L0505867-06-LD	L1008325-24	632005	970826A-11
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	05/31/05	06/04/10	05/19/95	04/15/97
	Location ID		SD-211	SD-211	SD-212	SD-212	SD-212	SD-212	SD-213	SD-213	SD-213	SD-213	SD-214	SD-214	SD-214	SD-214	SD-214	SD-36	SD-39
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NC	NS
Yes	Antimony	2,000	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	0.2	ND	ND
Yes	Arsenic	9,800	0.9	NS	0.9	NS	0.5	NS	0.5	NS	0.5	NS	0.8	NS	**2**	NS	1	0.4	0.4
Yes	Cadmium	990	**90**	NS	**8**	NS	**3**	NS	**30**	NS	ND	NS	**6**	NS	ND	NS	**4**	**2**	**10**
Yes	Chromium, Total	43,400	0.5	NS	0.4	NS	0.3	NS	0.5	NS	0.5	NS	0.4	NS	1	NS	0.5	**2**	0.2
Yes	Copper	31,600	0.9	NS	1	NS	0.3	NS	0.7	NS	0.5	NS	0.8	NS	0.9	NS	NS	**6**	0.3
Yes	Mercury	180	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	1	**30**	0.6
Yes	Nickel	22,700	1	NS	0.9	NS	0.4	NS	0.7	NS	0.4	NS	0.7	NS	0.8	NS	0.9	**2**	0.4
Yes	Selenium	2,000	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	ND	NS	**2**	ND	**2**
Yes	Silver	1,000	**6**	NS	ND	NS	ND	NS	**3**	NS	ND	NS	ND	NS	ND	NS	0.5	**30**	ND
Yes	Zinc	121,000	1	NS	1	NS	0.3	NS	0.5	NS	0.1	NS	0.7	NS	0.4	NS	1	ND	0.3
Yes	Acetone	99	**3**	**2**	**2**	**2**	1	0.7	**3**	**3**	**4**	**2**	**2**	1	**5**	**8**	NS	NS	NS
Yes	Carbon Disulfide	239	0.3	0.6	ND	ND	ND	ND	0.5	0.4	ND	ND	ND	0.3	0.6	0.8	NS	NS	NS
Yes	Chloroethane	310	0.1	0.3	ND	ND	ND	ND	ND	ND	ND	ND	0.2	1	ND	ND	NS	NS	ND
Yes	1,1-Dichloroethane	310	0.5	0.5	ND	ND	ND	ND	ND	ND	ND	0.05	0.6	0.3	**2**	**2**	NS	NS	0.006
Yes	1,1-Dichloroethene	194	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.03	ND	0.7	0.5	NS	NS	ND
Yes	Cis-1,2-Dichloroethene	6,540	0.02	0.02	ND	ND	0.0008	0.0007	0.004	0.002	0.003	0.003	0.03	0.01	0.2	0.1	NS	NS	NS
Yes	Methyl Ethyl Ketone	424	ND	ND	0.2	ND	0.07	ND	0.2	0.2	0.4	0.2	0.2	0.1	0.4	0.6	NS	NS	NS
Yes	Tetrachloroethene	42,000	0.0008	0.0008	0.0004	0.0007	0.0003	ND	0.001	0.0003	ND	ND	0.0003	0.001	ND	ND	NS	NS	ND
Yes	1,1,1-Trichloroethane	33,000	0.004	0.002	ND	ND	ND	ND	0.0004	ND	ND	ND	ND	0.0002	0.003	0.0005	NS	NS	ND
Yes	Trichloroethene	33,000	0.0008	0.0008	0.0003	0.0003	0.0001	ND	0.001	0.0003	ND	ND	0.0004	0.0007	0.003	0.002	NS	NS	0.00003
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons C9-C18	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Bold	HQ
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	970826A-12RE	970826A-10	970826A-10RE	L0505996-08	L0506632-02	L0505996-06	L1008325-13	L1008325-28	L0505867-09	L0505867-09-LD	L1008325-07	L0505996-15	L0505996-15-LD	L1008325-05	L1008325-09	L1008325-11	L0505937-04
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		04/15/97	04/15/97	04/15/97	06/02/05	06/02/05	06/02/05	06/03/10	06/03/10	05/31/05	05/31/05	06/03/10	06/02/05	06/02/05	06/03/10	06/03/10	06/03/10	05/31/05
	Location ID		SD-39	SD-40	SD-40	SD-45	SD-45	SD-46	SD-46	SD-46	SD-47	SD-47	SD-47	SD-48	SD-48	SD-48	SD-61	SD-60	SD-49
		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Aluminum	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Antimony	2,000	2000U	1000U	NS	NS	4900U	4600U	**214**	**255**	21000U	NS	**798**	10000U	NS	**782**	**663**	**704**	12000U
Yes	Arsenic	9,800	**2,600**	**3,000**	NS	NS	**1,800**	**2,200**	**3,700**	**4,580**	**11,000**	NS	**7,160**	**3,200**	NS	**6,370**	**5,390**	**6,890**	**7,200**
Yes	Cadmium	990	**2,300**	**2,400**	NS	NS	**2,300**	**2,600**	**15,520**	**15,640**	**23,000**	NS	**58,070**	2100U	NS	**44,320**	**28,950**	**47,600**	**51,000**
Yes	Chromium, Total	43,400	**5,700**	**12,800**	NS	NS	**12,000**	**4,200**	**18,200**	**13,500**	**23,000**	NS	**20,700**	**25,000**	NS	**21,500**	**17,200**	**19,900**	**22,000**
Yes	Copper	31,600	**7,200**	**11,800**	NS	NS	**18,000**	**6,000**	NS	NS	**42,000**	NS	NS	**9,700**	NS	NS	NS	NS	**29,000**
Yes	Mercury	180	100U	90U	NS	NS	200U	180U	**99**	**105**	870U	NS	**199**	400U	NS	**190**	**154**	**192**	460U
Yes	Nickel	22,700	**6,900**	**10,100**	NS	NS	**7,200**	**4,700**	**31,000**	**21,300**	**21,000**	NS	**31,600**	**9,700**	NS	**29,400**	**24,600**	**31,800**	**21,000**
Yes	Selenium	2,000	**3,900**	**4,000**	NS	NS	4900U	4600U	**1,560**	**1,650**	21000U	NS	**4,360**	10000U	NS	**4,030**	**3,360**	**4,060**	12000U
Yes	Silver	1,000	110UJ	90UJ	NS	NS	990U	**1,100**	**5,460**	**4,500**	4200U	NS	**4,240**	2100U	NS	**4,620**	**2,090**	**3,050**	**6,700**
Yes	Zinc	121,000	**22,000**	**22,200**	NS	NS	**28,000**	**36,000**	**101,000**	**80,400**	**130,000**	NS	**132,000**	10000U	NS	**143,000**	**121,000**	**131,000**	**100,000**
Yes	Acetone	99	NS	NS	NS	1900U	NS	1600U	**620**	NS	**260**	**420**	NS	**490**	**400**	NS	NS	NS	**330**
Yes	Carbon Disulfide	239	NS	NS	NS	1900U	NS	1600U	390UJ	NS	**110**	**170**	NS	44U	38U	NS	NS	NS	52U
Yes	Chloroethane	310	10UJ	10UJ	10UJ	370U	NS	310U	16U	NS	19U	20U	NS	8.8U	**16**	NS	NS	NS	10U
Yes	1,1-Dichloroethane	310	**14**	**5**	**4**	280U	NS	240U	**35**	NS	14U	15U	NS	**38**	**31**	NS	NS	NS	7.7U
Yes	1,1-Dichloroethene	194	5UJ	5UJ	5U	190U	NS	160U	7.8U	NS	9.4U	9.9U	NS	**6.1**	3.8U	NS	NS	NS	5.2U
Yes	Cis-1,2-Dichloroethene	6,540	NS	NS	NS	**430**	NS	**300**	**170**	NS	9.4U	9.9U	NS	**65**	**38**	NS	NS	NS	**21**
Yes	Methyl Ethyl Ketone	424	NS	NS	NS	1900U	NS	1600U	**150**	NS	94U	99U	NS	**230**	**130**	NS	NS	NS	**66**
Yes	Tetrachloroethene	42,000	5UR	5UJ	5U	**1,100**	NS	**4,300**	**100**	NS	9.4U	9.9U	NS	**37**	**6.2**	NS	NS	NS	**36**
Yes	1,1,1-Trichloroethane	33,000	5UR	5UJ	5U	190U	NS	**290**	**29**	NS	9.4U	9.9U	NS	**20**	**7**	NS	NS	NS	5.2U
Yes	Trichloroethene	33,000	**3**	5UJ	5U	190U	NS	**430**	**65**	NS	9.4U	9.9U	NS	**18**	**5.7**	NS	NS	NS	**20**
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons, Aliphatic C9-C	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	83.3U	77.5U	NS	NS	351U	351U	NS	877U	NS	NS	NS	NS	196UJ
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	83.3U	77.5U	NS	NS	351U	351U	NS	877U	NS	NS	NS	NS	196UJ

Bold	HQ greater
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	970826A-12RE	970826A-10	970826A-10RE	L0505996-08	L0506632-02	L0505996-06	L1008325-13	L1008325-28	L0505867-09	L0505867-09-LD	L1008325-07	L0505996-15	L0505996-15-LD	L1008325-05	L1008325-09	L1008325-11	L0505937-04
	Area		Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream	Stream
	Date		04/15/97	04/15/97	04/15/97	06/02/05	06/02/05	06/02/05	06/03/10	06/03/10	05/31/05	05/31/05	06/03/10	06/02/05	06/02/05	06/03/10	06/03/10	06/03/10	05/31/05
	Location ID		SD-39	SD-40	SD-40	SD-45	SD-45	SD-46	SD-46	SD-46	SD-47	SD-47	SD-47	SD-48	SD-48	SD-48	SD-61	SD-60	SD-49
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Antimony	2,000	ND	ND	NS	NS	ND	ND	0.1	0.1	ND	NS	0.4	ND	NS	0.4	0.3	0.4	ND
Yes	Arsenic	9,800	0.3	0.3	NS	NS	0.2	0.2	0.4	0.5	1	NS	0.7	0.3	NS	0.7	0.6	0.7	0.7
Yes	Cadmium	990	**2**	**2**	NS	NS	**2**	**3**	**20**	**20**	**20**	NS	**60**	ND	NS	**40**	**30**	**50**	**50**
Yes	Chromium, Total	43,400	0.1	0.3	NS	NS	0.3	0.1	0.4	0.3	0.5	NS	0.5	0.6	NS	0.5	0.4	0.5	0.5
Yes	Copper	31,600	0.2	0.4	NS	NS	0.6	0.2	NS	NS	1	NS	NS	0.3	NS	NS	NS	NS	0.9
Yes	Mercury	180	ND	ND	NS	NS	ND	ND	0.6	0.6	ND	NS	1	ND	NS	1	0.9	1	ND
Yes	Nickel	22,700	0.3	0.4	NS	NS	0.3	0.2	1	0.9	0.9	NS	1	0.4	NS	1	1	1	0.9
Yes	Selenium	2,000	**2**	**2**	NS	NS	ND	ND	0.8	0.8	ND	NS	**2**	ND	NS	**2**	**2**	**2**	ND
Yes	Silver	1,000	ND	ND	NS	NS	ND	1	**5**	**5**	ND	NS	**4**	ND	NS	**5**	**2**	**3**	**7**
Yes	Zinc	121,000	0.2	0.2	NS	NS	0.2	0.3	0.8	0.7	1	NS	1	ND	NS	1	1	1	0.8
Yes	Acetone	99	NS	NS	NS	ND	NS	ND	**6**	NS	**3**	**4**	NS	**5**	**4**	NS	NS	NS	**3**
Yes	Carbon Disulfide	239	NS	NS	NS	ND	NS	ND	ND	NS	0.5	0.7	NS	ND	ND	NS	NS	NS	ND
Yes	Chloroethane	310	ND	ND	ND	ND	NS	ND	ND	NS	ND	ND	NS	ND	0.05	NS	NS	NS	ND
Yes	1,1-Dichloroethane	310	0.05	0.02	0.01	ND	NS	ND	0.1	NS	ND	ND	NS	0.1	0.1	NS	NS	NS	ND
Yes	1,1-Dichloroethene	194	ND	ND	ND	ND	NS	ND	ND	NS	ND	ND	NS	0.03	ND	NS	NS	NS	ND
Yes	Cis-1,2-Dichloroethene	6,540	NS	NS	NS	0.07	NS	0.05	0.03	NS	ND	ND	NS	0.01	0.006	NS	NS	NS	0.003
Yes	Methyl Ethyl Ketone	424	NS	NS	NS	ND	NS	ND	0.4	NS	ND	ND	NS	0.5	0.3	NS	NS	NS	0.2
Yes	Tetrachloroethene	42,000	ND	ND	ND	0.03	NS	0.1	0.002	NS	ND	ND	NS	0.0009	0.0001	NS	NS	NS	0.0009
Yes	1,1,1-Trichloroethane	33,000	ND	ND	ND	ND	NS	0.009	0.0009	NS	ND	ND	NS	0.0006	0.0002	NS	NS	NS	ND
Yes	Trichloroethene	33,000	0.00009	ND	ND	ND	NS	0.01	0.002	NS	ND	ND	NS	0.0005	0.0002	NS	NS	NS	0.0006
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons C9-C18	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	NS	NS	NS	NS	ND	ND	NS	NS	ND	ND	NS	ND	NS	NS	NS	NS	ND
Yes	PCB-1254 (Arochlor 1254)	75,000	NS	NS	NS	NS	ND	ND	NS	NS	ND	ND	NS	ND	NS	NS	NS	NS	ND

Bold	HQ greater
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505937-04-LD	L0505867-08	L0505867-08-LD	L1013390-01	L0505996-17	632003	L0505996-11	L0505996-11-LD	L0505996-13	L0505996-13-LD	L1008325-15
	Area		Stream	Stream	Stream	Stream	Stream	Stream Bkg	Stream Bkg	Stream Bkg	Stream Bkg	Stream Bkg	Stream Bkg
	Date		05/31/05	05/31/05	05/31/05	06/04/10	06/02/05	05/19/95	06/02/05	06/02/05	06/02/05	06/02/05	06/03/10
	Location ID		SD-49	SD-50	SD-50	SD-50	SD-51	SD-03	SD-03	SD-03	SD-03	SD-03	SD-TRIB
		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Aluminum	NC	NS	NS	NS	NS	NS	**6,170,000**	NS	NS	NS	NS	NS
Yes	Antimony	2,000	NS	16000U	NS	**547**	3000U	15800U	12000U	NS	14000U	NS	**543**
Yes	Arsenic	9,800	NS	**8,200**	NS	**7,590**	**4,000**	800U	**3,000**	NS	**5,100**	NS	**2,820**
Yes	Cadmium	990	NS	**100,000**	NS	**843.8**	**5,100**	1600U	**2,400**	NS	2800U	NS	**26,670**
Yes	Chromium, Total	43,400	NS	**26,000**	NS	**48,900**	**16,000**	**21,400**	**17,000**	NS	**25,000**	NS	**23,400**
Yes	Copper	31,600	NS	**49,000**	NS	NS	**8,200**	**10,800**	**24,000**	NS	**33,000**	NS	NS
Yes	Mercury	180	NS	670U	NS	**150**	110U	380U	460U	NS	560U	NS	**181**
Yes	Nickel	22,700	NS	**30,000**	NS	**24,500**	**3,800**	**24,100**	**12,000**	NS	**19,000**	NS	**52,500**
Yes	Selenium	2,000	NS	16000U	NS	**1,150**	3000U	7900U	12000U	NS	14000U	NS	**3,890**
Yes	Silver	1,000	NS	**9,500**	NS	**4,510**	**660**	2400UJ	2300U	NS	2800U	NS	**5,670**
Yes	Zinc	121,000	NS	**160,000**	NS	**129,000**	**27,000**	54800U	**24,000**	NS	**29,000**	NS	**72,600**
Yes	Acetone	99	**260**	**220**	**2,800**	NS	**56**	NS	**210**	**540**	**310**	**160**	**1,300**
Yes	Carbon Disulfide	239	**50**	82U	69U	NS	30U	NS	40U	50U	69U	65U	910UJ
Yes	Chloroethane	310	9.2U	16U	14U	NS	1.8U	36U	8U	10U	14U	13U	36U
Yes	1,1-Dichloroethane	310	6.9U	12U	10U	NS	1.4U	18U	6U	7.5U	10U	9.7U	27U
Yes	1,1-Dichloroethene	194	4.6U	8.2U	6.9U	NS	0.93U	18U	4U	5U	6.9U	6.5U	18U
Yes	Cis-1,2-Dichloroethene	6,540	**13**	**38**	**39**	NS	0.93U	18U	4U	5U	6.9U	6.5U	18U
Yes	Methyl Ethyl Ketone	424	**60**	82U	69U	NS	9.3U	NS	40U	50U	69U	65U	**310**
Yes	Tetrachloroethene	42,000	**30**	**66**	**80**	NS	0.93U	18U	4UJ	5UJ	6.9U	6.5U	18U
Yes	1,1,1-Trichloroethane	33,000	4.6U	8.2U	**8.8**	NS	0.93U	18U	4U	5U	6.9U	6.5U	18U
Yes	Trichloroethene	33,000	**11**	**27**	**32**	NS	0.93U	18U	4UJ	5UJ	6.9U	6.5U	18U
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons, Aliphatic C9-C	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	196UJ	278U	NS	NS	51.3U	NS	196U	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	196UJ	278U	NS	NS	51.3U	NS	196U	NS	NS	NS	NS

Bold	HQ greater than 1 (rounded to one significant
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5c
Location Specific Sediment Hazard Quotients
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Keep in BERA?	Lab ID	Criterion	L0505937-04-LD	L0505867-08	L0505867-08-LD	L1013390-01	L0505996-17	632003	L0505996-11	L0505996-11-LD	L0505996-13	L0505996-13-LD	L1008325-15
	Area		Stream	Stream	Stream	Stream	Stream	Stream Bkg	Stream Bkg	Stream Bkg	Stream Bkg	Stream Bkg	Stream Bkg
	Date		05/31/05	05/31/05	05/31/05	06/04/10	06/02/05	05/19/95	06/02/05	06/02/05	06/02/05	06/02/05	06/03/10
	Location ID	Criterion	SD-49	SD-50	SD-50	SD-50	SD-51	SD-03	SD-03	SD-03	SD-03	SD-03	SD-TRIB
		ug/L	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	NC	NS	NS	NS	NS	NS	NC	NS	NS	NS	NS	NS
Yes	Antimony	2,000	NS	ND	NS	0.3	ND	ND	ND	NS	ND	NS	0.3
Yes	Arsenic	9,800	NS	0.8	NS	0.8	0.4	ND	0.3	NS	0.5	NS	0.3
Yes	Cadmium	990	NS	**100**	NS	0.9	**5**	ND	**2**	NS	ND	NS	**30**
Yes	Chromium, Total	43,400	NS	0.6	NS	1	0.4	0.5	0.4	NS	0.6	NS	0.5
Yes	Copper	31,600	NS	**2**	NS	NS	0.3	0.3	0.8	NS	1	NS	NS
Yes	Mercury	180	NS	ND	NS	0.8	ND	ND	ND	NS	ND	NS	1
Yes	Nickel	22,700	NS	1	NS	1	0.2	1	0.5	NS	0.8	NS	**2**
Yes	Selenium	2,000	NS	ND	NS	0.6	ND	ND	ND	NS	ND	NS	**2**
Yes	Silver	1,000	NS	**10**	NS	**5**	0.7	ND	ND	NS	ND	NS	**6**
Yes	Zinc	121,000	NS	1	NS	1	0.2	ND	0.2	NS	0.2	NS	0.6
Yes	Acetone	99	**3**	**2**	**30**	NS	0.6	NS	**2**	**5**	**3**	**2**	**10**
Yes	Carbon Disulfide	239	0.2	ND	ND	NS	ND	NS	ND	ND	ND	ND	ND
Yes	Chloroethane	310	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND	ND
Yes	1,1-Dichloroethane	310	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND	ND
Yes	1,1-Dichloroethene	194	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND	ND
Yes	Cis-1,2-Dichloroethene	6,540	0.002	0.006	0.006	NS	ND	ND	ND	ND	ND	ND	ND
Yes	Methyl Ethyl Ketone	424	0.1	ND	ND	NS	ND	NS	ND	ND	ND	ND	0.7
Yes	Tetrachloroethene	42,000	0.0007	0.002	0.002	NS	ND	ND	ND	ND	ND	ND	ND
Yes	1,1,1-Trichloroethane	33,000	ND	ND	0.0003	NS	ND	ND	ND	ND	ND	ND	ND
Yes	Trichloroethene	33,000	0.0003	0.0008	0.001	NS	ND	ND	ND	ND	ND	ND	ND
Yes	Acenaphthylene	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Anthracene	108	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(A)Pyrene	150	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(B)Fluoranthene	27.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(G,H,I)Perylene	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Benzo(K)Fluoranthene	240	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Chrysene	166	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Fluoranthene	423	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Indeno(1,2,3-C,D)Pyrene	17	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Phenanthrene	204	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Pyrene	195	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Hydrocarbons C9-C18	NC	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1242 (Arochlor 1242)	10,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	PCB-1248 (Arochlor 1248)	24,500	ND	ND	NS	NS	ND	NS	ND	NS	NS	NS	NS
Yes	PCB-1254 (Arochlor 1254)	75,000	ND	ND	NS	NS	ND	NS	ND	NS	NS	NS	NS

Bold	HQ greater
EqP	5% total organic carbon values from Table 3-4. Example Tier 2 ESBs in USEPA, 2008.
F	Values from Fuchman, P., et al., 2008.
R5 10%TOC	Region 5 sediment equilibrium partitioning value, scaled from 1% TOC to 10% TOC.
BERA	Baseline Ecological Risk Assessment.
HQ	Hazard Quotient.
J	Estimated concentration.
Lake	Sample from Turnpike Lake.
Lake Bkg	Sample from the Turnpike Lake background reference.
NC	No criterion
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill/Turtle Brook.
Stream Bkg	Sample from the wetland streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-5d
Screening of Divalent Metals in Sediment Using AVS-SEM
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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	2005	2010	2005	2005	2005	2005	2010	2005	2010	2005	2010	2010
	Lake Bkg	Lake Bkg	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Lake	Stream Bkg	Stream Bkg
SEM (umoles/gm)	SD-09A	SD-09A	SD-05	SD-41	SD-42	SD-43	SD-43	SD-44	SD-44	SD-45	SD-TRIB	SD-TRIB (dup)
Cadmium, Total	0.148	0.194	0.094	0.738	2.05	3.19	3.85	0.586	1.34	0.018	0.2	0.204
Copper, Total	0.61	0.813	0.109	0.673	2.07	1.5	1.72	0.437	0.891	0.13	<0.33	<0.33
Lead, Total	1.84	1.05	0.117	0.92	1.3	0.924	0.882	0.33	0.614	0.049	0.352	0.357
Nickel, Total	<0.293	<0.281	<0.0243	<0.216	<0.233	<0.24	<0.319	<0.0986	<0.195	<0.0418	0.642	0.654
Silver, Total	NS	<0.0077	NS	NS	NS	NS	0.262	NS	0.0508	NS	0.0149	0.0164
Zinc, Total	6.12	4.43	<0.273	3.87	5.56	4.44	4.61	1.12	3.46	0.202	1.28 J	0.981
Sulfide, Acid Volatile	11.7	<5.15	0.312	8.49	10.7	10.5	<5.84	2.04	6.12	0.92	<3.27	3.57
Total Organic Carbon (% replicate 1)	25.9	11.4	1.39	19.7	16.8	19.6	13.1	8.1	10.3	1.89	15.2	15.2
Total Organic Carbon (% replicate 2)		10.2					13.1		10		15.6	15.6
Total Organic Carbon (fractional)	0.259	0.108	0.0139	0.197	0.168	0.196	0.131	0.081	0.1015	0.0189	0.154	0.154
Total SEM	8.9	6.6	0.5	6.3	11.1	10.2	11.5	2.5	6.5	0.4	2.0	2.4
Sulfide, Acid Volatile	11.7	2.6	0.3	8.5	10.7	10.5	2.9	2.0	6.1	0.9	1.6	3.6
Total Metals (ΣSEM - AVS)	-2.8	**4.1**	0.2	-2.2	0.4	-0.3	**8.6**	0.5	0.3	-0.5	0.4	-1.2
(ΣSEM-AVS)/fOC	NA	37.6	11.3	NA	2.4	NA	65.4	6.0	3.3	NA	2.5	NA

Note that samples that were below the DL are assumed to be present at 1/2 the DL.

AVS	Acid volatile sulfides.
DL	Detection limit.
fOC	Fraction of organic carbon present in sediments.
NA	Not applicable, AVS exceeds SEM.
ND	Not detected.
NS	Not sampled.
SEM	Simultaneously extracted metals.
umoles/gm	Micromoles per gram.

This approach is detailed in Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: Metal Mixtures (Cadmium, Copper, Lead, Nickel, Silver, and Zinc). EPA-600-R-02-011 http://epa.gov/nheerl/publications/files/metalsESB_022405.pdf

Table: 11-5d
Screening of Divalent Metals in Sediment Using AVS-SEM
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BASF Corporation, Plainville, Massachusetts

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SEM (umoles/gm)	2005 Stream SD-01	2005 Stream SD-02	2005 Stream SD-03	2005 Stream SD-04	2005 Stream SD-10A	2005 Stream SD-46	2010 Stream SD-46	2010 Stream SD-46 DUP	2005 Stream SD-47	2010 Stream SD-47	2005 Stream SD-48	2010 Stream SD-48	2005 Stream SD-49	2005 Stream SD-50
Cadmium, Total	0.705	0.328	0.015	0.013	0.021	0.02	0.132	0.144	0.176	0.356	0.012	0.351	0.396	1.02
Copper, Total	0.251	0.588	0.313	0.031	0.51	0.097	0.192	0.181	0.549	0.389	0.069	0.368	0.44	0.66
Lead, Total	0.614	0.847	0.189	0.043	1.06	0.094	0.207	0.235	0.784	0.451	0.059	0.435	0.545	0.84
Nickel, Total	0.238	0.187	0.177	<0.0204	<0.171	0.061	0.202	0.168	0.26	0.435	0.103	0.346	0.265	0.397
Silver, Total	NS	NS	NS	NS	NS	NS	0.0082	0.0071	NS	0.0232	NS	0.0107	NS	NS
Zinc, Total	2.34	1.56	<0.273	<0.171	1.62	1.06	0.922	1.03	1.79	2.18	<0.0932	1.72	1.54	2.78
Sulfide, Acid Volatile	36.7	20.8	<0.294	<0.0617	2.05	<0.116	1.74	1.79	5.97	<3.68	<0.263	31	21.8	10.1
Total Organic Carbon (% replicate 1)	20.1	18.3	21.6	0.495	18.7	3.98	9.12	7.43	39.8	18.7	30.4	17.4	11.3	24.6
Total Organic Carbon (% replicate 2)							9.25	6.71		19.7		18		
Total Organic Carbon (fractional)	0.201	0.183	0.216	0.00495	0.187	0.0398	0.0919	0.0707	0.398	0.192	0.304	0.177	0.113	0.246
Total SEM	4.1	3.5	0.8	0.2	3.3	1.3	1.7	1.8	3.6	3.8	0.3	3.2	3.2	5.7
Sulfide, Acid Volatile	36.7	20.8	0.1	0.0	2.1	0.1	1.7	1.8	6.0	1.8	0.1	31.0	21.8	10.1
Total Metals (ΣSEM - AVS)	-32.6	-17.3	0.7	0.2	1.2	1.3	-0.1	0.0	-2.4	**2.0**	0.2	-27.8	-18.6	-4.4
(ΣSEM-AVS)/fOC	NA	NA	3.2	30.7	6.7	32.0	NA	NA	NA	10.4	0.5	NA	NA	NA

ΣSEM-AVS difference:

>120 µmol/g	Toxicity likely.	**BOLD**
1.7-120 µmol/g	Toxicity uncertain.	**BOLD**
<1.7 µmol/g	Toxicity unlikely.	Gray

ΣSEM-AVS/fOC value:

>3,000 µmol/gOC	Toxicity likely.	**BOLD**
130-3,000 µmol/gOC	Toxicity uncertain	**BOLD**
<130 µmol/gOC	Toxicity unlikely.	Gray

Table: 11-5d
Screening of Divalent Metals in Sediment Using AVS-SEM
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SEM (umoles/gm)	2010 Stream SD-50	2005 Stream SD-51	2010 Stream SD-202	2010 Stream SD-214	2010 Stream SD-61	2010 Stream SD-60
Cadmium, Total	0.253	0.059	0.137	0.0281	0.293	0.402
Copper, Total	0.281	0.163	0.188	<0.191	0.229	0.424
Lead, Total	0.369	0.125	0.256	0.319	0.365	0.417
Nickel, Total	0.236	0.027	0.146	0.152	0.315	0.442
Silver, Total	0.0187	NS	0.0191	<0.0028	0.0054	0.0177
Zinc, Total	1.3	<0.464	0.791	1.66	1.58	1.66
Sulfide, Acid Volatile	5.75	8.94	1.37	5.39	29.7	3.1
Total Organic Carbon (% replicate 1)	12.8	0.884	8.38	14.2	15.2	17.9
Total Organic Carbon (% replicate 2)	13.3		7.91	13.2	15.4	17.1
Total Organic Carbon (fractional)	0.1305	0.0088	0.0815	0.137	0.153	0.175
Total SEM	2.5	0.6	1.5	2.3	2.8	3.4
Sulfide, Acid Volatile	5.8	8.9	1.4	5.4	29.7	3.1
Total Metals (ΣSEM - AVS)	-3.3	-8.3	0.2	-3.1	-26.9	0.3
(ΣSEM-AVS)/fOC	NA	NA	2.1	NA	NA	1.5

Table: 11-5e
Calculation of PAH Toxic Units
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Field ID	SD-09A_20050603	SD-10A_20050603	SD-41_20050603	SD-DUP-3_20050603	SD-42_20050603	SD-43_20050603	SD-44_20050603
Lab ID	L0506096-03	L0506096-04	L0506096-05	L0506096-06	L0506096-07	L0506096-08	L0506096-19
Area	lake bkg	lake bkg	lake	lake	lake	lake	lake
Date	06/03/05	06/03/05	06/03/05	06/03/05	06/03/05	06/03/05	06/03/05
Location ID	SD-09A	SD-10A	SD-41	SD-41DUP	SD-42	SD-43	SD-44

	Final Chronic	%TOC =		25.9		%TOC =		18.7		%TOC =		19.7		%TOC =		18		%TOC =		16.8		%TOC =		19.6		%TOC =		8.1	
Constituent	Value (µg/goc)	ug/kg	Qual	µg/gOC	TU	ug/kg	Qual	µg/gOC	TU	ug/kg	Qual	µg/gOC	TU	ug/kg	Qual	µg/gOC	TU	ug/kg	Qual	µg/gOC	TU	ug/kg	Qual	µg/gOC	TU	ug/kg	Qual	µg/gOC	TU
Acenaphthene	491	468	U	9.0	0.02	287	U	7.7	0.02	342	U	8.7	0.02	342	U	9.5	0.02	376	U	11.2	0.02	386	U	9.8	0.02	167	U	10.3	0.02
Acenaphthylene	452	468	U	9.0	0.02	287	U	7.7	0.02	342	U	8.7	0.02	342	U	9.5	0.02	376	U	11.2	0.02	386	U	9.8	0.02	167	U	10.3	0.02
Anthracene	594	468	U	9.0	0.02	287	U	7.7	0.01	342	U	8.7	0.01	342	U	9.5	0.02	376	U	11.2	0.02	386	U	9.8	0.02	167	U	10.3	0.02
Benzo(a)anthracene	841	468	U	9.0	0.01	287	U	7.7	0.01	342	U	8.7	0.01	342	U	9.5	0.01	376	U	11.2	0.01	878		44.8	0.05	187		23.1	0.03
Benzo(a)pyrene	965	234	U	4.5	0.00	287	U	7.7	0.01	342	U	8.7	0.01	342	U	9.5	0.01	376	U	11.2	0.01	1060		54.1	0.06	197		24.3	0.03
Benzo(b)fluoranthene	979	468	U	9.0	0.01	287	U	7.7	0.01	342	U	8.7	0.01	342	U	9.5	0.01	376	U	11.2	0.01	1200		61.2	0.06	203		25.1	0.03
Benzo(ghi)perylene	967	468	U	9.0	0.01	287	U	7.7	0.01	342	U	8.7	0.01	342	U	9.5	0.01	376	U	11.2	0.01	944		48.2	0.05	167	U	10.3	0.01
Benzo(k)fluoranthene	1095	468	U	9.0	0.01	287	U	7.7	0.01	342	U	8.7	0.01	342	U	9.5	0.01	376	U	11.2	0.01	1450		74.0	0.07	268		33.1	0.03
Chrysene	981	468	U	9.0	0.01	475		25.4	0.03	342	U	8.7	0.01	342	U	9.5	0.01	376	U	11.2	0.01	1580		80.6	0.08	304		37.5	0.04
Dibenzo(a,h)anthracene	844	468	U	9.0	0.01	287	U	7.7	0.01	342	U	8.7	0.01	342	U	9.5	0.01	376	U	11.2	0.01	386	U	9.8	0.01	167	U	10.3	0.01
Fluoranthene	1123	468	U	9.0	0.01	859		45.9	0.04	638		32.4	0.03	682		37.9	0.03	698		41.5	0.04	2680		136.7	0.12	585		72.2	0.06
Fluorene	707	468	U	9.0	0.01	287	U	7.7	0.01	342	U	8.7	0.01	342	U	9.5	0.01	376	U	11.2	0.02	386	U	9.8	0.01	167	U	10.3	0.01
Indeno(1,2,3-cd)Pyrene	538	468	U	9.0	0.02	287	U	7.7	0.01	342	U	8.7	0.02	342	U	9.5	0.02	376	U	11.2	0.02	784		40.0	0.07	167	U	10.3	0.02
Naphthalene	1115	468	U	9.0	0.01	287	U	7.7	0.01	342	U	8.7	0.01	342	U	9.5	0.01	376	U	11.2	0.01	386	U	9.8	0.01	167	U	10.3	0.01
2-Methylnaphthalene	385	468	U	9.0	0.02	287	U	7.7	0.02	342	U	8.7	0.02	342	U	9.5	0.02	376	U	11.2	0.03	386	U	9.8	0.03	167	U	10.3	0.03
Phenanthrene	596	468	U	9.0	0.02	320		17.1	0.03	342	U	8.7	0.01	342	U	9.5	0.02	376	U	11.2	0.02	813		41.5	0.07	167	U	10.3	0.02
Pyrene	697	468	U	9.0	0.01	619		33.1	0.05	476		24.2	0.03	533		29.6	0.04	527		31.4	0.05	2220		113.3	0.16	415		51.2	0.07
ΣPAH TUs for 17 PAHs				0.2				0.3				0.3				0.3				0.3				0.9				0.5	

%TOC Percent total organic carbon.
µg/gO(Microgram per gram of organic carbon.
µg/kg Microgram per kilogram.
BKG Background.
PAH Polycyclic aromatic hydrocarbon.
Qual Qualifier. A U qualifier indicates that the constituent was not detected, detection limit shown. For calculation of TUs, constituents that were not detected are presumed to be present at 1/2 the detection limit.
TU Toxicity unit (i.e., hazard quotient); rounded to one significant figure.

Table: 11-6
Fish Tissue Critical Body Residue Comparison
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep from background screening?		Criterion (mg/kg ww)											
	Location		South Embayment	South Embayment	South Embayment	South Embayment	South Embayment	South Embayment	South Embayment	South Embayment	South Embayment	South Embayment	South Embayment
	Class		Bottom Feeder	Bottom Feeder	Bottom Feeder	Bottom Feeder	Bottom Feeder	Game Fish	Game Fish	Game Fish	Game Fish	Game Fish	Game Fish
	Sample Type		Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)
	Fish ID		SE-BF-001	SE-BF-002	SE-BF-003a	SE-BF-004	SE-BF-005	SE-GS-001	SE-GS-002	SE-GS-003	SE-GS-004	SE-GS-005a	SE-GS-005b
	Species		Black Bullhead Catfish	Black Bullhead Catfish	Black Bullhead Catfish	Black Bullhead Catfish	Black Bullhead Catfish	Pickerel	Large Mouth Bass	Large Mouth Bass	Yellow Perch	Large Mouth Bass	Large Mouth Bass
	Date Sampled		06/19/96	06/25/96	06/26/96	06/26/96	07/03/96	05/18/95	06/18/96	06/20/96	06/18/96	06/18/96	06/18/96
	Phase		II	II	II	II	II	I	II	II	II	II	II
			mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww
Yes	Aluminum	8	1.6875U	1.638U	1.0265U	**11.039**	1.948U	0.5358U	1.808U	1.9U	1.5055U	1.364U	1.145U
Yes	Arsenic	5.5	0.17675U	**0.272**	0.1708U	0.15U	0.1928U	0.1127U	0.1919U	0.143U	0.1695U	0.1635U	0.183U
no	Barium	NA	**0.419625**	**0.649**	**1.17525**	**0.5371**	**0.2236**	**0.17595**	**0.6699**	**0.203**	**0.37125**	**0.3505**	**0.1295**
Yes	Cadmium	1.2	**0.119375**	0.059U	0.03485U	**0.1153**	0.0452U	**0.06305**	**0.06495**	0.02U	**0.0555**	**0.0695**	0.056U
Yes	Chromium	0.58	**0.096**	0.199U	**0.19405**	0.2381U	0.1224U	**0.1005**	**0.1418**	**0.231**	**0.2645**	**0.269**	**0.0845**
no	Cobalt	NA	0.04U	**0.044**	0.0527U	0.04U	0.0528U	0.05U	0.04U	0.043U	0.053U	0.0465U	0.047U
Yes	Copper	11.7	**0.49875**	**2.146**	**0.30855**	**0.5385**	**0.3356**	**0.17705**	**0.5196**	0.331U	**0.3745**	**0.822**	**0.14**
Yes	Lead	2.5	**0.1165**	**0.174**	0.1267U	0.1232U	0.122U	0.07U	0.1822U	0.146U	0.194U	0.1455U	0.083U
Yes	Mercury	2.75	**0.094**	**0.054**	**0.04595**	**0.0373**	**0.0616**	**0.2084**	**0.4041**	**0.123**	**0.069**	**0.6035**	**0.689**
Yes	Nickel	36.4	**0.060375**	0.12U	0.09755U	0.1338U	0.1328U	0.0727U	0.0773U	**0.111**	**0.1325**	**0.09675**	0.087U
no	Selenium	NA	**0.266875**	**0.379**	**0.34075**	**0.34**	**0.3348**	**0.4138**	0.6116U	**0.77**	**0.9805**	**0.6125**	**0.653**
Yes	Silver	0.06	**0.0405**	**0.0415**	**0.079**	**0.04525**	**0.198**	0.0527U	0.06U	0.05U	**0.073**	0.0535U	0.06U
Yes	Vanadium	5.74	**0.03775**	**0.0645**	**0.06455**	**0.04875**	0.04U	**0.04795**	**0.04795**	**0.0385**	**0.0965**	**0.037**	0.057U
no	Zinc	NA	**7.4025**	**8.73**	**8.0075**	**6.722**	**5.044**	**13.8465**	**9.819**	**11.86**	**10.545**	**10.03**	**6.46**
Yes	Aroclor 1242	10.9	**0.059375**	**0.1014**	0.0030915U	**0.12897**	0.00424U	0.020457U	**0.0066555**	**0.003795**	**0.1139**	**0.006025**	**0.00678**
Yes	Aroclor 1254	21	**0.5625**	**0.0873**	**0.005149**	**0.3175**	**0.030632**	**0.0482**	**0.03576**	**0.01802**	**0.0899**	**0.07145**	**0.0634**
Yes	Aroclor 1260	32	**0.0737**	**0.0322**	**0.008831**	**0.10379**	**0.024824**	**0.010904**	**0.013501**	**0.00937**	0.013025U	**0.06379**	**0.0601**
Yes	Sum PCB	13.7	**0.535**	**0.85**	**2.353**	**0.816**	**0.9**	**0.2613**	**0.913**	**1.2**	**2.85**	**1.14**	**1.03**
	Percent Lipids		**0.5321**	**0.8572**	**2.363**	**0.8196**	**0.8968**	**0.262**	**0.9215**	**1.194**	**2.845**	**1.145**	**1.028**
			HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Aluminum	8	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND
Yes	Arsenic	5.5	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND
no	Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yes	Cadmium	1.2	0.1	ND	ND	0.1	ND	0.05	0.05	ND	0.05	0.06	ND
Yes	Chromium	0.58	0.2	ND	0.3	ND	ND	0.2	0.2	0.4	0.5	0.5	0.1
no	Cobalt	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
Yes	Copper	11.7	0.04	0.2	0.03	0.05	0.03	0.02	0.04	ND	0.03	0.07	0.01
Yes	Lead	2.5	0.05	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND
Yes	Mercury	2.75	0.03	0.02	0.02	0.01	0.02	0.08	0.1	0.04	0.03	0.2	0.3
Yes	Nickel	36.4	0.002	ND	ND	ND	ND	ND	ND	0.003	0.004	0.003	ND
no	Selenium	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA
Yes	Silver	0.06	0.7	0.7	1	0.8	**3**	ND	ND	ND	1	ND	ND
Yes	Vanadium	5.74	0.007	0.01	0.01	0.008	ND	0.008	0.008	0.007	0.02	0.006	ND
no	Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yes	Aroclor 1242	10.9	0.005	0.009	ND	0.01	ND	ND	0.0006	0.0003	0.01	0.0006	0.0006
Yes	Aroclor 1254	21	0.03	0.004	0.0002	0.02	0.001	0.002	0.002	0.0009	0.004	0.003	0.003
Yes	Aroclor 1260	32	0.002	0.001	0.0003	0.003	0.0008	0.0003	0.0004	0.0003	ND	0.002	0.002
Yes	Sum PCB	13.7	0.04	0.06	0.2	0.06	0.07	0.02	0.07	0.09	0.2	0.08	0.08

HQ	Hazard Quotient.
mg/kg ww	Milligrams per kilogram, wet weight.
ND	Not detected.
U	Not detected, detection limit shown.

Table: 11-6
Fish Tissue Critical Body Residue Comparison
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Location		South Embayment	South Embayment	South Embayment	South Embayment	South Embayment	Old Mill Pond	Old Mill Pond	Old Mill Pond	Old Mill Pond	Old Mill Pond	Old Mill Pond	Old Mill Pond
Class		Prey Fish	Prey Fish	Prey Fish	Prey Fish	Prey Fish	Bottom Feeder	Bottom Feeder	Bottom Feeder	Bottom Feeder	Bottom Feeder	Game Fish	Game Fish
Sample Type		Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body (calc)
Fish ID		SE-PS-001	SE-PS-002	SE-PS-003	SE-PS-004	SE-PS-005	MP-BF-001	MP-BF-002	MP-BF-003	MP-BF-004	MP-BF-005	MP-GS-001	MP-GS-002
Species		Bluegill Sunfish	Bluegill Sunfish	Red Ear Sunfish	Red Ear Sunfish	Bluegill Sunfish	Black Bullhead Catfish	Black Bullhead Catfish	Black Bullhead Catfish	Black Bullhead Catfish	Black Bullhead Catfish	Large Mouth Bass	Pickerel
Date Sampled	Criterion (mg/kg ww)	06/18/96	06/18/96	06/18/96	06/18/96	06/18/96	06/18/96	06/18/96	06/18/96	06/18/96	06/19/96	06/18/96	06/19/96
Phase		II	II	II	II	II	II	II	II	II	II	II	II
		mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww
Aluminum	8	2.5U	6.8U	1.6U	1.5U	2.2U	1.7U	1.308U	3.675U	**5.3775**	**3.8125**	1.889U	1.4975U
Arsenic	5.5	0.18U	0.19U	0.19U	0.18U	0.18U	0.15U	0.15U	0.1758U	**0.19125**	0.19U	0.19U	0.1717U
Barium	NA	**2**	**2.9**	**1.6**	**0.98**	**2.3**	**0.77**	**0.6642**	**1.7163**	**0.9975**	**2.36**	**0.4758**	**0.4717**
Cadmium	1.2	**0.26**	**0.65**	0.06U	0.14U	**1**	0.02U	0.0274U	0.0458U	0.02U	0.0425U	0.0354U	0.03U
Chromium	0.58	**0.43**	**0.48**	**0.45**	**0.34**	**0.37**	**0.2**	**0.1578**	**0.10575**	**0.2125**	**0.11625**	**0.1013**	0.14705U
Cobalt	NA	0.04U	0.04U	0.04U	0.04U	0.04U	0.045U	0.05U	0.04U	**0.03875**	0.04U	0.04U	0.04U
Copper	11.7	**0.47**	**0.74**	**0.39**	**0.42**	**0.6**	**0.42**	0.4624U	**0.42905**	**1.37375**	**0.45875**	**0.3033**	**0.28415**
Lead	2.5	0.19U	0.24U	0.12U	0.08U	0.09U	0.1775U	**0.1465**	0.1551U	**0.2075**	0.285U	0.1492U	0.1466U
Mercury	2.75	**0.12**	**0.14**	**0.07**	**0.12**	**0.08**	**0.055**	**0.0274**	**0.0613**	**0.0625**	**0.1225**	**0.1776**	**0.21905**
Nickel	36.4	0.07U	0.07U	0.08U	0.07U	0.07U	**0.175**	**0.1474**	0.07U	**0.1775**	0.08U	0.08U	0.06585U
Selenium	NA	0.61U	0.53U	0.62U	0.59U	0.68U	**0.57**	**0.6082**	0.4163U	**0.735**	0.56U	0.5735U	0.56145U
Silver	0.06	0.06U	**0.09**	0.06U	0.06U	0.06U	**0.045**	**0.0805**	0.06U	0.05U	0.06U	0.06U	0.0539U
Vanadium	5.74	**0.14**	**0.17**	**0.21**	**0.16**	**0.1**	**0.0875**	**0.083**	**0.0674**	**0.08**	**0.06875**	0.05U	**0.09605**
Zinc	NA	**24**	**23.9**	**27.9**	**21.3**	**24.8**	**6.85**	**5.486**	**8.054**	**8.45**	**12.625**	**9.714**	**31.042**
Aroclor 1242	10.9	0.027U	**0.07**	0.0027U	**0.005**	0.014U	0.002725U	**0.002424**	**0.0017415**	0.00265U	0.0027U	0.0027U	0.0027U
Aroclor 1254	21	**0.18**	**0.26**	**0.012**	**0.032**	**0.052**	**0.0020625**	**0.0179**	**0.009628**	**0.004025**	**0.00855**	**0.0061155**	**0.0076485**
Aroclor 1260	32	**0.049**	**0.064**	**0.015**	**0.029**	0.014U	**0.0016875**	**0.0206**	**0.006315**	**0.0025875**	**0.012025**	**0.0082755**	**0.0103785**
Sum PCB	13.7	**4.2**	**2.1**	**1.8**	**2.3**	**1.1**	**0.95**	**0.956**	**2.757**	**0.6**	**1.5**	**0.913**	**0.946**
Percent Lipids		**4.2**	**2.1**	**1.8**	**2.3**	**1.1**	**0.9465**	**0.9568**	**2.751**	**0.6015**	**1.497**	**0.9124**	**0.9454**
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Aluminum	8	ND	ND	ND	ND	ND	ND	ND	ND	0.7	0.5	ND	ND
Arsenic	5.5	ND	ND	ND	ND	ND	ND	ND	ND	0.03	ND	ND	ND
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	1.2	0.2	0.5	ND	ND	0.8	ND	ND	ND	ND	ND	ND	ND
Chromium	0.58	0.7	0.8	0.8	0.6	0.6	0.3	0.3	0.2	0.4	0.2	0.2	ND
Cobalt	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Copper	11.7	0.04	0.06	0.03	0.04	0.05	0.04	ND	0.04	0.1	0.04	0.03	0.02
Lead	2.5	ND	ND	ND	ND	ND	ND	0.06	ND	0.08	ND	ND	ND
Mercury	2.75	0.04	0.05	0.03	0.04	0.03	0.02	0.01	0.02	0.02	0.04	0.06	0.08
Nickel	36.4	ND	ND	ND	ND	ND	0.005	0.004	ND	0.005	ND	ND	ND
Selenium	NA	ND	ND	ND	ND	ND	NA	NA	ND	NA	ND	ND	ND
Silver	0.06	ND	**2**	ND	ND	ND	0.8	1	ND	ND	ND	ND	ND
Vanadium	5.74	0.02	0.03	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.01	ND	0.02
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242	10.9	ND	0.006	ND	0.0005	ND	ND	0.0002	0.0002	ND	ND	ND	ND
Aroclor 1254	21	0.009	0.01	0.0006	0.002	0.002	0.0001	0.0009	0.0005	0.0002	0.0004	0.0003	0.0004
Aroclor 1260	32	0.002	0.002	0.0005	0.0009	ND	0.00005	0.0006	0.0002	0.00008	0.0004	0.0003	0.0003
Sum PCB	13.7	0.3	0.2	0.1	0.2	0.08	0.07	0.07	0.2	0.04	0.1	0.07	0.07

Hazard Quotient.
Milligrams per kilogram, wet weight.
Not detected.
Not detected, detection limit shown.

Table: 11-6
Fish Tissue Critical Body Residue Comparison
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Location		Old Mill Pond	Old Mill Pond	Old Mill Pond	Old Mill Pond	Old Mill Pond	Old Mill Pond	Old Mill Pond	Old Mill Pond	Private Impoundment	Private Impoundment	Private Impoundment	Private Impoundment
Class		Game Fish	Game Fish	Game Fish	Prey Fish	Prey Fish	Prey Fish	Prey Fish	Prey Fish	Bottom Feeder	Game Fish	Prey Fish	Prey Fish
Sample Type		Whole Body (calc)	Whole Body (calc)	Whole Body (calc)	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body (calc)	Whole Body (calc)	Whole Body	Whole Body
Fish ID		MP-GS-003	MP-GS-004	MP-GS-005	MP-PS-001	MP-PS-002	MP-PS-003	MP-PS-004	MP-PS-005	PI-BF-001	PI-GS-001	PI-PS-001	PI-PS-002
Species		Large Mouth Bass	Large Mouth Bass	Pickerel	Bluegill Sunfish	Bluegill Sunfish	Bluegill Sunfish	Bluegill Sunfish	Red Ear Sunfish	Black Bullhead Catfish	Pickerel	Bluegill Sunfish	Bluegill Sunfish
Date Sampled	Criterion (mg/kg ww)	06/20/96	06/20/96	06/21/96	05/18/95	05/18/95	05/18/95	05/18/95	05/18/95	05/18/95	06/19/96	05/18/95	05/18/95
Phase		II	II	II	I	I	I	I	I	I	II	I	I
		mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww	mg/kg ww
Aluminum	8	1.0119U	2.068U	0.9128U	1.1U	1.7U	**7.6**	2.0U	**4.3**	**16.0**	1.8231U	**8.2**	3.3U
Arsenic	5.5	0.1666U	0.1476U	0.1652U	0.11U	0.11U	0.12U	0.11U	0.11U	**0.112**	0.1624U	0.12U	0.11U
Barium	NA	**0.6012**	**1.0108**	**3.0496**	**2.8**	**2.6**	**1.5**	**2.1**	**2.2**	**2.02**	**0.29835**	**1.6**	**1.5**
Cadmium	1.2	0.02U	0.02U	0.02U	0.01U	**0.01**	0.01U	**0.01**	**0.01**	**0.471**	**0.134**	**0.47**	**0.14**
Chromium	0.58	**0.2323**	**0.244**	**0.3364**	**0.2**	**0.29**	**0.34**	**0.24**	**0.3**	**0.286**	**0.1741**	**0.32**	**0.26**
Cobalt	NA	0.05U	0.0476U	0.0484U	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U	0.0469U	0.05U	0.05U
Copper	11.7	**0.39735**	**0.5422**	0.5772U	**0.38**	**0.53**	**0.36**	**0.52**	**0.77**	**1.31**	**0.51**	**0.61**	**0.63**
Lead	2.5	0.1333U	0.154U	0.1988U	0.06U	0.07U	0.07U	0.07U	0.07U	**0.892**	0.1455U	**0.11**	0.07U
Mercury	2.75	**0.1068**	**0.2716**	**0.1892**	**0.07**	**0.08**	**0.12**	**0.04**	**0.08**	**0.022**	**0.1876**	**0.07**	**0.08**
Nickel	36.4	0.0833U	**0.13**	**0.132**	0.07U	0.07U	**0.28**	0.07U	**0.94**	**2.27**	**0.0883**	0.07U	0.07U
Selenium	NA	**0.9264**	**0.7512**	**0.9552**	**0.48**	**0.57**	**0.54**	**0.55**	**0.68**	**0.696**	**0.606**	**0.62**	**0.69**
Silver	0.06	0.0533U	0.05U	0.0584U	0.05U	0.05U	0.06U	0.05U	0.05U	**0.062**	0.0531U	0.06U	0.50U
Vanadium	5.74	0.06U	**0.0396**	0.0584U	**0.06**	**0.12**	**0.13**	**0.11**	**0.09**	**0.592**	**0.06995**	**0.17**	**0.12**
Zinc	NA	**12.792**	**8.496**	**45.796**	**18.4**	**23**	**21.9**	**20.8**	**32.1**	**22.3**	**25.07**	**19.6**	**18.7**
Aroclor 1242	10.9	**0.0045345**	**0.001794**	**0.002652**	0.02U	0.02U	0.0098U	0.02U	0.0098U	0.082U	**0.008616**	0.049U	0.049U
Aroclor 1254	21	**0.021944**	**0.004866**	**0.012816**	**0.012**	**0.026**	**0.0074**	**0.017**	0.0098U	**0.324**	**0.028598**	**0.05**	**0.039**
Aroclor 1260	32	**0.0147645**	**0.004386**	**0.011976**	**0.0069**	**0.0087**	**0.01**	**0.01**	0.0098U	**0.097**	**0.0086825**	**0.026**	**0.03**
Sum PCB	13.7	**1.126**	**0.66**	**1.392**	**0.67**	**1.69**	**0.45**	**2.83**	**1.47**	**2.23**	**1.175**	**2.02**	**1.55**
Percent Lipids		**1.123**	**0.6633**	**1.396**	**0.67**	**1.69**	**0.45**	**2.83**	**1.47**	**1.75**	**1.165**	**2.02**	**1.55**
		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Aluminum	8	ND	ND	ND	ND	ND	1	ND	0.5	**2**	ND	1	ND
Arsenic	5.5	ND	ND	ND	ND	ND	ND	ND	ND	0.02	ND	ND	ND
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	1.2	ND	ND	ND	ND	0.008	ND	0.008	0.008	0.4	0.1	0.4	0.1
Chromium	0.58	0.4	0.4	0.6	0.3	0.5	0.6	0.4	0.5	0.5	0.3	0.6	0.4
Cobalt	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper	11.7	0.03	0.05	ND	0.03	0.05	0.03	0.04	0.07	0.1	0.04	0.05	0.05
Lead	2.5	ND	ND	ND	ND	ND	ND	ND	ND	0.4	ND	0.04	ND
Mercury	2.75	0.04	0.1	0.07	0.03	0.03	0.04	0.01	0.03	0.008	0.07	0.03	0.03
Nickel	36.4	ND	0.004	0.004	ND	ND	0.008	ND	0.03	0.06	0.002	ND	ND
Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	0.06	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND
Vanadium	5.74	ND	0.007	ND	0.01	0.02	0.02	0.02	0.02	0.1	0.01	0.03	0.02
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242	10.9	0.0004	0.0002	0.0002	ND	ND	ND	ND	ND	ND	0.0008	ND	ND
Aroclor 1254	21	0.001	0.0002	0.0006	0.0006	0.001	0.0004	0.0008	ND	0.02	0.001	0.002	0.002
Aroclor 1260	32	0.0005	0.0001	0.0004	0.0002	0.0003	0.0003	0.0003	ND	0.003	0.0003	0.0008	0.0009
Sum PCB	13.7	0.08	0.05	0.1	0.05	0.1	0.03	0.2	0.1	0.2	0.09	0.1	0.1

Hazard Quotient.
Milligrams per kilogram, wet weight.
Not detected.
Not detected, detection limit shown.

Table: 11-6
Fish Tissue Critical Body Residue Comparison
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Location		Private Impoundment	Private Impoundment	Private Impoundment
Class		Prey Fish	Prey Fish	Prey Fish
Sample Type		Whole Body	Whole Body	Whole Body
Fish ID		PI-PS-003	PI-PS-004	PI-PS-005
Species		Bluegill Sunfish	Bluegill Sunfish	Bluegill Sunfish
Date Sampled	Criterion (mg/kg ww)	05/18/95	05/18/95	05/18/95
Phase		I	I	I
		mg/kg ww	mg/kg ww	mg/kg ww
Aluminum	8	**4.5**	**6.3**	**6.5**
Arsenic	5.5	0.12U	0.12U	0.12U
Barium	NA	**1.5**	**1.6**	**2.4**
Cadmium	1.2	**0.27**	**0.35**	**0.16**
Chromium	0.58	**0.26**	**0.29**	**0.28**
Cobalt	NA	0.05U	0.05U	0.05U
Copper	11.7	**1**	**1.1**	**0.7**
Lead	2.5	**0.09**	**0.13**	**0.15**
Mercury	2.75	**0.08**	**0.06**	**0.12**
Nickel	36.4	**0.44**	0.08U	0.08U
Selenium	NA	**0.6**	**0.63**	**0.69**
Silver	0.06	0.06U	**0.07**	0.06U
Vanadium	5.74	**0.12**	**0.18**	**0.18**
Zinc	NA	**20.3**	**18.8**	**20.3**
Aroclor 1242	10.9	0.02U	0.029U	0.03U
Aroclor 1254	21	**0.037**	**0.11**	**0.035**
Aroclor 1260	32	**0.019**	**0.32**	**0.025**
Sum PCB	13.7	**1.94**	**2.3**	**2.97**
Percent Lipids		**1.94**	**2.3**	**2.97**
		HQ	HQ	HQ
Aluminum	8	0.6	0.8	0.8
Arsenic	5.5	ND	ND	ND
Barium	NA	NA	NA	NA
Cadmium	1.2	0.2	0.3	0.1
Chromium	0.58	0.4	0.5	0.5
Cobalt	NA	ND	ND	ND
Copper	11.7	0.09	0.09	0.06
Lead	2.5	0.04	0.05	0.06
Mercury	2.75	0.03	0.02	0.04
Nickel	36.4	0.01	ND	ND
Selenium	NA	NA	NA	NA
Silver	0.06	ND	1	ND
Vanadium	5.74	0.02	0.03	0.03
Zinc	NA	NA	NA	NA
Aroclor 1242	10.9	ND	ND	ND
Aroclor 1254	21	0.002	0.005	0.002
Aroclor 1260	32	0.0006	0.01	0.0008
Sum PCB	13.7	0.1	0.2	0.2

Hazard Quotient.
Milligrams per kilogram, wet weight.
Not detected.
Not detected, detection limit shown.

Table: 11-7a
Location Specific Facility Soil Hazard Quotients for Plants
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	Source	L0511859-01	L0511851-02	L0511851-02-LD	L0511851-01	EP-SS01-005_19950308	EP-SS02-005_19950308	EP-SS03-005_19950308	EP-SS04-005_19950308	EP-SS05-005_19950307
				EXCLUDE Below Slab	EXCLUDE Below Slab	EXCLUDE Below Slab	EXCLUDE Below Slab	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			10/04/05	10/05/05	10/05/05	10/05/05	03/08/95	03/08/95	03/08/95	03/08/95	03/07/95
	Location			AOC30-1	AOC30-2N	AOC30-2N	AOC30-2S	SS-01	SS-02	SS-03	SS-04	SS-05
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	5,000	E Plants	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	62,000	EcoSSL Data	NS	NS	NS	NS	**224,000**	**204,000**	**148,000**	**3,270,000**	**903,000**
Yes	Chromium, Total	39,700	EcoSSL Data	NS	NS	NS	NS	**25,000**	**30,000**	**15,000**	**16,000**	**17,000**
Yes	Copper	266,100	EcoSSL Data	NS	NS	NS	NS	**152,000**	**159,000**	**182,000**	**108,000**	**144,000**
Yes	Lead	348,100	EcoSSL Data	NS	NS	NS	NS	**31,000**	**61,000**	**96,000**	**27,000**	**814,000**
Yes	Silver	678,100	EcoSSL Data	NS	NS	NS	NS	**40,000**	**47,000**	**31,000**	**62,000**	**9,000**
Yes	Zinc	185,600	EcoSSL Data	NS	NS	NS	NS	**55,000**	**189,000**	**294,000**	**181,000**	**414,000**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	5,000	E Plants	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	62,000	EcoSSL Data	NS	NS	NS	NS	**4**	**3**	**2**	**50**	**10**
Yes	Chromium, Total	39,700	EcoSSL Data	NS	NS	NS	NS	0.6	0.8	0.4	0.4	0.4
Yes	Copper	266,100	EcoSSL Data	NS	NS	NS	NS	0.6	0.6	0.7	0.4	0.5
Yes	Lead	348,100	EcoSSL Data	NS	NS	NS	NS	0.09	0.2	0.3	0.08	**2**
Yes	Silver	678,100	EcoSSL Data	NS	NS	NS	NS	0.06	0.07	0.05	0.09	0.01
Yes	Zinc	185,600	EcoSSL Data	NS	NS	NS	NS	0.3	1	**2**	1	**2**

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Plants	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7a
Location Specific Facility Soil Hazard Quotients for Plants
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BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	Source	EP-SS06-005_19950307	EP-SS07-005_19950301	EP-SS08-005_19950308	EP-SS09-005_19950301	EP-SS10-005_19950307	EP-SS11-005_19950307	EP-SS12-005_19950307	EP-SS13-005_19950301	EP-SS14-005_19950307
				EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			03/07/95	03/01/95	03/08/95	03/01/95	03/07/95	03/07/95	03/07/95	03/01/95	03/07/95
	Location			SS-06	SS-07	SS-08	SS-09	SS-10	SS-11	SS-12	SS-13	SS-14
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	5,000	E Plants	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	62,000	EcoSSL Data	**2,230,000**	**72,000**	**288,000**	**57,000**	**142,000**	**96,200**	**161,000**	**41,000**	**78,600**
Yes	Chromium, Total	39,700	EcoSSL Data	**15,000**	**131,000**	**19,000**	**14,000**	**19,000**	**19,000**	**27,000**	**19,000**	**13,000**
Yes	Copper	266,100	EcoSSL Data	**2,060,000**	**172,000**	**2,220,000**	**99,000**	**78,000**	**78,000**	**546,000**	**102,000**	**45,000**
Yes	Lead	348,100	EcoSSL Data	**21,000**	**57,000**	**18,000**	**23,000**	**37,000**	**37,000**	**28,000**	**33,000**	**23,000**
Yes	Silver	678,100	EcoSSL Data	**25,000**	**18,000**	**36,000**	**36,000**	**26,000**	**26,000**	**21,000**	**22,000**	**11,000**
Yes	Zinc	185,600	EcoSSL Data	**294,000**	**134,000**	**110,000**	**110,000**	**402,000**	**402,000**	**143,000**	**108,000**	**119,000**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	5,000	E Plants	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	62,000	EcoSSL Data	**40**	1	**5**	0.9	**2**	**2**	**3**	0.7	1
Yes	Chromium, Total	39,700	EcoSSL Data	0.4	**3**	0.5	0.4	0.5	0.5	0.7	0.5	0.3
Yes	Copper	266,100	EcoSSL Data	**8**	0.6	**8**	0.4	0.3	0.3	**2**	0.4	0.2
Yes	Lead	348,100	EcoSSL Data	0.06	0.2	0.05	0.07	0.1	0.1	0.08	0.09	0.07
Yes	Silver	678,100	EcoSSL Data	0.04	0.03	0.05	0.05	0.04	0.04	0.03	0.03	0.02
Yes	Zinc	185,600	EcoSSL Data	**2**	0.7	0.6	0.6	**2**	**2**	0.8	0.6	0.6

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Plants	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7a
Location Specific Facility Soil Hazard Quotients for Plants
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	Source	EP-SS15-005_19950301	EP-SS16-005_19950307	EP-SS17-005_19950307	EP-SS18-005_19950307	EP-SS19-005_19950307	EP-SS20-005_19950301	EP-SS21-005_19950308	EP-SS22-005_19950308	EP-SS23-005_19950308
				EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			03/01/95	03/07/95	03/07/95	03/07/95	03/07/95	03/01/95	03/08/95	03/08/95	03/08/95
	Location			SS-15	SS-16	SS-17	SS-18	SS-19	SS-20	SS-21	SS-22	SS-23
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	5,000	E Plants	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	62,000	EcoSSL Data	**44,000**	**109,000**	**252,000**	**342,000**	**893,000**	**8,000**	**146,000**	**232,000**	**1,390,000**
Yes	Chromium, Total	39,700	EcoSSL Data	**17,000**	**18,000**	**59,000**	**22,000**	**20,000**	**11,000**	**15,000**	**10,000**	**19,000**
Yes	Copper	266,100	EcoSSL Data	**63,000**	**76,000**	**620,000**	**179,000**	**299,000**	**11,000**	**62,000**	**10,000**	**187,000**
Yes	Lead	348,100	EcoSSL Data	**15,000**	**31,000**	**71,000**	**41,000**	**39,000**	**11,000**	**31,000**	**9,000**	**243,000**
Yes	Silver	678,100	EcoSSL Data	**21,000**	**13,000**	**24,000**	**16,000**	**82,000**	410U	**14,000**	**4,000**	**9,000**
Yes	Zinc	185,600	EcoSSL Data	**71,000**	**97,000**	**280,000**	**135,000**	**455,000**	**39,000**	**97,000**	**44,000**	**606,000**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	5,000	E Plants	NS	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	62,000	EcoSSL Data	0.7	**2**	**4**	**6**	**10**	0.1	**2**	**4**	**20**
Yes	Chromium, Total	39,700	EcoSSL Data	0.4	0.5	1	0.6	0.5	0.3	0.4	0.3	0.5
Yes	Copper	266,100	EcoSSL Data	0.2	0.3	**2**	0.7	1	0.04	0.2	0.04	0.7
Yes	Lead	348,100	EcoSSL Data	0.04	0.09	0.2	0.1	0.1	0.03	0.09	0.03	0.7
Yes	Silver	678,100	EcoSSL Data	0.03	0.02	0.04	0.02	0.1	ND	0.02	0.006	0.01
Yes	Zinc	185,600	EcoSSL Data	0.4	0.5	**2**	0.7	**2**	0.2	0.5	0.2	**3**

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Plants	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7a
Location Specific Facility Soil Hazard Quotients for Plants
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	Source	EP-SS24-005_19950301	L0514775-01	L0514775-02	L0514775-03	L0514775-04	970828A-12	970828A-19	970828A-19DL	970828A-11
				EXCLUDE AOC B	Behind fenceline	Behind fenceline	Behind fenceline	Behind fenceline	Eco	Eco	Eco	Eco
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			03/01/95	12/05/05	12/05/05	12/05/05	12/05/05	04/16/97	04/17/97	04/17/97	04/16/97
	Location			SS-24	SS-A1-01	SS-A1-01	SS-A1-02	SS-A1-03	SS-E-01	SS-E-02	SS-E-02	SS-EH-01
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	5,000	E Plants	NS	2300U	2300U	2400U	2300U	1200BR	640UR	NS	960UR
Yes	Cadmium	62,000	EcoSSL Data	**74,000**	**2,000**	**2,200**	**6,600**	**2,900**	**2,000**	**2,600**	NS	**350**
Yes	Chromium, Total	39,700	EcoSSL Data	**15,000**	**4,600**	**4,900**	**8,700**	**6,800**	**9,800**	**9,800**	NS	**11,100**
Yes	Copper	266,100	EcoSSL Data	**34,000**	**12,000**	**11,000**	**25,000**	**30,000**	**6,700**	**11,400**	NS	**7,200**
Yes	Lead	348,100	EcoSSL Data	**14,000**	**13,000**	**13,000**	**36,000**	**11,000**	**32,600**	**7,400**	NS	**30,700**
Yes	Silver	678,100	EcoSSL Data	**15,000**	**4,300**	**4,700**	**20,000**	**20,000**	**2,500**	**3,900**	NS	**140**
Yes	Zinc	185,600	EcoSSL Data	**105,000**	**26,000**	**33,000**	**38,000**	**29,000**	**27,300**	**29,800**	NS	**20,100**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	5,000	E Plants	NS	ND	ND	ND	ND	ND	ND	NS	ND
Yes	Cadmium	62,000	EcoSSL Data	1	0.03	0.04	0.1	0.05	0.03	0.04	NS	0.006
Yes	Chromium, Total	39,700	EcoSSL Data	0.4	0.1	0.1	0.2	0.2	0.2	0.2	NS	0.3
Yes	Copper	266,100	EcoSSL Data	0.1	0.05	0.04	0.09	0.1	0.03	0.04	NS	0.03
Yes	Lead	348,100	EcoSSL Data	0.04	0.04	0.04	0.1	0.03	0.09	0.02	NS	0.09
Yes	Silver	678,100	EcoSSL Data	0.02	0.006	0.007	0.03	0.03	0.004	0.006	NS	0.0002
Yes	Zinc	185,600	EcoSSL Data	0.6	0.1	0.2	0.2	0.2	0.1	0.2	NS	0.1

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Plants	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7a
Location Specific Facility Soil Hazard Quotients for Plants
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	Source	970828A-15	970828A-20	970828A-20RE	970828B-01	EP-SS-H-01-D_19970417	970828A-16	970828B-02	970828B-04	970828B-06
				Eco	Eco	Eco	Eco	Eco	Eco	Human	Eco	Human
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			04/17/97	04/17/97	04/17/97	04/17/97	04/17/97	04/17/97	04/17/97	04/17/97	04/17/97
	Location			SS-EH-02	SS-EH-03	SS-EH-03	SS-EH-04	SS-H-01	SS-H-01	SS-H-02	SS-H-03	SS-H-04
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	5,000	E Plants	790UR	1300BR	NS	790U	NS	720UR	640U	680U	740U
Yes	Cadmium	62,000	EcoSSL Data	**3,000**	**26,900**	NS	**6,400**	**2,300**	**2,200**	**1,200**	**3,800**	**1,100**
Yes	Chromium, Total	39,700	EcoSSL Data	**11,900**	**10,500**	NS	**10,800**	**14,000**	**12,400**	**8,300**	**11,300**	**9,400**
Yes	Copper	266,100	EcoSSL Data	**7,200**	**44,300**	NS	**10,700**	**10,800**	**10,600**	**12,400**	**19,000**	**9,900**
Yes	Lead	348,100	EcoSSL Data	**21,800**	**77,700**	NS	**40,600**	**15,600**	**14,700**	**10,900**	**33,400**	**13,600**
Yes	Silver	678,100	EcoSSL Data	**400**	**18,300**	NS	**3,300**	**6,700**	**6,400**	**5,100**	**3,400**	**990**
Yes	Zinc	185,600	EcoSSL Data	**29,000**	**48,900**	NS	**28,800**	**32,600**	**30,000**	**30,100**	**57,200**	**29,200**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	5,000	E Plants	ND	ND	NS	ND	NS	ND	ND	ND	ND
Yes	Cadmium	62,000	EcoSSL Data	0.05	0.4	NS	0.1	0.04	0.04	0.02	0.06	0.02
Yes	Chromium, Total	39,700	EcoSSL Data	0.3	0.3	NS	0.3	0.4	0.3	0.2	0.3	0.2
Yes	Copper	266,100	EcoSSL Data	0.03	0.2	NS	0.04	0.04	0.04	0.05	0.07	0.04
Yes	Lead	348,100	EcoSSL Data	0.06	0.2	NS	0.1	0.04	0.04	0.03	0.1	0.04
Yes	Silver	678,100	EcoSSL Data	0.0006	0.03	NS	0.005	0.01	0.009	0.008	0.005	0.001
Yes	Zinc	185,600	EcoSSL Data	0.2	0.3	NS	0.2	0.2	0.2	0.2	0.3	0.2

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Plants	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7a
Location Specific Facility Soil Hazard Quotients for Plants
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Keep in BERA?	Lab ID	Criterion	Source	970828B-06DL	970828B-03	970828B-05	970828A-18	970828A-01	970828A-02	970828A-03	970828A-04
				Human	Human	Human	Human	Eco BKG	Eco BKG	Eco BKG	Eco BKG
	Area			Facility	Facility	Facility	Facility	Facility BKG	Facility BKG	Facility BKG	Facility BKG
	Date			04/17/97	04/17/97	04/17/97	04/17/97	04/16/97	04/16/97	04/16/97	04/16/97
	Location			SS-H-04	SS-H-05	SS-H-06	SS-H-07	SS-B-01	SS-B-02	SS-B-03	SS-B-04
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	5,000	E Plants	NS	700U	840B	1000BR	1100BR	1300BR	790UR	800UR
Yes	Cadmium	62,000	EcoSSL Data	NS	**3,200**	**24,300**	**350**	**840**	**830**	**1,900**	**610**
Yes	Chromium, Total	39,700	EcoSSL Data	NS	**10,600**	**17,700**	**10,300**	**12,800**	**11,600**	**12,100**	**10,200**
Yes	Copper	266,100	EcoSSL Data	NS	**10,400**	**18,500**	**12,300**	**3,900**	**5,900**	**7,800**	**5,100**
Yes	Lead	348,100	EcoSSL Data	NS	**47,400**	**74,300**	**13,300**	**16,100**	**18,700**	**18,400**	**21,500**
Yes	Silver	678,100	EcoSSL Data	NS	**1,700**	**6,900**	**3,200**	60U	**1,500**	**1,900**	**700**
Yes	Zinc	185,600	EcoSSL Data	NS	**29,900**	**46,300**	**51,300**	**21,000**	**22,900**	**25,000**	**24,100**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	5,000	E Plants	NS	ND	ND	ND	ND	ND	ND	ND
Yes	Cadmium	62,000	EcoSSL Data	NS	0.05	0.4	0.006	0.01	0.01	0.03	0.01
Yes	Chromium, Total	39,700	EcoSSL Data	NS	0.3	0.4	0.3	0.3	0.3	0.3	0.3
Yes	Copper	266,100	EcoSSL Data	NS	0.04	0.07	0.05	0.01	0.02	0.03	0.02
Yes	Lead	348,100	EcoSSL Data	NS	0.1	0.2	0.04	0.05	0.05	0.05	0.06
Yes	Silver	678,100	EcoSSL Data	NS	0.003	0.01	0.005	ND	0.002	0.003	0.001
Yes	Zinc	185,600	EcoSSL Data	NS	0.2	0.2	0.3	0.1	0.1	0.1	0.1

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Plants	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7a
Location Specific Facility Soil Hazard Quotients for Plants
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Keep in BERA?	Lab ID	Criterion	Source	970828A-05	970828A-06	970828A-07	970828A-08	970828A-09	970828A-10	EP-SS-B-03-D_19970416
				Eco BKG	Eco BKG	Eco BKG	Eco BKG	Eco BKG	Eco BKG	Eco BKG
	Area			Facility BKG	Facility BKG	Facility BKG	Facility BKG	Facility BKG	Facility BKG	Facility BKG
	Date			04/16/97	04/16/97	04/16/97	04/16/97	04/16/97	04/16/97	04/16/97
	Location			SS-B-05	SS-B-06	SS-B-07	SS-B-08	SS-B-09	SS-B-10	SS-B-03
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	5,000	E Plants	850UR	1200BR	940BR	680UR	910UR	780UR	NS
Yes	Cadmium	62,000	EcoSSL Data	**2,700**	**120**	**380**	**4,400**	**2,700**	**360**	**1,500**
Yes	Chromium, Total	39,700	EcoSSL Data	**10,400**	**8,100**	**14,000**	**11,500**	**10,700**	**15,300**	**11,400**
Yes	Copper	266,100	EcoSSL Data	**8,100**	**3,600**	**3,500**	**14,700**	**7,300**	**7,600**	**6,600**
Yes	Lead	348,100	EcoSSL Data	**27,400**	**40,400**	**15,900**	**78,400**	**34,000**	**8,800**	**17,400**
Yes	Silver	678,100	EcoSSL Data	**11,400**	**240**	**80**	**4,100**	**350**	70U	**2,100**
Yes	Zinc	185,600	EcoSSL Data	**27,200**	**12,100**	**23,200**	**23,600**	**22,000**	**40,300**	**27,300**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	5,000	E Plants	ND	ND	ND	ND	ND	ND	NS
Yes	Cadmium	62,000	EcoSSL Data	0.04	0.002	0.006	0.07	0.04	0.006	0.02
Yes	Chromium, Total	39,700	EcoSSL Data	0.3	0.2	0.4	0.3	0.3	0.4	0.3
Yes	Copper	266,100	EcoSSL Data	0.03	0.01	0.01	0.06	0.03	0.03	0.02
Yes	Lead	348,100	EcoSSL Data	0.08	0.1	0.05	0.2	0.1	0.03	0.05
Yes	Silver	678,100	EcoSSL Data	0.02	0.0004	0.0001	0.006	0.0005	ND	0.003
Yes	Zinc	185,600	EcoSSL Data	0.1	0.07	0.1	0.1	0.1	0.2	0.1

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Plants	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7b
Location Specific Facility Soil Hazard Quotients for Invertebrates
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Keep in BERA?	Lab ID	Criterion	Source	L0511859-01	L0511851-02	L0511851-02-LD	L0511851-01	EP-SS01-005_19950308	EP-SS02-005_19950308	EP-SS03-005_19950308	EP-SS04-005_19950308
				EXCLUDE Below Slab	EXCLUDE Below Slab	EXCLUDE Below Slab	EXCLUDE Below Slab	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			10/04/05	10/05/05	10/05/05	10/05/05	03/08/95	03/08/95	03/08/95	03/08/95
	Location			AOC30-1	AOC30-2N	AOC30-2N	AOC30-2S	SS-01	SS-02	SS-03	SS-04
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	78,000	EcoSSL Inverts	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	274,000	EcoSSL Data	NS	NS	NS	NS	**224,000**	**204,000**	**148,000**	**3,270,000**
Yes	Chromium, Total	28,500	EcoSSL Data	NS	NS	NS	NS	**25,000**	**30,000**	**15,000**	**16,000**
Yes	Copper	138,300	EcoSSL Data	NS	NS	NS	NS	**152,000**	**159,000**	**182,000**	**108,000**
Yes	Lead	1,700,000	EcoSSL Inverts	NS	NS	NS	NS	**31,000**	**61,000**	**96,000**	**27,000**
Yes	Silver	560,000	EcoSSL Data	NS	NS	NS	NS	**40,000**	**47,000**	**31,000**	**62,000**
Yes	Zinc	413,800	EcoSSL Data	NS	NS	NS	NS	**55,000**	**189,000**	**294,000**	**181,000**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	78,000	EcoSSL Inverts	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	274,000	EcoSSL Data	NS	NS	NS	NS	0.8	0.7	0.5	**10**
Yes	Chromium, Total	28,500	EcoSSL Data	NS	NS	NS	NS	0.9	1	0.5	0.6
Yes	Copper	138,300	EcoSSL Data	NS	NS	NS	NS	1	1	1	0.8
Yes	Lead	1,700,000	EcoSSL Inverts	NS	NS	NS	NS	0.02	0.04	0.06	0.02
Yes	Silver	560,000	EcoSSL Data	NS	NS	NS	NS	0.07	0.08	0.06	0.1
Yes	Zinc	413,800	EcoSSL Data	NS	NS	NS	NS	0.1	0.5	0.7	0.4

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Worms	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
	Silver is the plant criterion
EcoSSL Inverts	Criterion from the SSLfor invertebrates. http://www.epa.gov/ecotox/ecossl/
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7b
Location Specific Facility Soil Hazard Quotients for Invertebrates
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Keep in BERA?	Lab ID	Criterion	Source	EP-SS05-005_19950307	EP-SS06-005_19950307	EP-SS07-005_19950301	EP-SS08-005_19950308	EP-SS09-005_19950301	EP-SS10-005_19950307	EP-SS11-005_19950307	EP-SS12-005_19950307
				EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			03/07/95	03/07/95	03/01/95	03/08/95	03/01/95	03/07/95	03/07/95	03/07/95
	Location			SS-05	SS-06	SS-07	SS-08	SS-09	SS-10	SS-11	SS-12
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	78,000	EcoSSL Inverts	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	274,000	EcoSSL Data	**903,000**	**2,230,000**	**72,000**	**288,000**	**57,000**	**142,000**	**96,200**	**161,000**
Yes	Chromium, Total	28,500	EcoSSL Data	**17,000**	**15,000**	**131,000**	**19,000**	**14,000**	**19,000**	**19,000**	**27,000**
Yes	Copper	138,300	EcoSSL Data	**144,000**	**2,060,000**	**172,000**	**2,220,000**	**99,000**	**78,000**	**78,000**	**546,000**
Yes	Lead	1,700,000	EcoSSL Inverts	**814,000**	**21,000**	**57,000**	**18,000**	**23,000**	**37,000**	**37,000**	**28,000**
Yes	Silver	560,000	EcoSSL Data	**9,000**	**25,000**	**18,000**	**36,000**	**36,000**	**26,000**	**26,000**	**21,000**
Yes	Zinc	413,800	EcoSSL Data	**414,000**	**294,000**	**134,000**	**110,000**	**110,000**	**402,000**	**402,000**	**143,000**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	78,000	EcoSSL Inverts	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	274,000	EcoSSL Data	**3**	**8**	0.3	1	0.2	0.5	0.4	0.6
Yes	Chromium, Total	28,500	EcoSSL Data	0.6	0.5	**5**	0.7	0.5	0.7	0.7	0.9
Yes	Copper	138,300	EcoSSL Data	1	**10**	1	**20**	0.7	0.6	0.6	**4**
Yes	Lead	1,700,000	EcoSSL Inverts	0.5	0.01	0.03	0.01	0.01	0.02	0.02	0.02
Yes	Silver	560,000	EcoSSL Data	0.02	0.04	0.03	0.06	0.06	0.05	0.05	0.04
Yes	Zinc	413,800	EcoSSL Data	1	0.7	0.3	0.3	0.3	1	1	0.3

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Worms	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
	Silver is the plant criterion
EcoSSL Inverts	Criterion from the SSLfor invertebrates. http://www.epa.gov/ecotox/ecoss
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

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Location Specific Facility Soil Hazard Quotients for Invertebrates
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Keep in BERA?	Lab ID	Criterion	Source	EP-SS13-005_19950301	EP-SS14-005_19950307	EP-SS15-005_19950301	EP-SS16-005_19950307	EP-SS17-005_19950307	EP-SS18-005_19950307	EP-SS19-005_19950307	EP-SS20-005_19950301
				EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			03/01/95	03/07/95	03/01/95	03/07/95	03/07/95	03/07/95	03/07/95	03/01/95
	Location			SS-13	SS-14	SS-15	SS-16	SS-17	SS-18	SS-19	SS-20
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	78,000	EcoSSL Inverts	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	274,000	EcoSSL Data	**41,000**	**78,600**	**44,000**	**109,000**	**252,000**	**342,000**	**893,000**	**8,000**
Yes	Chromium, Total	28,500	EcoSSL Data	**19,000**	**13,000**	**17,000**	**18,000**	**59,000**	**22,000**	**20,000**	**11,000**
Yes	Copper	138,300	EcoSSL Data	**102,000**	**45,000**	**63,000**	**76,000**	**620,000**	**179,000**	**299,000**	**11,000**
Yes	Lead	1,700,000	EcoSSL Inverts	**33,000**	**23,000**	**15,000**	**31,000**	**71,000**	**41,000**	**39,000**	**11,000**
Yes	Silver	560,000	EcoSSL Data	**22,000**	**11,000**	**21,000**	**13,000**	**24,000**	**16,000**	**82,000**	410U
Yes	Zinc	413,800	EcoSSL Data	**108,000**	**119,000**	**71,000**	**97,000**	**280,000**	**135,000**	**455,000**	**39,000**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	78,000	EcoSSL Inverts	NS	NS	NS	NS	NS	NS	NS	NS
Yes	Cadmium	274,000	EcoSSL Data	0.1	0.3	0.2	0.4	0.9	1	**3**	0.03
Yes	Chromium, Total	28,500	EcoSSL Data	0.7	0.5	0.6	0.6	**2**	0.8	0.7	0.4
Yes	Copper	138,300	EcoSSL Data	0.7	0.3	0.5	0.5	**4**	1	**2**	0.08
Yes	Lead	1,700,000	EcoSSL Inverts	0.02	0.01	0.009	0.02	0.04	0.02	0.02	0.006
Yes	Silver	560,000	EcoSSL Data	0.04	0.02	0.04	0.02	0.04	0.03	0.1	ND
Yes	Zinc	413,800	EcoSSL Data	0.3	0.3	0.2	0.2	0.7	0.3	1	0.09

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Worms	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
	Silver is the plant criterion
EcoSSL Inverts	Criterion from the SSLfor invertebrates. http://www.epa.gov/ecotox/ecoss
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7b
Location Specific Facility Soil Hazard Quotients for Invertebrates
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Keep in BERA?	Lab ID	Criterion	Source	EP-SS21-005_19950308	EP-SS22-005_19950308	EP-SS23-005_19950308	EP-SS24-005_19950301	L0514775-01	L0514775-02	L0514775-03	L0514775-04
				EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	EXCLUDE AOC B	Behind fenceline	Behind fenceline	Behind fenceline	Behind fenceline
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			03/08/95	03/08/95	03/08/95	03/01/95	12/05/05	12/05/05	12/05/05	12/05/05
	Location			SS-21	SS-22	SS-23	SS-24	SS-A1-01	SS-A1-01	SS-A1-02	SS-A1-03
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	78,000	EcoSSL Inverts	NS	NS	NS	NS	2300U	2300U	2400U	2300U
Yes	Cadmium	274,000	EcoSSL Data	**146,000**	**232,000**	**1,390,000**	**74,000**	**2,000**	**2,200**	**6,600**	**2,900**
Yes	Chromium, Total	28,500	EcoSSL Data	**15,000**	**10,000**	**19,000**	**15,000**	**4,600**	**4,900**	**8,700**	**6,800**
Yes	Copper	138,300	EcoSSL Data	**62,000**	**10,000**	**187,000**	**34,000**	**12,000**	**11,000**	**25,000**	**30,000**
Yes	Lead	1,700,000	EcoSSL Inverts	**31,000**	**9,000**	**243,000**	**14,000**	**13,000**	**13,000**	**36,000**	**11,000**
Yes	Silver	560,000	EcoSSL Data	**14,000**	**4,000**	**9,000**	**15,000**	**4,300**	**4,700**	**20,000**	**20,000**
Yes	Zinc	413,800	EcoSSL Data	**97,000**	**44,000**	**606,000**	**105,000**	**26,000**	**33,000**	**38,000**	**29,000**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	78,000	EcoSSL Inverts	NS	NS	NS	NS	ND	ND	ND	ND
Yes	Cadmium	274,000	EcoSSL Data	0.5	0.8	**5**	0.3	0.007	0.008	0.02	0.01
Yes	Chromium, Total	28,500	EcoSSL Data	0.5	0.4	0.7	0.5	0.2	0.2	0.3	0.2
Yes	Copper	138,300	EcoSSL Data	0.4	0.07	1	0.2	0.09	0.08	0.2	0.2
Yes	Lead	1,700,000	EcoSSL Inverts	0.02	0.005	0.1	0.008	0.008	0.008	0.02	0.006
Yes	Silver	560,000	EcoSSL Data	0.03	0.007	0.02	0.03	0.008	0.008	0.04	0.04
Yes	Zinc	413,800	EcoSSL Data	0.2	0.1	1	0.3	0.06	0.08	0.09	0.07

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Worms	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
	Silver is the plant criterion
EcoSSL Inverts	Criterion from the SSLfor invertebrates. http://www.epa.gov/ecotox/ecoss
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7b
Location Specific Facility Soil Hazard Quotients for Invertebrates
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Keep in BERA?	Lab ID	Criterion	Source	970828A-12	970828A-19	970828A-19DL	970828A-11	970828A-15	970828A-20	970828A-20RE	970828B-01
				Eco	Eco	Eco	Eco	Eco	Eco	Eco	Eco
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			04/16/97	04/17/97	04/17/97	04/16/97	04/17/97	04/17/97	04/17/97	04/17/97
	Location			SS-E-01	SS-E-02	SS-E-02	SS-EH-01	SS-EH-02	SS-EH-03	SS-EH-03	SS-EH-04
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	78,000	EcoSSL Inverts	1200BR	640UR	NS	960UR	790UR	1300BR	NS	790U
Yes	Cadmium	274,000	EcoSSL Data	**2,000**	**2,600**	NS	**350**	**3,000**	**26,900**	NS	**6,400**
Yes	Chromium, Total	28,500	EcoSSL Data	**9,800**	**9,800**	NS	**11,100**	**11,900**	**10,500**	NS	**10,800**
Yes	Copper	138,300	EcoSSL Data	**6,700**	**11,400**	NS	**7,200**	**7,200**	**44,300**	NS	**10,700**
Yes	Lead	1,700,000	EcoSSL Inverts	**32,600**	**7,400**	NS	**30,700**	**21,800**	**77,700**	NS	**40,600**
Yes	Silver	560,000	EcoSSL Data	**2,500**	**3,900**	NS	**140**	**400**	**18,300**	NS	**3,300**
Yes	Zinc	413,800	EcoSSL Data	**27,300**	**29,800**	NS	**20,100**	**29,000**	**48,900**	NS	**28,800**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	78,000	EcoSSL Inverts	ND	ND	NS	ND	ND	ND	NS	ND
Yes	Cadmium	274,000	EcoSSL Data	0.007	0.009	NS	0.001	0.01	0.1	NS	0.02
Yes	Chromium, Total	28,500	EcoSSL Data	0.3	0.3	NS	0.4	0.4	0.4	NS	0.4
Yes	Copper	138,300	EcoSSL Data	0.05	0.08	NS	0.05	0.05	0.3	NS	0.08
Yes	Lead	1,700,000	EcoSSL Inverts	0.02	0.004	NS	0.02	0.01	0.05	NS	0.02
Yes	Silver	560,000	EcoSSL Data	0.004	0.007	NS	0.0003	0.0007	0.03	NS	0.006
Yes	Zinc	413,800	EcoSSL Data	0.07	0.07	NS	0.05	0.07	0.1	NS	0.07

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Worms	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
	Silver is the plant criterion
EcoSSL Inverts	Criterion from the SSLfor invertebrates. http://www.epa.gov/ecotox/ecoss
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7b
Location Specific Facility Soil Hazard Quotients for Invertebrates
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Keep in BERA?	Lab ID	Criterion	Source	EP-SS-H-01-D_19970417	970828A-16	970828B-02	970828B-04	970828B-06	970828B-06DL	970828B-03	970828B-05
				Eco	Eco	Human	Eco	Human	Human	Human	Human
	Area			Facility	Facility	Facility	Facility	Facility	Facility	Facility	Facility
	Date			04/17/97	04/17/97	04/17/97	04/17/97	04/17/97	04/17/97	04/17/97	04/17/97
	Location			SS-H-01	SS-H-01	SS-H-02	SS-H-03	SS-H-04	SS-H-04	SS-H-05	SS-H-06
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	78,000	EcoSSL Inverts	NS	720UR	640U	680U	740U	NS	700U	840B
Yes	Cadmium	274,000	EcoSSL Data	**2,300**	**2,200**	**1,200**	**3,800**	**1,100**	NS	**3,200**	**24,300**
Yes	Chromium, Total	28,500	EcoSSL Data	**14,000**	**12,400**	**8,300**	**11,300**	**9,400**	NS	**10,600**	**17,700**
Yes	Copper	138,300	EcoSSL Data	**10,800**	**10,600**	**12,400**	**19,000**	**9,900**	NS	**10,400**	**18,500**
Yes	Lead	1,700,000	EcoSSL Inverts	**15,600**	**14,700**	**10,900**	**33,400**	**13,600**	NS	**47,400**	**74,300**
Yes	Silver	560,000	EcoSSL Data	**6,700**	**6,400**	**5,100**	**3,400**	**990**	NS	**1,700**	**6,900**
Yes	Zinc	413,800	EcoSSL Data	**32,600**	**30,000**	**30,100**	**57,200**	**29,200**	NS	**29,900**	**46,300**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	78,000	EcoSSL Inverts	NS	ND	ND	ND	ND	NS	ND	ND
Yes	Cadmium	274,000	EcoSSL Data	0.008	0.008	0.004	0.01	0.004	NS	0.01	0.09
Yes	Chromium, Total	28,500	EcoSSL Data	0.5	0.4	0.3	0.4	0.3	NS	0.4	0.6
Yes	Copper	138,300	EcoSSL Data	0.08	0.08	0.09	0.1	0.07	NS	0.08	0.1
Yes	Lead	1,700,000	EcoSSL Inverts	0.009	0.009	0.006	0.02	0.008	NS	0.03	0.04
Yes	Silver	560,000	EcoSSL Data	0.01	0.01	0.009	0.006	0.002	NS	0.003	0.01
Yes	Zinc	413,800	EcoSSL Data	0.08	0.07	0.07	0.1	0.07	NS	0.07	0.1

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Worms	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
	Silver is the plant criterion
EcoSSL Inverts	Criterion from the SSLfor invertebrates. http://www.epa.gov/ecotox/ecoss
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7b
Location Specific Facility Soil Hazard Quotients for Invertebrates
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	Source	970828A-18	970828A-01	970828A-02	970828A-03	970828A-04	970828A-05	970828A-06
				Human	Eco BKG	Eco BKG	Eco BKG	Eco BKG	Eco BKG	Eco BKG
	Area			Facility	Facility BKG	Facility BKG	Facility BKG	Facility BKG	Facility BKG	Facility BKG
	Date			04/17/97	04/16/97	04/16/97	04/16/97	04/16/97	04/16/97	04/16/97
	Location			SS-H-07	SS-B-01	SS-B-02	SS-B-03	SS-B-04	SS-B-05	SS-B-06
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	78,000	EcoSSL Inverts	1000BR	1100BR	1300BR	790UR	800UR	850UR	1200BR
Yes	Cadmium	274,000	EcoSSL Data	**350**	**840**	**830**	**1,900**	**610**	**2,700**	**120**
Yes	Chromium, Total	28,500	EcoSSL Data	**10,300**	**12,800**	**11,600**	**12,100**	**10,200**	**10,400**	**8,100**
Yes	Copper	138,300	EcoSSL Data	**12,300**	**3,900**	**5,900**	**7,800**	**5,100**	**8,100**	**3,600**
Yes	Lead	1,700,000	EcoSSL Inverts	**13,300**	**16,100**	**18,700**	**18,400**	**21,500**	**27,400**	**40,400**
Yes	Silver	560,000	EcoSSL Data	**3,200**	60U	**1,500**	**1,900**	**700**	**11,400**	**240**
Yes	Zinc	413,800	EcoSSL Data	**51,300**	**21,000**	**22,900**	**25,000**	**24,100**	**27,200**	**12,100**

		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ	HQ
Yes	Antimony	78,000	EcoSSL Inverts	ND	ND	ND	ND	ND	ND	ND
Yes	Cadmium	274,000	EcoSSL Data	0.001	0.003	0.003	0.007	0.002	0.01	0.0004
Yes	Chromium, Total	28,500	EcoSSL Data	0.4	0.4	0.4	0.4	0.4	0.4	0.3
Yes	Copper	138,300	EcoSSL Data	0.09	0.03	0.04	0.06	0.04	0.06	0.03
Yes	Lead	1,700,000	EcoSSL Inverts	0.008	0.009	0.01	0.01	0.01	0.02	0.02
Yes	Silver	560,000	EcoSSL Data	0.006	ND	0.003	0.003	0.001	0.02	0.0004
Yes	Zinc	413,800	EcoSSL Data	0.1	0.05	0.06	0.06	0.06	0.07	0.03

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Worms	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
	Silver is the plant criterion
EcoSSL Inverts	Criterion from the SSLfor invertebrates. http://www.epa.gov/ecotox/ecoss
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7b
Location Specific Facility Soil Hazard Quotients for Invertebrates
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	Source	970828A-07	970828A-08	970828A-09	970828A-10	EP-SS-B-03-D_19970416
				Eco BKG	Eco BKG	Eco BKG	Eco BKG	Eco BKG
	Area			Facility BKG	Facility BKG	Facility BKG	Facility BKG	Facility BKG
	Date			04/16/97	04/16/97	04/16/97	04/16/97	04/16/97
	Location			SS-B-07	SS-B-08	SS-B-09	SS-B-10	SS-B-03
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Antimony	78,000	EcoSSL Inverts	940BR	680UR	910UR	780UR	NS
Yes	Cadmium	274,000	EcoSSL Data	**380**	**4,400**	**2,700**	**360**	**1,500**
Yes	Chromium, Total	28,500	EcoSSL Data	**14,000**	**11,500**	**10,700**	**15,300**	**11,400**
Yes	Copper	138,300	EcoSSL Data	**3,500**	**14,700**	**7,300**	**7,600**	**6,600**
Yes	Lead	1,700,000	EcoSSL Inverts	**15,900**	**78,400**	**34,000**	**8,800**	**17,400**
Yes	Silver	560,000	EcoSSL Data	**80**	**4,100**	**350**	70U	**2,100**
Yes	Zinc	413,800	EcoSSL Data	**23,200**	**23,600**	**22,000**	**40,300**	**27,300**

		ug/kg		HQ	HQ	HQ	HQ	HQ
Yes	Antimony	78,000	EcoSSL Inverts	ND	ND	ND	ND	NS
Yes	Cadmium	274,000	EcoSSL Data	0.001	0.02	0.01	0.001	0.005
Yes	Chromium, Total	28,500	EcoSSL Data	0.5	0.4	0.4	0.5	0.4
Yes	Copper	138,300	EcoSSL Data	0.03	0.1	0.05	0.05	0.05
Yes	Lead	1,700,000	EcoSSL Inverts	0.009	0.05	0.02	0.005	0.01
Yes	Silver	560,000	EcoSSL Data	0.0001	0.007	0.0006	ND	0.004
Yes	Zinc	413,800	EcoSSL Data	0.06	0.06	0.05	0.1	0.07

Note that all samples were collected in 1995-2005.

BERA	Baseline Ecological Risk Assessment.
E Worms	Criterion from Efroymson et al., 1997
Eco	Sample taken for Site ecological characterization.
Eco BKG	Sample taken for background Site ecological characterization.
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
	Silver is the plant criterion
EcoSSL Inverts	Criterion from the SSLfor invertebrates. http://www.epa.gov/ecotox/ecoss
Facility	Sample from the Facility.
Facility Bkg	Sample from the Facility background reference.
HQ	Hazard Quotient.
Human	Sample taken in support of human health risk assessment.
ND	Not detected.
NS	Not sampled.
SLERA	Criterion from the Screening Level Ecological Risk Assessment.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7c
Location Specific Floodplain Soil Hazard Quotients for Plants
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	Source	L1008325-18	L1008325-20	L1008325-21	L1008325-19	L1008325-27	L1008325-17
	Area			Stream	Stream	Stream	Stream	Stream BKG	Stream BKG
	Date			06/01/10	06/01/10	06/01/10	06/01/10	06/03/10	06/03/10
	Location			SD-01	SD-50	SD-204	SD-209	TTSB-RB	TTSB-LB
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Cadmium	62,000	EcoSSL Data	2,560	5,722	14,160	940.3	13,920	7,859
Yes	Thallium	1,000	E Plants/Region 4	82.6	120	160.5	92.3	151.1U	236.3U
Yes	Zinc	185,600	EcoSSL Data	32,400	26,400	80,700	8,450	39,300	31,600
		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ
Yes	Cadmium	62,000	EcoSSL Data	0.04	0.09	0.2	0.02	0.2	0.1
Yes	Thallium	1,000	E Plants/Region 4	0.08	0.1	0.2	0.09	ND	ND
Yes	Zinc	185,600	EcoSSL Data	0.2	0.1	0.4	0.05	0.2	0.2

Note that all samples were collected in 2010.

BERA	Baseline Ecological Risk Assessment.
E Plants	Criterion from Efroymson, R, M. Will, G. Suter II, and A. Wooten. 1997. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision. Oak Ridge National Laboratory, Oak Ridge, TN. ES/ER/TM-85/R3. http://www.esd.ornl.gov/programs/ecorisk/benchmark_reports.html
EcoSSL Data	Calculated using the EcoSSL Data, see Appendix K.
ND	Not detected.
NS	Not sampled.
Region 4	USEPA Region 4 Soil Screening Levels. http://www.epa.gov/region4/waste/ots/epatab4.pdf
Stream	Sample from the private impoundment, wetlands, Sawmill Brook, or the unnamed streams.
Stream Bkg	Sample from the wetland/unnamed streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-7d
Location Specific Floodplain Soil Hazard Quotients for Invertebrates
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep in BERA?	Lab ID	Criterion	Source	L1008325-18	L1008325-20	L1008325-21	L1008325-19	L1008325-27	L1008325-17
	Area			Stream	Stream	Stream	Stream	Stream BKG	Stream BKG
	Date			06/01/10	06/01/10	06/01/10	06/01/10	06/03/10	06/03/10
	Location			SD-01	SD-50	SD-204	SD-209	TTSB-RB	TTSB-LB
		ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Yes	Cadmium	274,000	EcoSSL Data	2,560	5,722	14,160	940.3	13,920	7,859
Yes	Thallium	1,000	Region 4	82.6	120	160.5	92.3	151.1U	236.3U
Yes	Zinc	413,800	EcoSSL Data	32,400	26,400	80,700	8,450	39,300	31,600
		ug/kg		HQ	HQ	HQ	HQ	HQ	HQ
Yes	Cadmium	274,000	EcoSSL Data	0.009	0.02	0.05	0.003	0.05	0.03
Yes	Thallium	1,000	Region 4	0.08	0.1	0.2	0.09	ND	ND
Yes	Zinc	413,800	EcoSSL Data	0.08	0.06	0.2	0.02	0.09	0.08

Note that all samples were collected in 2010.

BERA	Baseline Ecological Risk Assessment.
EcoSSL Inverts	Criterion from the Ecological Soil Screening level for invertebrates. http://www.epa.gov/ecotox/ecossl/
ND	Not detected.
NS	Not sampled.
Stream	Sample from the private impoundment, wetlands, Sawmill Brook, or the unnamed streams.
Stream Bkg	Sample from the wetland/unnamed streams background reference.
U	Not detected, detection limit shown.
ug/kg	Micrograms per kilogram.

Table: 11-8a
Uptake Equations for Soil
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Constituent	Soil to Plants Equation		Soil to Earthworms Equation		Soil to Mammals Equation	
Antimony	ln(Cp) = 0.938 * ln(Cs) - 3.233	(a)	Ce = Cs	(b)	Cm = 0.001 * 50 * Cd	(a)
Arsenic	Cp = 0.03752 * Cs	(a)	ln(Ce) = 0.706 * ln(Cs) - 1.421	(a)	ln(Cm) = 0.8188 * ln(Cs) - 4.8471	(a)
Barium	Cp = 0.156 * Cs	(a)	Ce = 0.091 * Cs	(a)	Cm = 0.00015 * 50 * Cd	(a)
Beryllium	ln(Cp) = 0.7345 * ln(Cs) - 0.5361	(a)	Ce = 0.045 * Cs	(a)	Cm = 0.001 * 50 * Cd	(a)
Cadmium	ln(Cp) = 0.546 * ln(Cs) - 0.475	(a)	ln(Ce) = 0.795 * ln(Cs) + 2.114	(a)	ln(Cm) = 0.4723 * ln(Cs) - 1.2571	(a)
Chromium, Total	Cp = 0.041 * Cs	(a)	Ce = 0.306 * Cs	(a)	ln(Cm) = 0.7338 * ln(Cs) - 1.4599	(a)
Cobalt	Cp = 0.0075 * Cs	(a)	Ce = 0.122 * Cs	(a)	ln(Cm) = 1.307 * ln(Cs) - 4.4669	(a)
Copper	ln(Cp) = 0.394 * ln(Cs) + 0.668	(a)	Ce = 0.515 * Cs	(a)	ln(Cm) = 0.1444 * ln(Cs) + 2.042	(a)
Lead	ln(Cp) = 0.561 * ln(Cs) - 1.328	(a)	ln(Ce) = 0.807 * ln(Cs) - 0.218	(a)	ln(Cm) = 0.4422 * ln(Cs) + 0.0761	(a)
Mercury	ln(Cp) = 0.544 * ln(Cs) - 0.996	(c)	ln(Ce) = 0.118 * ln(Cs) - 0.684	(d)	ln(Cm) = -2.2764 * ln(Cs) - 4.8666	(e)
Manganese	Cp = 0.079 * Cs	(a)	ln(Ce) = 0.682 * ln(Cs) - 0.809	(a)	Cm = 0.0205 * Cs	(a)
Nickel	ln(Cp) = 0.748 * ln(Cs) - 2.223	(a)	Not available	(a)	ln(Cm) = 0.4658 * ln(Cs) - 0.2462	(a)
Selenium	ln(Cp) = 1.104 * ln(Cs) - 0.677	(a)	ln(Ce) = 0.733 * ln(Cs) - 0.075	(a)	ln(Cm) = 0.3764 * ln(Cs) - 0.4158	(a)
Silver	Cp = 0.014 * Cs	(a)	Ce = 2.045 * Cs	(a)	Cm = 0.004 * Cs	(a)
Thallium	Cp = Cs	(b)	Ce = Cs	(b)	Cm = Cs	(b)
Vanadium	Cp = 0.00485 * Cs	(a)	Ce = 0.042 * Cs	(a)	Cm = 0.0123 * Cs	(a)
Zinc	ln(Cp) = 0.554 * ln(Cs) + 1.575	(a)	ln(Ce) = 0.328 * ln(Cs) + 4.449	(a)	ln(Cm) = 0.0706 * ln(Cs) + 4.3632	(a)
Sum of PCBs	Cp = 0.005 * Cs	(f)	Ce = 1.1 * Cs	(g)	Cm = 3.5 * Cs	(f)
% Solids	15%		16%		32%	

(a) USEPA EcoSSL Guidance. http://www.epa.gov/ecotox/ecossl/pdf/ecossl_attachment_4-1.pdf Table 4a. Uptake Equations for Inorganics
(b) In the USEPA EcoSSL guidance, where no uptake factor is given, the USEPA assumes that the bioaccumulation factor is one.
(c) Bechtel Jacobs, 1998, Table 7. http://www.esd.ornl.gov/programs/ecorisk/documents/bjcor-133.pdf
(d) Sample 1998, Table 12. The mercury uptake equation is highly uncertain. http://www.esd.ornl.gov/programs/ecorisk/documents/tm220.pdf
(e) Sample 1998, Table 8. The value is for "general" mammals.
(f) Travis, C. C. and A. D. Arms, 1988. Bioconcentration of Organics in Beef, Milk, and Vegetation. Environmental Science and Technology, 22:271-274.
(g) Jager, T. 1998. Mechanistic approach for estimating bioconcentration of organic chemicals in earthworms. Environ. Toxicol. Chem. 17: 2080-2090.
Cs Concentration in soil (mg/kg).
Cp Concentration in plant tissue (mg/kg dry weight).
Ce Concentration in earthworm (mg/kg dry weight).
Cm Concentration in small mammal tissue (mg/kg dry weight).
Cd Concentration in diet (mg/kg dry weight). Small mammal diet is assumed to be 100% earthworms.

Plants are assumed to be 15% solids, earthworms 16% solids, and small mammals 32% solids (EcoSSL Guidance Attachment 4-1 page 2-1). The dry weight is multiplied by 0.15, 0.16, and 0.32 respectively.

Table: 11-8b
Food Chain Input Variables and Receptor Parameters
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Receptor Species	Water Ingestion Rate (L/day)	Food Ingestion Rate (kg/day)	Soil Ingestion Rate (kg/day)	Dietary Composition (Percent)				Body Weight (kg)
				Plants	Invertebrates	Small Mammals	Fish	
White-footed mouse	0.0066	0.0034	0.000068	50%	50%	0%	0%	0.022
Short-Tailed Shrew	0.0033	0.009	0.00117	13%	74%	0%	0%	0.015
Mink	0.099	0.137	0	0%	0%	0%	100% a	1
Red fox	0.38	0.45	0.0126	14%	1%	85%	0%	4.5
Great blue heron	0.1058	0.42	0	0%	0%	0%	100% a	2.39
Belted kingfisher	0.016	0.075	0	0%	0%	0%	100% a	0.148
American robin	0.0106	0.093	0.0019	60%	40%	0%	0%	0.077

Receptor Species	Range (ha)	FACILITY			WETLANDS			Density (animals/ha)
		Range/8.9 Ha (unitless)	SFF (unitless)	AUF (unitless)	Range/9.3 Ha (unitless)	SFF (unitless)	AUF (unitless)	
White-footed mouse	0.059	0.0066	1	1	0.0063	1	1	31.5
Short-Tailed Shrew	0.39	0.044	1	1	0.042	1	1	6.2
Mink	770	87	1	0.011	83	1	0.012	0.0575
Red fox	504	57	1	0.018	54	1	0.0185	0.0615
Great blue heron	555	62	1	0.016	60	1	0.0167	Colonial nest
Belted kingfisher	120	13	1	0.077	13	1	0.0769	0.3
American robin	0.42	0.047	1	1	0.045	1	1	8.8

Data from USEPA 1994, Chapter 4. http://www.esd.ornl.gov/programs/ecorisk/documents/tm125.pdf

a	Mink, heron, and kingfisher are assumed to eat only fish.
AUF	Area Use Factor.
ha	hectares.
kg	Kilograms.
kg/day	kilograms per day.
L/day	Liters per day.
SFF	Site Foraging Factor.

Table: 11-9a
Food Web Model for Piscivores in Turnpike Lake
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Constituent	Is Site Fish Tissue > BKG?	Region 3 Bio-accumulative Compound? (a)	Southeast Embayment Fish Tissue mg/kg Phase I/II RFI Data 1995-1997					Turnpike Lake Surface Water mg/L All Data				
			Max	UCL	RWC		Average	Max	UCL	RWC		Average
Arsenic	Yes	Yes	0.272	0.11	0.11	u	0.097	0.0013	0.00097	0.00097	u	0.0013
Cadmium	Yes	Yes	1	0.42	0.42	u	0.16	0.0544	0.00751	0.00751	u	0.003
Copper	Yes	Yes	2.146	0.79	0.79	u	0.54	0.0268	0.00658	0.00658	u	0.003
Lead	Yes	Yes	0.174	0.099	0.099	u	0.078	0.0247	0.00662	0.00662	u	0.004
Mercury	Yes	yes	0.689	0.31	0.31	u	0.18					
Nickel	Yes	Yes	0.1325	0.074	0.074	u	0.059	0.229	0.0325	0.0325	u	0.013
Silver	Yes	Yes	0.198	0.069	0.069	u	0.052	0.0467	0.0084	0.0084	u	0.004
PCB-1242	Yes	Yes	0.12897	0.17	0.12897	m	0.034					
PCB-1254	Yes	Yes	0.5625	0.34	0.34	u	0.12					
PCB-1260	Yes	Yes	0.10379	0.071	0.071	u	0.036					

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-9a
Food Web Model for Piscivores in Turnpike Lake
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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	Avian TRVs		Great Blue Heron				Belted Kingfisher				Mink TRVs		Mink			
			TDI		HQ		TDI		HQ				TDI		HQ	
	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL
Constituent	mg/kg bw/d		mg/kg bw/d		Unitless		mg/kg bw/d		Unitless		mg/kg bw/d		mg/kg bw/d		Unitless	
Arsenic	5.14	12.84	3.12E-04	2.76E-04	6E-05	2E-05	4.30E-03	3.79E-03	0.0008	3E-04	0.052	0.524	1.74E-04	1.54E-04	0.003	0.0003
Cadmium	1.45	20	1.20E-03	4.56E-04	0.0008	2E-05	1.64E-02	6.26E-03	0.01	3E-04	0.742	7.419	6.70E-04	2.55E-04	0.0009	3E-05
Copper	47	61.7	2.24E-03	1.53E-03	5E-05	2E-05	3.08E-02	2.11E-02	0.0007	3E-04	11.7	15.4	1.25E-03	8.54E-04	0.0001	6E-05
Lead	1.13	11.3	2.85E-04	2.24E-04	0.0003	2E-05	3.91E-03	3.07E-03	0.003	3E-04	6.15	61.53	1.63E-04	1.27E-04	3E-05	2E-06
Mercury	0.45	0.9	8.79E-04	5.10E-04	0.002	6E-04	1.21E-02	7.02E-03	0.03	0.008	1	1	4.88E-04	2.83E-04	0.0005	0.0003
Nickel	77.4	107	2.33E-04	1.77E-04	3E-06	2E-06	3.15E-03	2.41E-03	4E-05	2E-05	30.77	61.53	1.54E-04	1.08E-04	5E-06	2E-06
Silver	2.02	2.02	2.02E-04	1.50E-04	0.0001	7E-05	2.76E-03	2.06E-03	0.001	0.001	6.02	6.02	1.18E-04	8.64E-05	2E-05	1E-05
PCB-1242	0.41	0.41	3.66E-04	9.64E-05	0.0009	2E-04	5.03E-03	1.33E-03	0.01	0.003	0.069	0.69	2.03E-04	5.35E-05	0.003	8E-05
PCB-1254	0.18	1.8	9.64E-04	3.40E-04	0.005	2E-04	1.33E-02	4.68E-03	0.07	0.003	0.14	0.69	5.35E-04	1.89E-04	0.004	0.0003
PCB-1260	0.18	1.8	2.01E-04	1.02E-04	0.001	6E-05	2.77E-03	1.40E-03	0.02	8E-04	0.14	0.69	1.12E-04	5.67E-05	0.0008	8E-05

Table: 11-9b
Food Web Model for Piscivores in the Wetlands
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Is Site Fish Tissue > BKG?	Region 3 Bio-accumulative Compound? (a)	Private Impoundment					Wetlands				
			Fish Tissue mg/kg					Surface Water mg/L				
			Phase I/II RFI Data 1995-1997					All Data				
			Max	UCL	RWC		Average	Max	UCL	RWC		Average
Arsenic	Yes	Yes						0.0008	0.00087	0.0008	m	0.0008
Cadmium	Yes	Yes	0.471	0.52	0.471	m	0.28	0.0043	0.00117	0.00117	u	0.0043
Copper	Yes	Yes	1.31	1.2	1.2	u	0.84	0.0124	0.0019	0.0019	u	0.001
Lead	Yes	Yes	0.892	0.9	0.892	m	0.21	0.0047	0.00181	0.00181	u	0.001
Mercury	Yes	yes	0.1876	0.2	0.1876	m	0.089	0.00021	0.000107	0.000107	u	0.00021
Nickel	Yes	Yes	2.27	16	2.27	m	0.42	0.0106	0.00229	0.00229	u	0.001
Silver	Yes	Yes	0.07	0.2	0.07	m	0.071	0.0297	0.00238	0.00238	u	0.001
PCB-1242	Yes	Yes	0.00862	0.036	0.00862	m	0.02					
PCB-1254	Yes	Yes	0.324	0.28	0.28	u	0.089					
PCB-1260	Yes	Yes	0.32	0.59	0.32	m	0.075					

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-9b
Food Web Model for Piscivores in the Wetlands
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

	Avian TRVs		Great Blue Heron				Belted Kingfisher				Mink TRVs		Mink			
			TDI		HQ		TDI		HQ				TDI		HQ	
	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL
Constituent	mg/kg bw/d		mg/kg bw/d		Unitless		mg/kg bw/d		Unitless		mg/kg bw/d		mg/kg bw/d		Unitless	
Arsenic	5.14	12.84	5.90E-07	5.90E-07	1E-07	5E-08	6.65E-06	6.65E-06	1E-06	5E-07	0.052	0.524	9.54E-07	9.54E-07	2E-05	2E-06
Cadmium	1.45	20	1.38E-03	8.23E-04	0.001	0.00004	1.84E-02	1.10E-02	0.01	0.0005	0.742	7.419	7.79E-04	4.67E-04	0.001	6E-05
Copper	47	61.7	3.52E-03	2.46E-03	0.00007	0.00004	4.68E-02	3.28E-02	0.001	0.0005	11.7	15.4	1.98E-03	1.39E-03	0.0002	9E-05
Lead	1.13	11.3	2.61E-03	6.16E-04	0.002	0.00005	3.48E-02	8.19E-03	0.03	0.0007	6.15	61.53	1.47E-03	3.48E-04	0.0002	6E-06
Mercury	0.45	0.9	5.50E-04	2.61E-04	0.001	0.0003	7.31E-03	3.47E-03	0.02	0.004	1	1	3.10E-04	1.47E-04	0.0003	0.0001
Nickel	77.4	107	6.65E-03	1.23E-03	0.00009	0.00001	8.85E-02	1.64E-02	0.001	0.0002	30.77	61.53	3.75E-03	6.94E-04	0.0001	1E-05
Silver	2.02	2.02	2.07E-04	2.09E-04	0.0001	0.0001	2.75E-03	2.78E-03	0.001	0.001	6.02	6.02	1.18E-04	1.18E-04	2E-05	2E-05
PCB-1242	0.41	0.41	2.52E-05	5.86E-05	0.00006	0.0001	3.36E-04	7.80E-04	0.0008	0.002	0.069	0.69	1.42E-05	3.30E-05	0.0002	5E-05
PCB-1254	0.18	1.8	8.20E-04	2.61E-04	0.005	0.0001	1.09E-02	3.47E-03	0.06	0.002	0.14	0.69	4.62E-04	1.47E-04	0.003	0.0002
PCB-1260	0.18	1.8	9.37E-04	2.20E-04	0.005	0.0001	1.25E-02	2.92E-03	0.07	0.002	0.14	0.69	5.28E-04	1.24E-04	0.004	0.0002

Table: 11-10a
Food Web Model for Terrestrial Organisms in the Wetlands
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

Constituent	Keep Soil Constituent in BERA?	Region 3 Bio-accumulative Compound? (a)	Wetlands Soil mg/kg Supplemental RFI Data 2005-2010					Uptake into Plants mg/kg wet wt		Uptake into Earthworms mg/kg wet wt		Uptake into Small Mammals mg/kg wet wt		Unnamed Streams/Wetlands Surface Water mg/L All Data				
			Max	UCL	RWC		Average	RWC	Average	RWC	Average	RWC	Average	Max	UCL	RWC		Average
Cadmium	Yes	Yes	14.2	12.8	12.8	u	5.85	3.8E-01	2.4E-01	1.0E+01	5.4E+00	3.0E-01	2.1E-01	4.3	1.17	1.17	u	0.65
Zinc	Yes	Yes	80.7	73.3	73.3	u	37	7.8E+00	5.4E+00	5.6E+01	4.5E+01	3.4E+01	3.2E+01	127	22.2	22.2	u	16

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-10a
Food Web Model for Terrestrial Organisms in the Wetlands
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

DRAFT

	Avian TRVs		Robin				Mouse TRVs		Mouse			
			TDI		HQ				TDI		HQ	
	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL
Constituent	mg/kg bw/d		mg/kg bw/d		Unitless		mg/kg bw/d		mg/kg bw/d		Unitless	
Cadmium	1.45	20	5.61E+00	3.02E+00	**4**	0.2	1.926	19.264	1.20E+00	6.49E-01	0.6	0.03
Zinc	14.5	131	3.76E+01	2.86E+01	**3**	0.2	319.5	639.1	1.18E+01	8.79E+00	0.04	0.01

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-10a
Food Web Model for Terrestrial Organisms in the Wetlands
Revised RCRA Facility Investigation Report
BASF Catalysts LLC, Plainville, MA

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	Shrew TRVs		Shrew TDI		Shrew HQ		Fox TRVs		Fox TDI		Fox HQ	
	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL
Constituent	mg/kg bw/d		mg/kg bw/d		Unitless		mg/kg bw/d		mg/kg bw/d		Unitless	
Cadmium	2.12	21.2	5.75E+00	3.01E+00	**3**	0.1	0.509	5.094	3.25E-03	1.81E-03	0.006	0.0004
Zinc	351.7	703.3	3.61E+01	2.67E+01	0.1	0.04	84.5	169	9.51E-02	8.02E-02	0.001	0.0005

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-10b
Food Web Model for Terrestrial Organisms at the Facility (Including AOC B)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Keep Soil Constituent in BERA?	Region 3 Bio-accumulative Compound? (a)	Facility Soil mg/kg Full Dataset Including AOC B and Samples Beneath AOC 30 Buildings					Uptake into Plants mg/kg wet wt		Uptake into Earthworms mg/kg wet wt		Uptake into Small Mammals mg/kg wet wt		Turnpike Lake Surface Water mg/L All Data				
			Max	UCL	RWC		Average	RWC	Average	RWC	Average	RWC	Average	Max	UCL	RWC		Average
Cadmium	Yes	Yes	3270	439	439	u	274	2.6E+00	2.0E+00	1.7E+02	1.1E+02	1.6E+00	1.3E+00	0.169	0.02	0.02	u	0.009
Copper	Yes	Yes	2220	309	309	u	189	2.8E+00	2.3E+00	2.5E+01	1.6E+01	5.6E+00	5.3E+00	0.0247	0.01	0.01	u	0.004
Lead	Yes	Yes	814	87.9	87.9	u	55.2	4.9E-01	3.8E-01	4.8E+00	3.3E+00	2.5E+00	2.0E+00					
Silver	Yes	Yes	82	21.7	21.7	u	17.1	4.6E-02	3.6E-02	7.1E+00	5.6E+00	2.8E-02	2.2E-02	0.0649	0.02	0.02	u	0.015
Zinc	Yes	Yes	606	168	168	u	131	1.2E+01	1.1E+01	7.3E+01	6.8E+01	3.6E+01	3.5E+01					
PCB-1254 (Arochlor 1254)	Yes	Yes	0.84	0.238	0.238	u	0.136	1.8E-04	1.0E-04	4.2E-02	2.4E-02	2.7E-01	1.5E-01					
PCB-1260 (Arochlor 1260)	Yes	Yes	0.13	0.074	0.074	u	0.044	5.6E-05	3.3E-05	1.3E-02	7.7E-03	8.3E-02	4.9E-02					

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-10b
Food Web Model for Terrestrial Organisms at the Facility (Including AOC B)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

	Avian TRVs		Robin				Mouse TRVs		Mouse			
			TDI		HQ				TDI		HQ	
	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL
Constituent	mg/kg bw/d		mg/kg bw/d		Unitless		mg/kg bw/d		mg/kg bw/d		Unitless	
Cadmium	1.45	20	9.34E+01	6.37E+01	**60**	**3**	1.926	19.264	1.45E+01	9.88E+00	**8**	0.5
Copper	47	61.7	2.20E+01	1.39E+01	0.5	0.2	30.4	40	3.14E+00	1.97E+00	0.1	0.05
Lead	1.13	11.3	4.83E+00	3.22E+00	**4**	0.3	15.98	159.77	6.78E-01	4.53E-01	0.04	0.003
Silver	2.02	2.02	4.00E+00	3.15E+00	**2**	**2**	6.02	6.02	6.25E-01	4.92E-01	0.1	0.08
Zinc	14.5	131	4.86E+01	4.38E+01	**3**	0.3	319.5	639.1	7.15E+00	6.47E+00	0.02	0.01
PCB-1254 (Arochlor 1254	0.18	1.8	2.62E-02	1.50E-02	0.1	0.008	0.061	0.607	3.99E-03	2.28E-03	0.07	0.004
PCB-1260 (Arochlor 1260	0.18	1.8	8.17E-03	4.85E-03	0.05	0.003	0.061	0.607	1.24E-03	7.37E-04	0.02	0.001

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-10b
Food Web Model for Terrestrial Organisms at the Facility (Including AOC B)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

	Shrew TRVs		Shrew				Fox TRVs		Fox			
			TDI		HQ				TDI		HQ	
	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL
Constituent	mg/kg bw/d		mg/kg bw/d		Unitless		mg/kg bw/d		mg/kg bw/d		Unitless	
Cadmium	2.12	21.2	1.09E+02	7.25E+01	**50**	**3**	0.509	5.094	2.76E-02	1.79E-02	0.05	0.004
Copper	33.4	44	3.56E+01	2.18E+01	1	0.5	8	10.6	2.47E-02	1.80E-02	0.003	0.002
Lead	17.58	175.83	9.01E+00	5.79E+00	0.5	0.03	4.22	42.25	8.25E-03	5.90E-03	0.002	0.0001
Silver	6.02	6.02	4.85E+00	3.82E+00	0.8	0.6	6.02	6.02	1.27E-03	1.00E-03	0.0002	0.0002
Zinc	351.7	703.3	4.67E+01	4.11E+01	0.1	0.06	84.5	169	6.64E-02	6.31E-02	0.0008	0.0004
PCB-1254 (Arochlor 1254)	0.067	0.668	3.72E-02	2.12E-02	0.6	0.03	0.096	0.474	4.10E-04	2.34E-04	0.004	0.0005
PCB-1260 (Arochlor 1260)	0.067	0.668	1.16E-02	6.87E-03	0.2	0.01	0.096	0.474	1.28E-04	7.58E-05	0.001	0.0002

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-10c
Food Web Model for Terrestrial Organisms at the Facility (Excluding AOC B)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

DRAFT

Constituent	Keep Soil Constituent in BERA?	Region 3 Bio-accumulative Compound? (a)	Facility Soil mg/kg Phase I/II RFI Data 1997 - Limited Dataset Excluding AOC B and Samples Beneath AOC 30 Buildings					Uptake into Plants mg/kg wet wt		Uptake into Earthworms mg/kg wet wt		Uptake into Small Mammals mg/kg wet wt		Turnpike Lake Surface Water mg/L All Data				
			Max	UCL	RWC		Average	RWC	Average	RWC	Average	RWC	Average	Max	UCL	RWC		Average
Cadmium	Yes	Yes	26.9	11	11	u	5.5	3.5E-01	2.4E-01	8.9E+00	5.1E+00	2.8E-01	2.0E-01	0.169	0.02	0.02	u	0.009
Copper	Yes	Yes	44.3	19	19	u	15	9.3E-01	8.5E-01	1.6E+00	1.2E+00	3.8E+00	3.6E+00	0.0247	0.01	0.01	u	0.004
Lead	Yes	Yes	77.7	41	41	u	28	3.2E-01	2.6E-01	2.6E+00	1.9E+00	1.8E+00	1.5E+00					
Silver	Yes	Yes	20	12	12	u	7	2.5E-02	1.5E-02	3.9E+00	2.3E+00	1.5E-02	9.0E-03	0.0649	0.02	0.02	u	0.015
Zinc	Yes	Yes	57.2	39	39	u	34	5.5E+00	5.1E+00	4.6E+01	4.4E+01	3.3E+01	3.2E+01					
PCB-1254 (Arochlor 1254)	Yes	Yes	0.84	0.47	0.47	u	0.14	3.5E-04	1.1E-04	8.3E-02	2.5E-02	5.3E-01	1.6E-01					
PCB-1260 (Arochlor 1260)	Yes	Yes	0.13	0.07	0.07	u	0.044	4.9E-05	3.3E-05	1.1E-02	7.7E-03	7.3E-02	4.9E-02					

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-10c
Food Web Model for Terrestrial Organisms at the Facility (Excluding AOC B)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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	Avian TRVs		Robin				Mouse TRVs		Mouse			
			TDI		HQ				TDI		HQ	
	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL
Constituent	mg/kg bw/d		mg/kg bw/d		Unitless		mg/kg bw/d		mg/kg bw/d		Unitless	
Cadmium	1.45	20	4.83E+00	2.79E+00	**3**	0.1	1.926	19.264	7.57E-01	4.35E-01	0.4	0.02
Copper	47	61.7	1.90E+00	1.58E+00	0.04	0.03	30.4	40	2.54E-01	2.09E-01	0.008	0.005
Lead	1.13	11.3	2.49E+00	1.79E+00	**2**	0.2	15.98	159.77	3.50E-01	2.53E-01	0.02	0.002
Silver	2.02	2.02	2.21E+00	1.29E+00	1	0.6	6.02	6.02	3.49E-01	2.04E-01	0.06	0.03
Zinc	14.5	131	2.69E+01	2.56E+01	**2**	0.2	319.5	639.1	4.06E+00	3.86E+00	0.01	0.006
PCB-1254 (Arochlor 1254)	0.18	1.8	5.18E-02	1.54E-02	0.3	0.009	0.061	0.607	7.87E-03	2.34E-03	0.1	0.004
PCB-1260 (Arochlor 1260)	0.18	1.8	7.17E-03	4.85E-03	0.04	0.003	0.061	0.607	1.09E-03	7.37E-04	0.02	0.001

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-10c
Food Web Model for Terrestrial Organisms at the Facility (Excluding AOC B)
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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	Shrew TRVs		Shrew TDI		Shrew HQ		Fox TRVs		Fox TDI		Fox HQ	
	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL	NOAEL	LOAEL	RWC	Average	RWC/ NOAEL	Avg/ LOAEL
Constituent	mg/kg bw/d		mg/kg bw/d		Unitless		mg/kg bw/d		mg/kg bw/d		Unitless	
Cadmium	2.12	21.2	4.85E+00	2.73E+00	**2**	0.1	0.509	5.094	1.24E-03	7.35E-04	0.002	0.0001
Copper	33.4	44	2.25E+00	1.79E+00	0.07	0.04	8	10.6	6.83E-03	6.41E-03	0.0009	0.0006
Lead	17.58	175.83	4.37E+00	3.04E+00	0.2	0.02	4.22	42.25	4.80E-03	3.72E-03	0.001	0.00009
Silver	6.02	6.02	2.69E+00	1.57E+00	0.4	0.3	6.02	6.02	7.17E-04	4.23E-04	0.0001	0.00007
Zinc	351.7	703.3	2.37E+01	2.24E+01	0.07	0.03	84.5	169	5.26E-02	5.17E-02	0.0006	0.0003
PCB-1254 (Arochlor 1254)	0.067	0.668	7.34E-02	2.19E-02	1	0.03	0.096	0.474	8.10E-04	2.41E-04	0.008	0.0005
PCB-1260 (Arochlor 1260)	0.067	0.668	1.02E-02	6.87E-03	0.2	0.01	0.096	0.474	1.12E-04	7.58E-05	0.001	0.0002

(a)	Region 3 bioaccumulative compounds are listed as part of the Region 3 Surface Water and Sediment Screening Criteria. http://www.epa.gov/reg3hwmd/risk/eco/index.htm
UCL	95% upper confidence limit of the mean.
HQ	Hazard Quotient.
LOAEL	Lowest observable apparent effects level.
m	The maximum value is used as the Exposure Point Concentration for the Reasonable Worst Case value.
mg/kg	Miligrams per kilogram.
mg/kg bw/d	Miligrams per kilogram body weight per day.
mg/L	Miligrams per liter.
NC	No criterion.
NOAEL	No observable apparent effects level.
RWC	Reasonable Wost Case, the lesser of the maximum value or the 95% UCL.
TDI	Total Daily Intake.
TRV	Toxicity Reference Value.
u	The UCL value is used as the Exposure Point Concentration for the Reasonable Worst Case value.

Table: 11-11a
Benthic Macroinvertebrate Community Assessment Metric Formulae
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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A.	Taxa Richness	Number of Taxa
B.	Biotic Index	$\Sigma \frac{x_i * t_i}{n}$
	Where:	
	x_i =	The number of organisms within species
	t_i =	The tolerance value of species (b)
	n =	Total number of organisms in sample
C.	Ratio of Scrapers & Filtering Functional	$\frac{\text{Number of Scraper Individuals}}{\text{Number of Filterer Individuals}}$
D.	Ratio of EPT (b) and Chironomidae	$\frac{\text{Number of EPT Individuals}}{\text{Number of Chironomidea Individuals}}$
E.	Percent Contribution of Dominant Taxon	$\frac{\text{Number of Individuals in Most Dominant Taxon}}{\text{Total Number of Organisms}}$
F.	EPT Index (b)	Number of EPT Taxa
G.	Community Loss Index	$\frac{A-C}{B}$
	Where:	
	C =	Number of Species Common to Both Samples
	A =	Total Number of Species Present in Sample A (Reference)
	B =	Total Number of Species in Sample B
H.	Ratio of Shredder Functional Feeding	$\frac{\text{Number of Shredder Individuals}}{\text{Total Number of Organisms}}$
I.	Total Number of Organism	Σ Individuals

(a) Rapid Bioassessment Protocols III (USEPA, 1999; 1989)
(b) Number of distinct taxa within the groups Ephemeroptera, Plecoptera, and Trichoptera (EPT).

Table: 11-11b
Benthic Metric Scoring Approach
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Benthic Macroinvertebrate Metric (a)		Biological Condition Scoring Criteria (a)			
		6	4	2	0
A.	Taxa Richness (b)	> 80 %	60-80 %	40-60 %	< 40 %
B.	Biotic Index (modified) (c)	> 85 %	70-85 %	50-70 %	< 50 %
C.	Ratio of Scrapers/Filterers Collectors (b,d)	> 50 %	35-50 %	20-35 %	< 20 %
D.	Ratio of EPT and Chironomidae Abundances (b)	> 75 %	50-75 %	25-50 %	< 25 %
E.	Percent Contribution of Dominant Taxon (e)	< 20 %	20-30 %	30-40 %	> 40 %
F.	EPT Index (b)	> 90 %	80-90 %	70-80 %	< 70 %
G.	Community Loss Index (f)	< 0.5	0.5-1.5	1.5-4.0	> 4.0
H.	Ratio of Shredders/Total (b,d)	> 50 %	35-50 %	20-35 %	< 20 %
I.	Total Number of Organisms	NS	NS	NS	NS

(a) USEPA Rapid Bioassessment Protocols III (USEPA, 1989)
(b) Score is a ratio of study site to reference site x 100.
(c) Score is a ratio of reference site to study site x 100.
(d) Determination of Functional Feeding Group is independent of taxonomic grouping.
(e) Scoring criteria evaluate percent contribution, not percent comparability to the reference station.
(f) Range of values obtained. A comparison to the reference station is incorporated in this index.
NS Not Scored

Comparison to Reference Score (g)

> 83 %	Nonimpaired	Comparable to a reference station (upstream location).
54-79 %	Slightly impaired	Community structure less than expected compared to the reference station. Composition (species richness) lower than expected due to loss of some intolerant forms. Percent contribution of tolerant forms increases.
21-50 %	Moderately impaired	Fewer species due to loss of most intolerant forms. Reduction in EPT Index.
< 17 %	Severely impaired	Few species present. If high densities of organisms, then dominated by one or two taxa.

(g) Percentage values obtained that are intermediate to the above ranges will require subjective judgement as to the correct placement. Use of the habitat assessment and physiochemical data may be necessary to aid in the decision process (USEPA, 1989).
EPT Ephemeroptera, Plecoptera, Trichoptera

Table: 11-11c
Benthic Macroinvertebrate Community Assessment Metric Results
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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	2005 Benthic Survey							2010 Benthic Survey						
	Turnpike Lake			Wetlands				Turnpike Lake			Wetlands			
Station	A (Ref)	G	F	B (Ref)	E	C	D	SD-09A (Ref)	SD-43	SD-44	Trib to Sawmill (Ref)	SD-46	SD-214	SD-202
Taxa Richness (a)	35	55	42	30	34	51	48	14	22	26	12	14	17	23
Biotic Index (b)	7.19	6.84	6.24	7.02	5.92	5.17	6.50	6.41	5.76	5.68	7.06	6.25	5.77	6.98
Scrapers/Filterers (c)	1.03	0.63	0.21	0.03	0.12	0.66	0.40	0	0.33	0	0	0	0	0
EPT/Chironomidae (d)	0.01	0.27	0.07	0.10	0.86	0.15	1.75	0	0.03	0.02	0.04	0.47	0.12	0.19
% Dominant (e)	23%	14%	19%	57% (f)	60% (f)	18%	34%	39%	19%	42%	48%	75% (f)	47%	24%
EPT Index (d)	1	8	5	3	8	13	10	0	1	1	2	2	2	3
Community Loss Index (g)	NA	0.24	0.42	NA	0.38	0.09	0.04	NA	0.18	0.19	NA	0.36	0.35	0.22
Shredders/Total Organisms (h)	0.14	0.13	0.24	0.02	0.02	0.19	0.25	0.01	0.14	0.02	0	0	0.01	0
Abundance (i)	316	606	1382	542	1236	498	515	144	63	261	6002	647	1755	1144

(a) Greater species diveristy is present as values increase.
(b) Pollution sensitive species are more abundant as value decreases.
(c) Biological community balance improves as value approaches 0.5.
(d) Abundance of most sensitive taxa improves as value increases.
(e) Biological community balance improves as value decreases.
(f) Greater than 50% values generally illustrate unbalanced community.
(g) Biological conditions are of higher quality for indices <1; conditions are similar as value approaches 0.
(h) Biological community balance improves as value increases toward approximately 0.25.
(i) Total number of organisms present; interpretation of results dependent upon the community balance as seen in other metrics.

Table: 11-11d
Benthic Metric Scoring Results
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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		2005 Benthic Macroinvertebrate Survey																		
		Turnpike Lake								Wetlands										
		Station A (Ref)		Station G			Station F			Station B (Ref)		Station E			Station C			Station D		
Benthic Macroinvertebrate Metric		Data	Score	Data	Comp	Score	Data	Comp	Score	Data	Score	Data	Comp	Score	Data	Comp	Score	Data	Comp	Score
A.	Taxa Richness	35	6	55	160%	6	42	120%	6	30	6	34	110%	6	51	170%	6	48	160%	6
B.	Biotic Index	7.186	6	6.842	95%	6	6.239	87%	6	7.017	6	5.916	84%	4	5.171	74%	4	6.504	93%	6
C.	Scrapers/Filterers	1.033	6	0.634	61%	6	0.214	21%	2	0.028	6	0.115	410%	6	0.657	2400%	6	0.395	1400%	6
D.	EPT/Chironomidae	0.009	6	0.271	3100%	6	0.070	810%	6	0.099	6	0.859	870%	6	0.147	150%	6	1.753	1800%	6
E.	% Dominant	23%	4	14%	14%	6	19%	19%	6	57%	0	60%	60%	0	18%	18%	6	34%	34%	2
F.	EPT Index	1	6	8	800%	6	5	500%	6	3	6	8	270%	6	13	430%	6	10	330%	6
G.	Community Loss Index	NA	6	0.236	0.24	6	0.417	0.42	6	NA	6	0.381	0.38	6	0.091	0.09	6	0.037	0.04	6
H.	Shredders/Total Organisms	0.142	6	0.125	88%	6	0.235	170%	6	0.018	6	0.019	100%	6	0.187	1000%	6	0.252	1400%	6
I.	Abundance	316	NS	606	190%	NS	1382	440%	NS	542	NS	1236	230%	NS	498	92%	NS	515	95%	NS
Sum of Scores			46			48			44		42			40			46			44
Percent of Reference						104%			96%					95%			110%			105%
Support Status						Nonimpaired			Nonimpaired					Nonimpaired			Nonimpaired			Nonimpaired

		2010 Benthic Macroinvertebrate Survey																		
		Turnpike Lake								Wetlands										
		SD-09A (Ref)		SD-43			SD-44			Trib to Sawmill (Ref)		SD-46			SD-214			SD-202		
Benthic Macroinvertebrate Metric		Data	Score	Data	Comp	Score	Data	Comp	Score	Data	Score	Data	Comp	Score	Data	Comp	Score	Data	Comp	Score
A.	Taxa Richness	14	6	22	160%	6	26	190%	6	12	6	14	120%	6	17	140%	6	23	190%	6
B.	Biotic Index	6.407	6	5.757	90%	6	5.675	89%	6	7.060	6	6.249	89%	6	5.772	82%	4	6.976	99%	6
C.	Scrapers/Filterers	0.000	NS	0.333	NS		0.000	NS		0.000	NS	0.000	NS		0.000	NS		0.000	NS	
D.	EPT/Chironomidae	0.000	NS	0.030	NS		0.018	NS		0.041	6	0.467	1100%	6	0.117	280%	6	0.192	460%	6
E.	% Dominant	39%	2	19%	19%	6	42%	42%	0	48%	0	75%	75%	0	47%	47%	0	24%	24%	4
F.	EPT Index	0	NS	1	NS		1	NS		2	6	2	100%	6	2	100%	6	3	150%	6
G.	Community Loss Index	NA	6	0.182	0.18	6	0.192	0.19	6	NA	6	0.357	0.36	6	0.353	0.35	6	0.217	0.22	6
H.	Shredders/Total Organisms	0.007	6	0.143	2100%	6	0.023	330%	6	0.000	NS	0.000	NS		0.006	NS		0.000	NS	
I.	Abundance	144	NS	63	NS		261	NS		6002	NS	647	NS		1755	NS		1144	NS	
Sum of Scores			26			30			24		30			30			28			34
Percent of Reference						115%			92%					100%			93%			113%
Support Status						Nonimpaired			Nonimpaired					Nonimpaired			Nonimpaired			Nonimpaired

NA	Not applicable.
NS	Not scored.
Ref	Reference.
Comp	Comparison.
EPT	Ephemeroptera, Plecoptera, Trichoptera.

Table: 11-12
Sediment Toxicity Testing Summary
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Phase 1 of *Hyalella azteca* Toxcity Testing						
	Mean Survival (%)	Percent (%) Different from Control/Ref	Mean Growth Dry Wt. (mg)	Percent (%) Different from Control/Ref	Mean Biomass Dry Wt. (mg)	Percent (%) Different from Control/Ref
Bearskin Lake Control	90	NA	0.5387	NA	0.4828	NA
Glass Bead Control	81.3	-9.7%	0.5422	0.6%	0.434	-10.1%
SD09A (REF)	88.8	-1.3%	0.6281	16.6%	0.5579	15.6%
SD43	0 *	-100%	0 *	100%	0 *	-100.0%
SD44	81.3	-8.4%	0.4254 *	-32.3%	0.3449 *	-38.2%
Trib to Sawmill (REF)	86.3	-4.1%	0.4846	-10.0%	0.412 *	-14.7%
SD214	93.8	8.7%	0.4767	-1.6%	0.4458	8.2%
SD50	82.5	-12.0%	0.3999	-17.5%	0.3241	-21.3%
SD46	71.3	-13.6%	0.5016	3.5%	0.3615	-12.3%
SD202	83.8	17.5%	0.6992	44.3%	0.5846	41.9%

Phase 2 of *Hyalella azteca* Toxcity Testing						
	Mean Survival (%)	Percent (%) Different from Control/Ref	Mean Growth Dry Wt. (mg)	Percent (%) Different from Control/Ref	Mean Biomass Dry Wt. (mg)	Percent (%) Different from Control/Ref
Bearskin Lake Control	91.3	NA	0.6482	NA	0.5871	NA
Glass Bead Control	53.8	-41.1%	0.8838	36.3%	0.428	-27.1%
Trib to Sawmill (REF)	83.8	-8.2%	0.6193	-4.5%	0.5189	-11.6%
SD47	90	7.4%	0.7441	20.2%	0.6593	27.1%
SD48	90	7.4%	0.7843	5.4%	0.6754	30.2%

* Reflects a statistically significant difference compared to controls
REF Turnpike Lake and Sawmill Brook Reference Locations

Table: 11-12a
Fish Tissue Critical Body Residues
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Keep from background screening?	Constituent	Source	Species and life stage	Endpoint	Test Duration	Reference Number	Tissue concentration mg/kg ww
Yes	Aluminum	J&A	Juvenile Atlantic Salmon	Reduced survival 20%.	30d	360, Table 14, Page 184	8
Yes	Arsenic	J&A	Adult Bluegill	No effects on survival or growth.	112d	149, Table 14, Page 175	5.5
no	Barium						NA
Yes	Cadmium	J&A	Flagfish embryo	No effects on survival, growth or reproduction.	100d	418, Table 5, Page 88	1.2
Yes	Chromium	J&A	Young rainbow trout	No effect on survival, most sensitive tissue.	180d	65, Table 15, Page 186	0.58
no	Cobalt						NA
Yes	Copper	J&A	Carp larvae	No effect on survival.	3.7d	432, Table 7, Page 135	11.7
Yes	Lead	J&A	Brook trout embryos	No effect on growth.	84d	207, Table 12, Page 179	2.5
Yes	Mercury	J&A	Fathead minnow larvae	No effect on survival.	60d	412, Table 6, Page 116	2.75
Yes	Nickel	J&A	Young carp	No effect on survival, most.	5d	437, Table 13, Page183	36.4
no	Selenium						NA
Yes	Silver	J&A	Juvenile bluegill	No effects on survival or growth.	180d	88, Table 15, Page 188	0.06
Yes	Vanadium	J&A	Adult Flagfish	No effect on survival, most sensitive tissue.	96d	96. Table 15, Page 189	5.74
no	Zinc						NA
Yes	Aroclor 1242	J&A	Channel catfish fingerling	No effects on survival and growth.	252d	178, Table 21, Page 283	10.9
Yes	Aroclor 1254	J&A	Channel catfish fingerling	No effects on survival and growth.	193d	283, Table 21, Page 278	21
Yes	Aroclor 1260	J&A	Channel catfish fingerling	No effects on survival and growth.	193d	283, Table 21, Page 283	32
Yes	Sum PCB	ACOE 1988	Fathead minnows	Lowest observed apparent effects level.	7-16wks		13.7

ACOE 1988 — Army Corps of Engineers. 1988. Relationship Between PCB Tissue Residues and Reproductive Success of Fathead Minnows. Environmental Effects of Dredging Technical Note EEDP-01-13. 9 pp.

J&A 1999 — Jarvinen, A.W. and G.T. Ankley. 1999. Linkage of Effects to Tissue Residues: Development of a Comprehensive Database for Aquatic Organisms Exposed to Inorganic and Organic Chemicals. Society of Environmental Toxicology and Chemistry (SETAC) Press, Pensacola, FL. 358 pp.

Table: 11-12b
Toxicity Reference Values
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Constituent	Toxicity Reference Values (mg/kg-BW/day)										Note
	White-footed mouse		Short-Tailed Shrew		Mink		Red Fox		Avians		
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	
Antimony	0.135	1.351	0.149	1.487	0.052	0.52	0.036	0.357	NC	NC	(a)
Arsenic	0.136	1.362	0.15	1.498	0.052	0.524	0.036	0.36	5.14	12.84	(a)
Barium	10.8	39.5	11.8	43.5	4.1	15.2	2.8	10.5	20.8	41.7	(a)
Beryllium	1.32	1.32	1.45	1.45	0.51	0.51	0.35	0.35	NC	NC	(a)
Cadmium	1.926	19.264	2.12	21.2	0.742	7.419	0.509	5.094	1.45	20	(a)
Chromium, Total	5,466	5,466	6,015	6,015	2,105	2,105	1,445	1,445	1	5	(a)
Copper	30.4	40	33.4	44	11.7	15.4	8	10.6	47	61.7	(a)
Lead	15.98	159.77	17.58	175.83	6.15	61.53	4.22	42.25	1.13	11.3	(a)
Mercury (mercuric chloride)	2.6	2.6	2.86	2.86	1	1	0.69	0.69	0.45	0.9	(a)
Nickel	79.89	159.77	87.91	175.83	30.77	61.53	21.12	42.25	77.4	107	(a)
Selenium	0.399	0.659	0.44	0.725	0.154	0.254	0.106	0.174	0.5	1	(a)
Silver	6.02	6.02	6.02	6.02	6.02	6.02	6.02	6.02	2.02	2.02	(b)
Thallium	0.015	0.149	0.016	0.164	0.006	0.058	0.004	0.039	NC	NC	(a)
Zinc	319.5	639.1	351.7	703.3	123.1	246.1	84.5	169	14.5	131	(a)
PCB-1242 (Arochlor 1242)	0.179	1.792	0.197	1.972	0.069	0.69	0.047	0.474	0.41	0.41	(a)
PCB-1248 (Arochlor 1248)	0.039	0.388	0.043	0.427	0.015	0.15	0.01	0.103	NC	NC	(a)
PCB-1254 (Arochlor 1254)	0.061	0.607	0.067	0.668	0.14	0.69	0.096	0.474	0.18	1.8	(a)
PCB-1260 (Arochlor 1260)	0.061	0.607	0.067	0.668	0.14	0.69	0.096	0.474	0.18	1.8	(c)

(a) Toxicological Benchmarks for Wildlife: 1996 Revision. ES/ER/TM-86/R3 Sample, Opresko, and Suter II. Prepared by the Risk Assessment Program Health Sciences Research Division Oak Ridge, Tennessee 37831. ttp://www.hsrd.ornl.gov/ecorisk/tm86r3.pdf NOAEL data from Table 12.

(b) USEPA EcoSSL for Silver (no bodyweight scaling). http://www.epa.gov/ecotox/ecossl/pdf/eco-ssl_silver.pdf

(c) No values for PCB-1260 in (a). Used PCB-1254 as a surrogate.

NC No criterion.

Note that if a constituent lacked a LOAEL, the NOAEL was used for both TRVs.

Table: 11-13
Weight of Evidence Approach for Benthic Invertebrates
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

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Year		2005							2010									
Area		Turnpike Lake			Wetlands				Turnpike Lake			Wetlands						
Benthic Community	Location	A (Ref)	G	F	B (Ref)	E	C	D	SD-09A (Ref)	SD-43	SD-44	Trib to Sawmill (Ref)	SD-46	SD-214	SD-202	NS	NS	NS
	Impairment Status	Reference	◌	◌	Reference	◌	◌	◌	Reference	◌	◌	Reference	◌	◌	◌	NS	NS	NS
Sediment Toxicity	Location								SD-09A (Ref)	SD-43	SD-44	Trib	SD-46	SD-214	SD-202	SD-50	SD-47	SD-48
	Survival	NS	NS	NS	NS	NS	NS	NS	Reference	+	◌	Reference	◌	◌	◌	◌	◌	◌
	Growth	NS	NS	NS	NS	NS	NS	NS	Reference	+	+	Reference	◌	◌	◌	◌	◌	◌
	Biomass	NS	NS	NS	NS	NS	NS	NS	Reference	+	+	Reference	◌	◌	◌	◌	◌	◌
Dissolved Surface Water HQs	Location	SW-09A	SW-07	SW-06	NS	SW-19	SW-204	SW-01	SW-09A	SW-06	SW-06	Trib	SW-15	NS	SW-202	SW-17	NS	NS
	Status	◌	◌	◌	NS	◌	◌	◌	NS	NS	NS	◌	NS	NS	NS	NS	◌	◌
	Constituents																	
Empirical Derived Sediment HQs (a)	Location	SD-09A	NS	SD-43, SD-44	NS	SD-51	SD-203, SD-204, SD-205, SD-206	SD-01	SD-09A	SD-43	SD-44	Trib	SD-46	SD-214	SD-202	SD-50	SD-47	SD-48
	Status	◌	NS	U	NS	U	U	U	◌	U	U	U	U	◌	U	◌	◌	◌
	Constituents			PAHs		ACE	ACE, CD, 11DCA, MEK	ACE, 11DCA, MEK		Hg, ACE	Hg, ACE	ACE, MEK	ACE, 11DCA, MEK		ACE, 11DCA, MEK			
Equilibrium Partitioning Based Benchmarks (AVS-SEM) (b)	Location	SD-09A	NS	SD-43, SD-44	NS	SD-51	SD-02	SD-01	SD-09A	SD-43	SD-44	Trib	SD-46	SD-214	SD-202	SD-50	SD-47	SD-48
	Status	◌	NS	◌	NS	◌	◌	◌	◌	U	◌	◌	◌	◌	◌	◌	◌	◌
	(ΣSEM-AVS)/ fOC			SD44=5.95					37.6	65.4	3.28	2.46			2.05		10.4	

111TCA	1,1,1-Trichloroethane.	HQ	Hazard Quotient.
11DCA	1,1-Dichloroethane.	MEK	Methyl Ethyl Ketone.
ACE	Acetone.	Ni	Nickel.
Ag	Silver.	NS	Not sampled.
Cd	Cadmium.	PAHs	Polycyclic aromatic hydrocarbons.
CD	Carbon Disulfide.	PCBs	Polychlorinated biphenyls.
Cr	Chromium.	PCE	Tetrachloroethylene.
Cu	Copper.	Se	Selenium.
EqP	Equilibrium partitioning	TCE	Trichloroethylene.
Hg	Mercury.	Zn	Zinc.

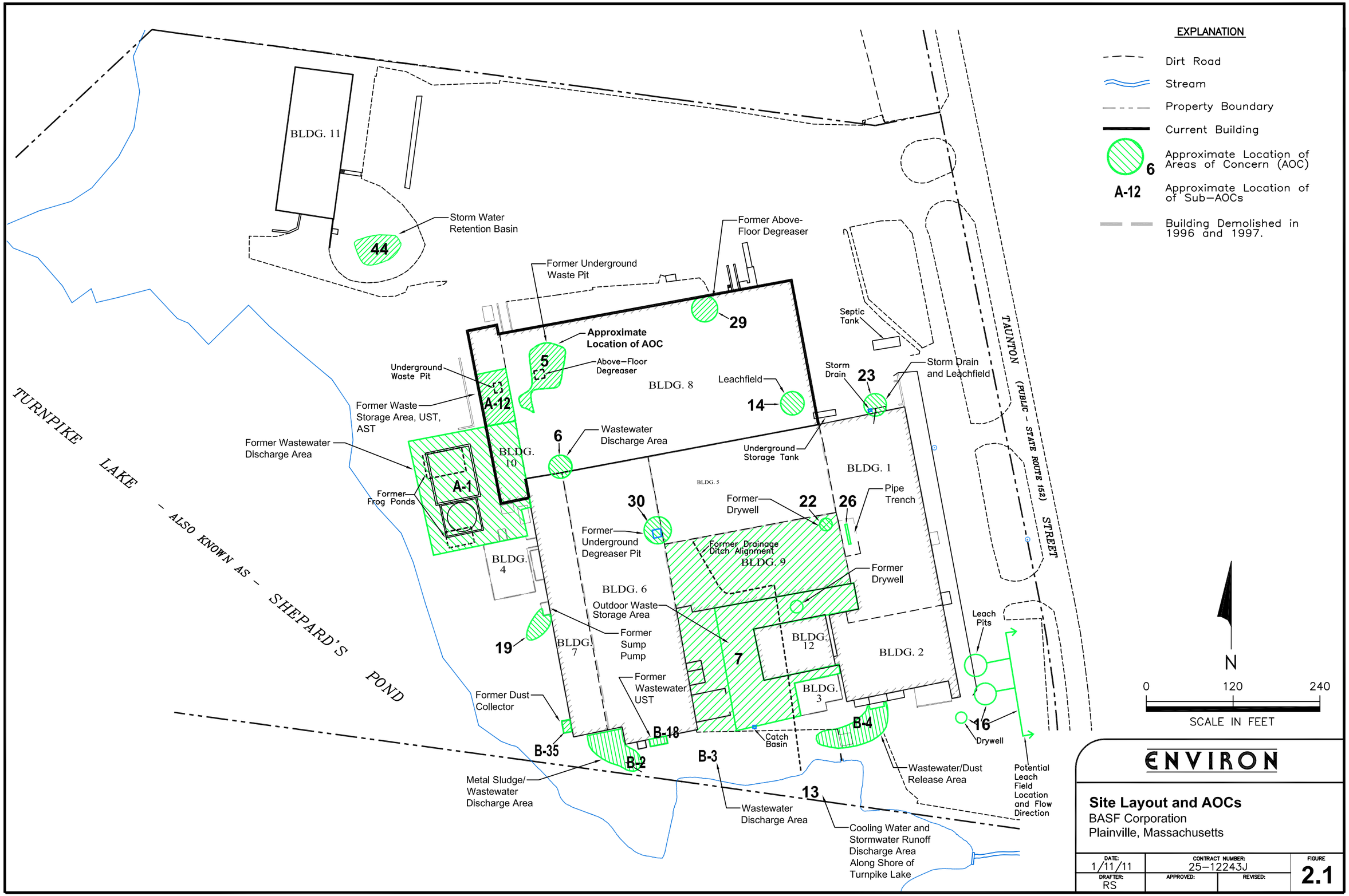
◌ Not impaired, showing no unacceptable ecological risk, HQs<2, or comparable to reference.

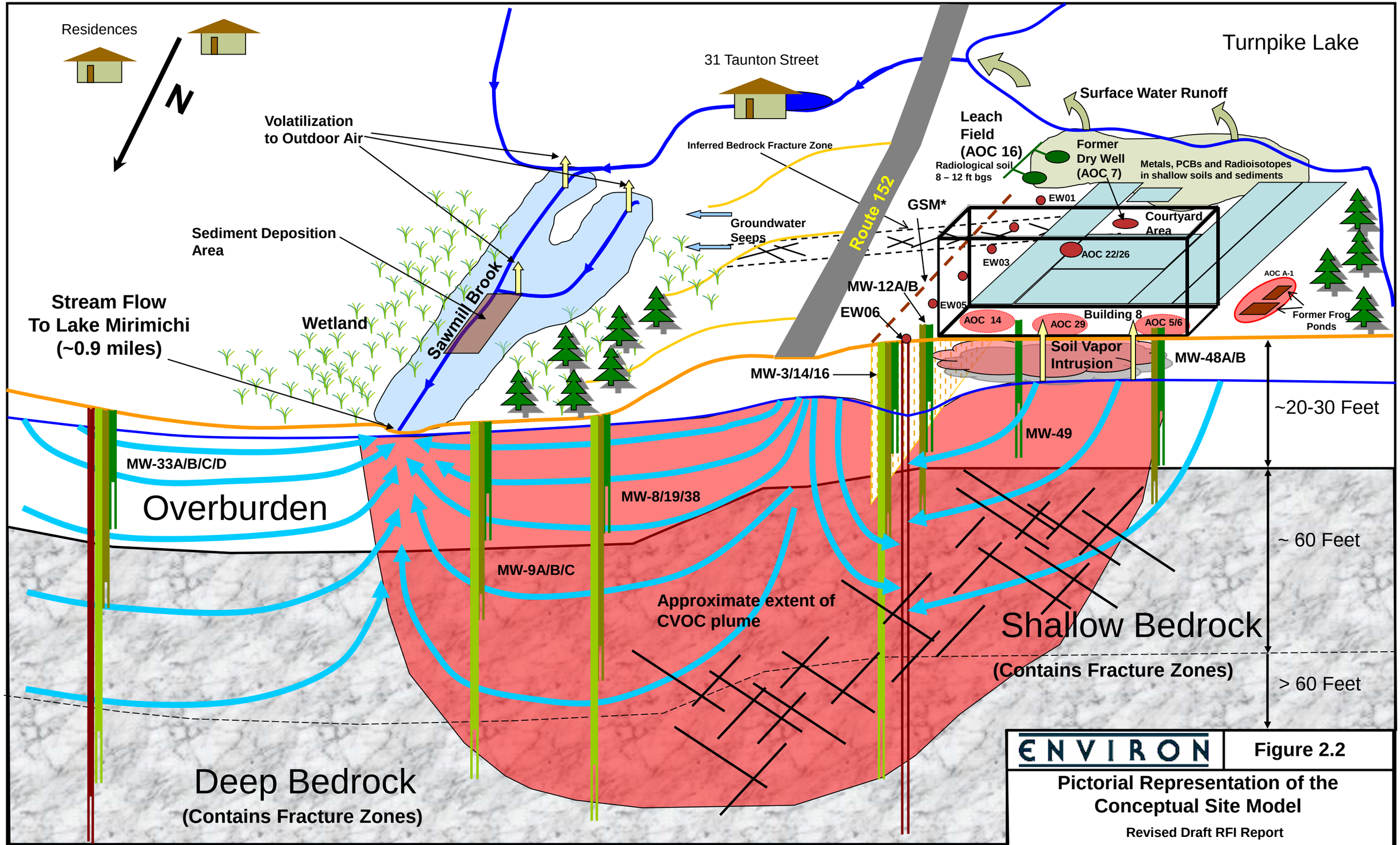
\+ Indicative of toxic response.

U Adverse effects are uncertain based on this line of evidence.

(a) HQs for divalent metals and chromium not considered for empirically derived benchmarks because EqP approach is more apprpriate

(b) EPA (2005) EqP Approach applies for cadmium, copper, lead, nickel, silver, and zinc. Chromium is considered as well.


EXPLANATION
Dirt Road
Stream
Property Boundary
Current Building
6
Approximate Location of Areas of Concern (AOC)
A-12
Approximate Location of of Sub–AOCs
Building Demolished in 1996 and 1997.
BLDG. 11
Storm Water Retention Basin
44
Former Above-Floor Degreaser
Former Underground Waste Pit
29
Approximate Location of AOC
5
Above–Floor Degreaser
Septic Tank
Storm Drain
23
Storm Drain and Leachfield
Underground Waste Pit
A-12
BLDG. 8
Leachfield
14
Former Waste Storage Area, UST, AST
6
Wastewater Discharge Area
Former Wastewater Discharge Area
BLDG. 10
A-1
Former Frog Ponds
Underground Storage Tank
BLDG. 1
BLDG. 5
30
Former Drywell
22
26
Pipe Trench
Former Underground Degreaser Pit
Former Drainage Ditch Alignment
BLDG. 9
Former Drywell
BLDG. 4
BLDG. 6
Outdoor Waste Storage Area
Former Sump Pump
19
BLDG. 7
7
BLDG. 12
BLDG. 2
Leach Pits
Former Wastewater UST
BLDG. 3
Former Dust Collector
B-18
B-4
16
Drywell
B-35
B-2
B-3
Catch Basin
Metal Sludge/ Wastewater Discharge Area
Wastewater Discharge Area
13
Wastewater/Dust Release Area
Potential Leach Field Location and Flow Direction
Cooling Water and Stormwater Runoff Discharge Area Along Shore of Turnpike Lake
TURNPIKE LAKE – ALSO KNOWN AS – SHEPARD'S POND
TAUNTON (PUBLIC – STATE ROUTE 152) STREET
N
0
120
240
SCALE IN FEET
ENVIRON
Site Layout and AOCs
BASF Corporation
Plainville, Massachusetts
DATE: 1/11/11
CONTRACT NUMBER: 25–12243J
FIGURE 2.1
DRAFTER: RS
APPROVED:
REVISED:
Q:\DRAWINGS\2512243J\2512243J–aoC–Layout.dwg – Thu, 27 Jan 2011 – 5:31pm



ENVIRON

Figure 2.2

Pictorial Representation of the Conceptual Site Model

Revised Draft RFI Report

BASF Corporation, Plainville, Massachusetts

* GSM = 6 Pumping Wells and Vertical HDPE Barrier Wall

0 0.3 0.6 0.9 1.2 1.5 km

0 0.2 0.4 0.6 0.8 1 mi

M=-15.387
G=-1.545

Map center is UTM 19 308962E 4654142N (NAD27)
Franklin quadrangle
Projection is UTM Zone 19 NAD83 Datum

DRAFT

ENVIRON	**Site Location Map** **Revised Draft RFI Report** **BASF Corporation, Plainville Massachusetts**	**Figure** **2.3**

DRAFT

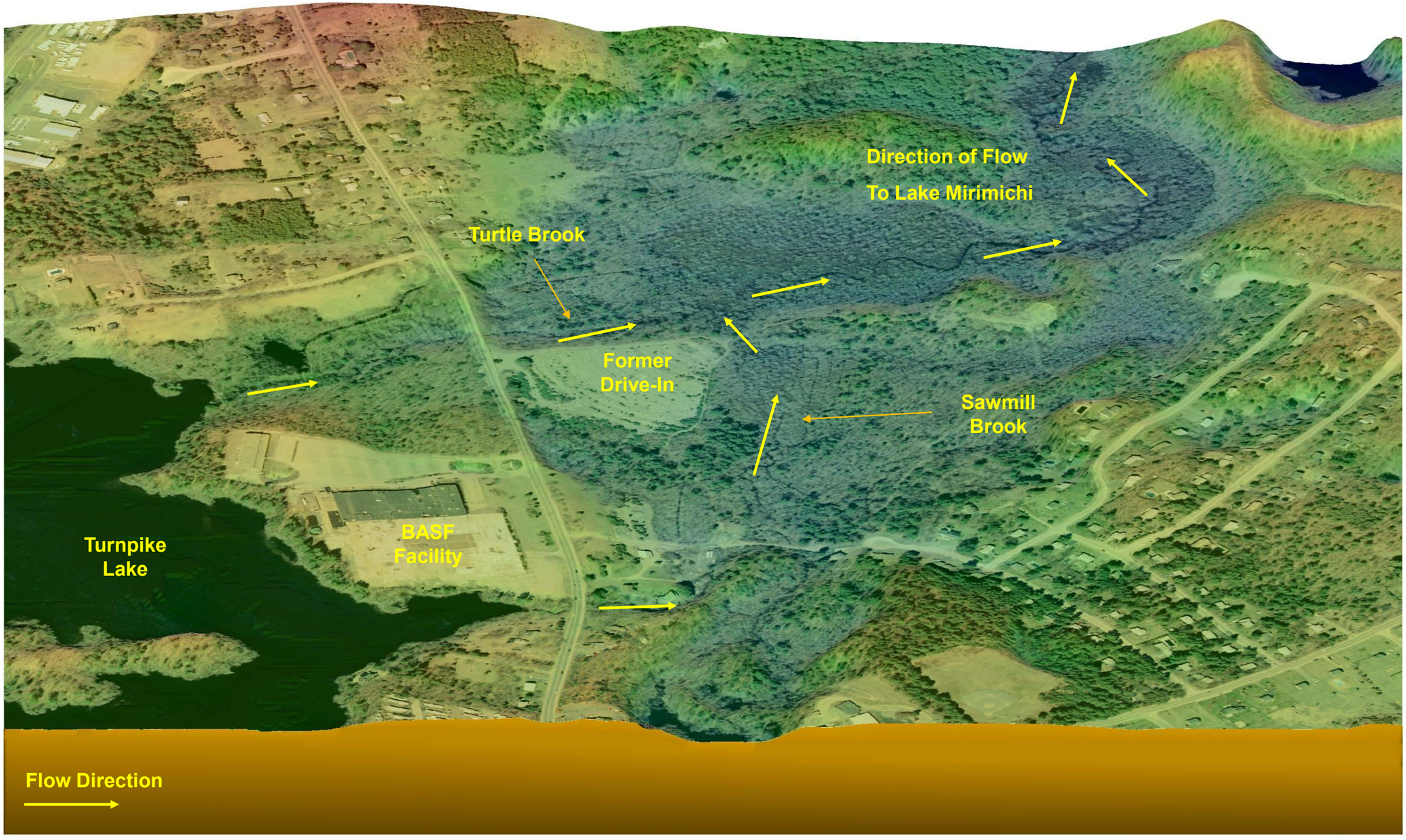
ENVIRON

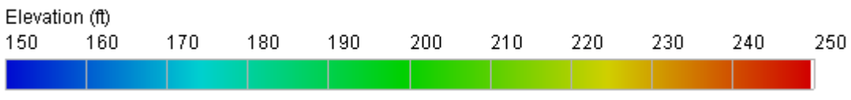
Aerial Photo of Site and Surrounding Area

Revised Draft RFI Report

BASF Corporation, Plainville Massachusetts

Figure 2.4





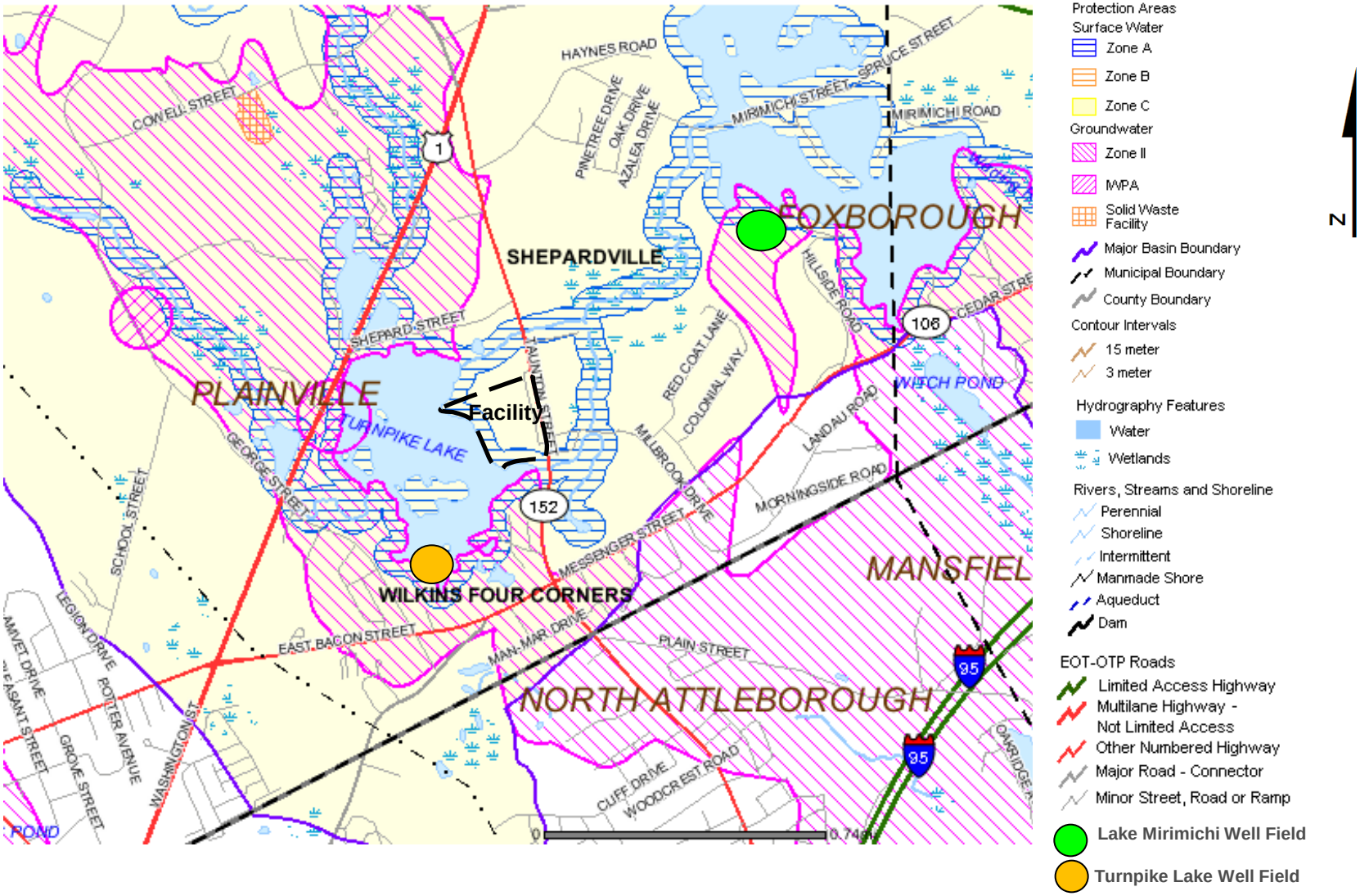
ENVIRON

Figure 2.5

Three Dimensional Representation of Site Topography (Vertical Exaggeration 3x)

Revised Draft RFI Report

BASF Corporation, Plainville, MA



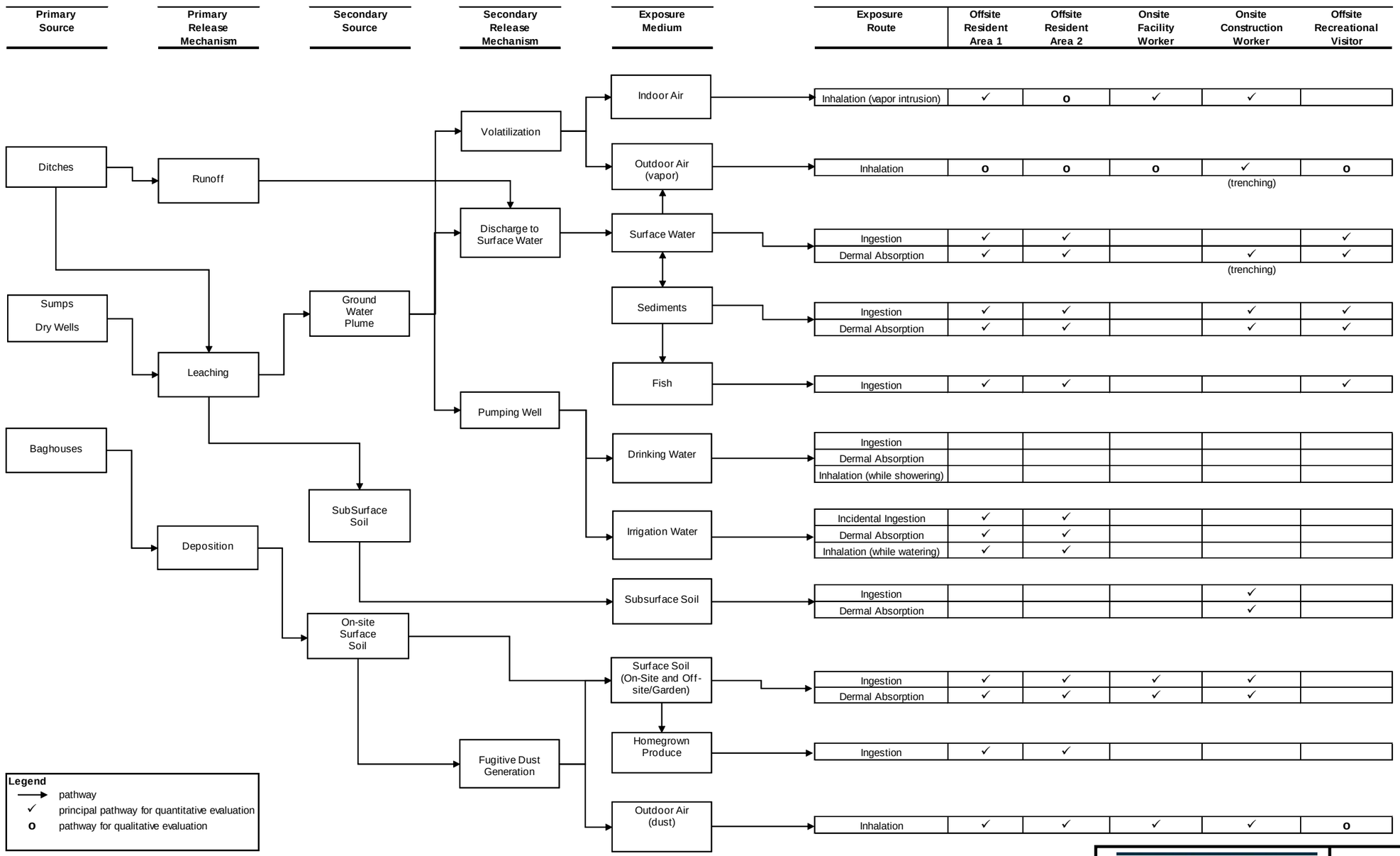
ENVIRON

Water Supply Protection Areas

Revised Draft RFI Report

BASF Corporation, Plainville Massachusetts

Figure 2.6



Exposure Route	Offsite Resident Area 1	Offsite Resident Area 2	Onsite Facility Worker	Onsite Construction Worker	Offsite Recreational Visitor
Inhalation (vapor intrusion)	✓	o	✓	✓	
Inhalation	o	o	o	✓ (trenching)	o
Ingestion	✓	✓			✓
Dermal Absorption	✓	✓		✓ (trenching)	✓
Ingestion	✓	✓		✓	✓
Dermal Absorption	✓	✓		✓	✓
Ingestion	✓	✓			✓
Ingestion					
Dermal Absorption					
Inhalation (while showering)					
Incidental Ingestion	✓	✓			
Dermal Absorption	✓	✓			
Inhalation (while watering)	✓	✓			
Ingestion				✓	
Dermal Absorption				✓	
Ingestion	✓	✓	✓	✓	
Dermal Absorption	✓	✓	✓	✓	
Ingestion	✓	✓			
Inhalation	✓	✓	✓	✓	o

DRAFT

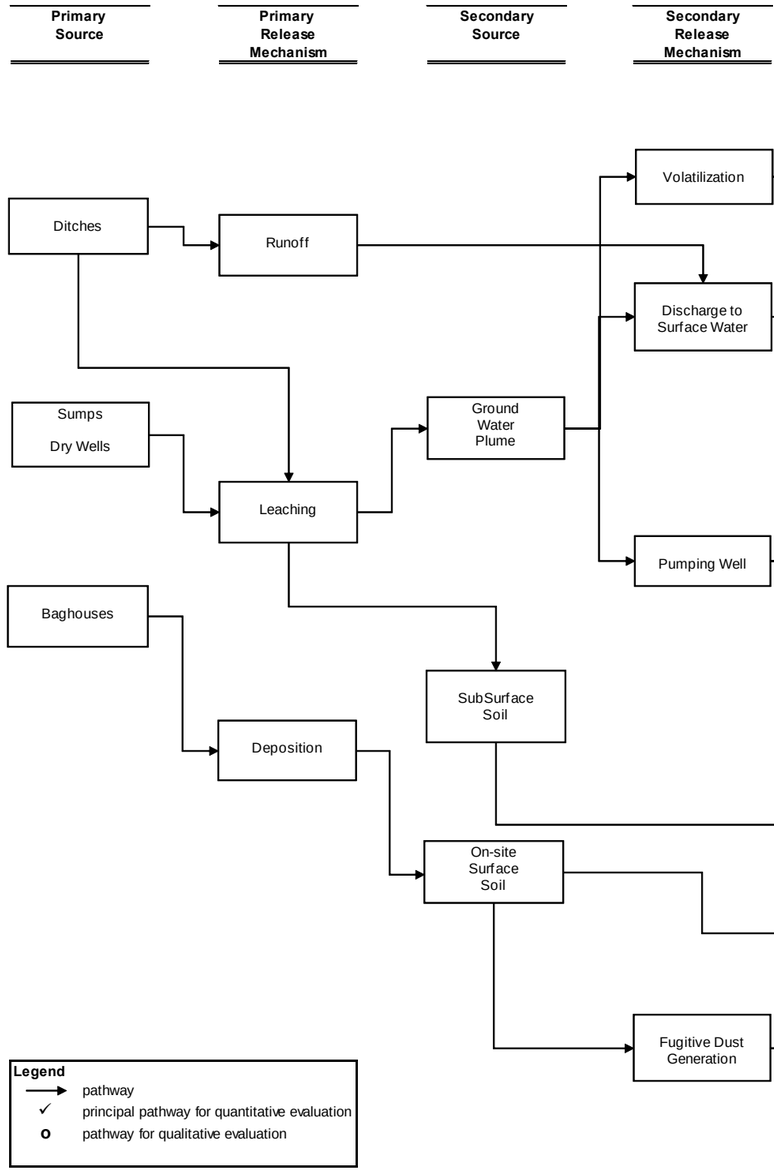
ENVIRON

Figure 2.7

Potential Exposure Pathways Under Current Land Use Scenarios

Revised Draft RFI Report

BASF Corporation, Plainville Massachusetts



Exposure Medium	Exposure Route	Onsite Resident	Offsite Resident Area 1	Offsite Resident Area 2	Onsite Facility Worker	Onsite Construction Worker	Offsite Recreational Visitor
Indoor Air	Inhalation (vapor intrusion)	✓	✓	o	✓	✓	
Outdoor Air (vapor)	Inhalation	o	o	o	o	✓ (trenching)	o
Surface Water	Ingestion	✓	✓	✓			✓
	Dermal Absorption	✓	✓	✓		✓ (trenching)	✓
Sediments	Ingestion	✓	✓	✓		✓	✓
	Dermal Absorption	✓	✓	✓		✓	✓
Fish	Ingestion	✓	✓	✓			✓
Drinking Water	Ingestion	✓	✓	✓	✓		
	Dermal Absorption	✓	✓	✓	✓		
	Inhalation (while showering)	✓	✓	✓			
Irrigation Water	Incidental Ingestion	✓	✓	✓			
	Dermal Absorption	✓	✓	✓			
	Inhalation (while watering)	✓	✓	✓			
Subsurface Soil	Ingestion					✓	
	Dermal Absorption					✓	
Surface Soil (On-Site and Off-site/Garden)	Ingestion	✓	✓	✓	✓	✓	
	Dermal Absorption	✓	✓	✓	✓	✓	
Homegrown Produce	Ingestion	✓	✓	✓			
Outdoor Air (dust)	Inhalation	✓	✓	✓	✓	✓	o

DRAFT

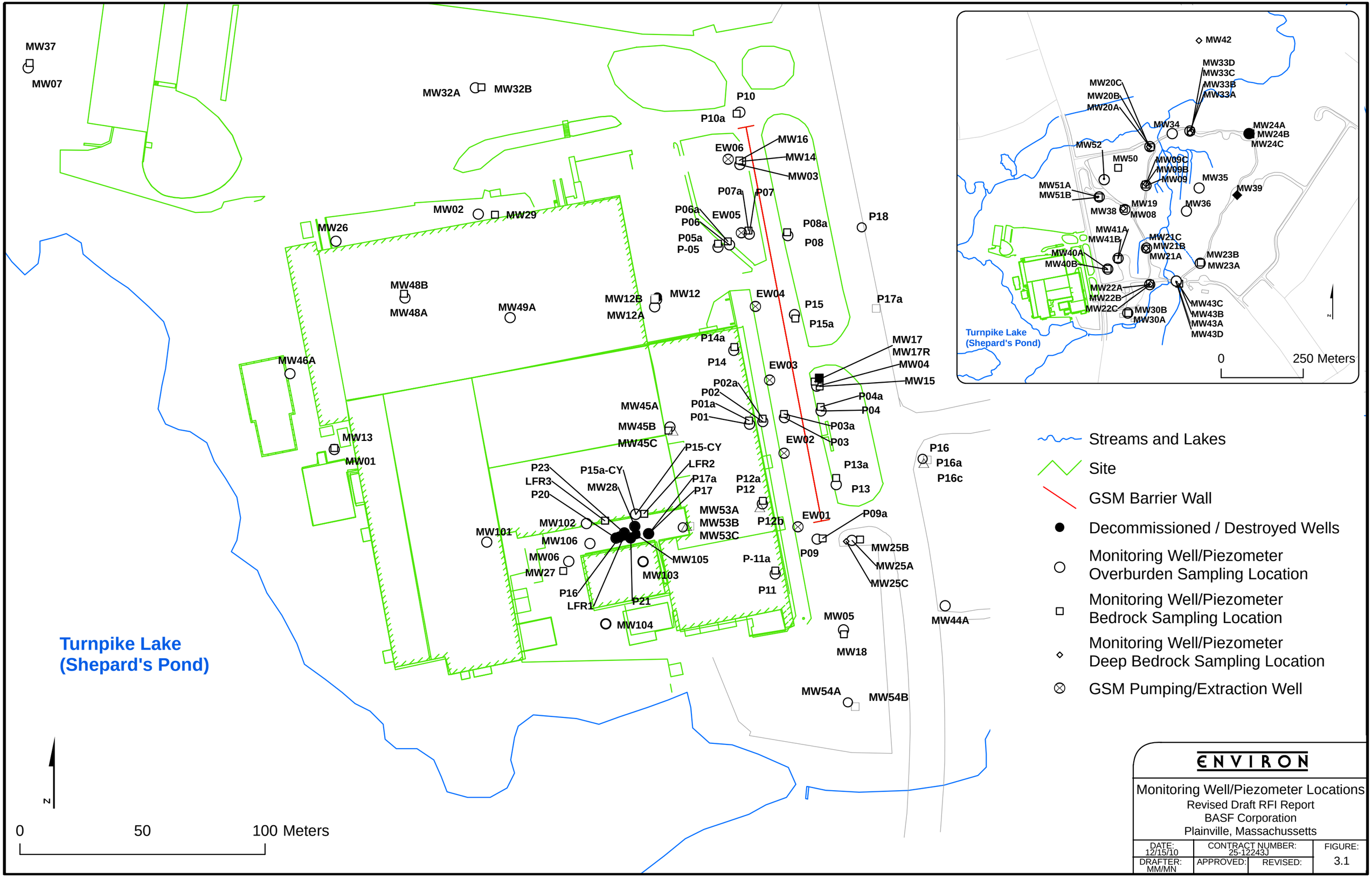
ENVIRON

Figure 2.8

Potential Exposure Pathways Under Reasonably Forseeable Future Use Scenarios

Revised Draft RFI Report

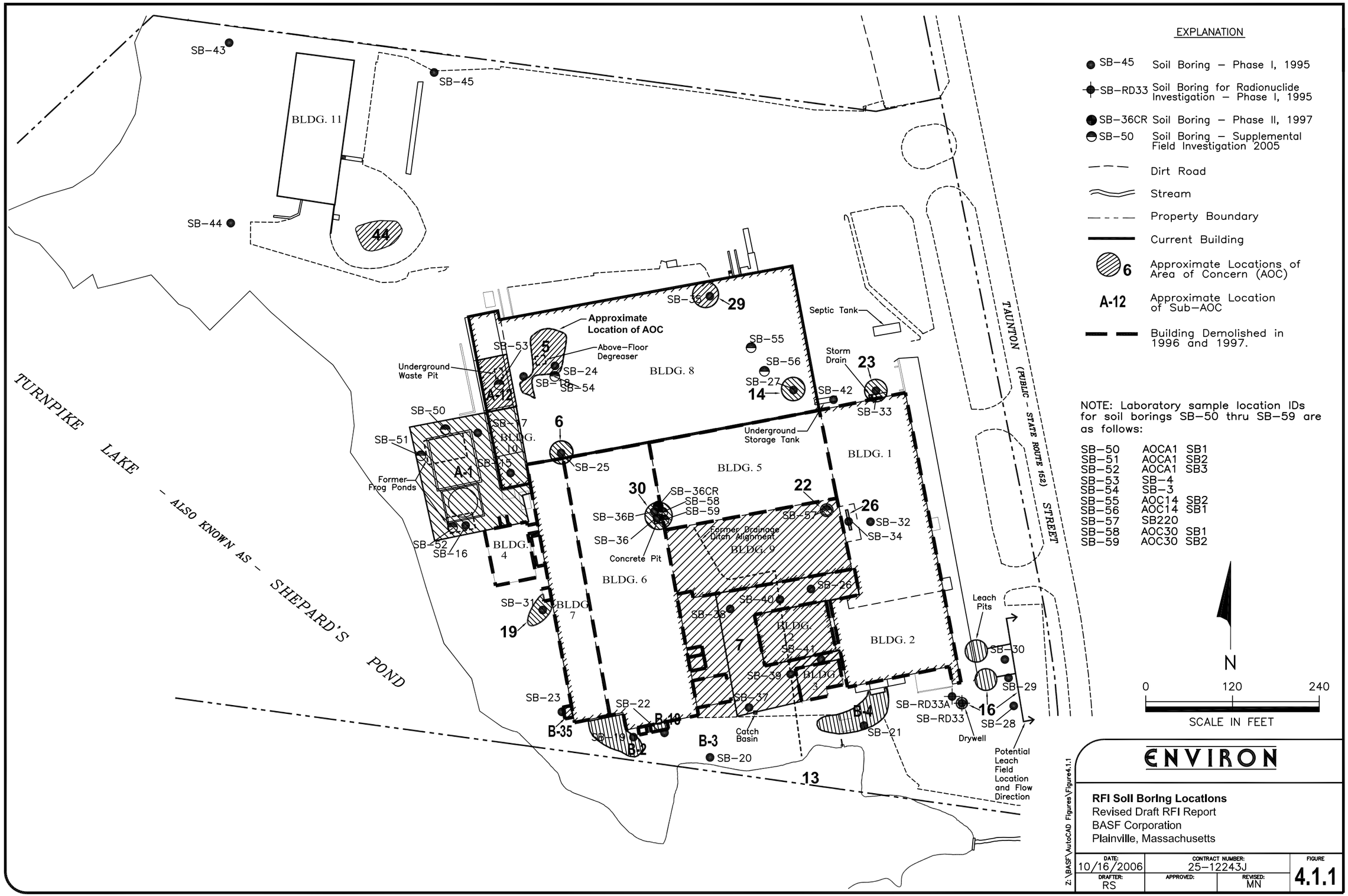
BASF Corporation, Plainville Massachusetts



ENVIRON

Monitoring Well/Piezometer Locations
Revised Draft RFI Report
BASF Corporation
Plainville, Massachussetts

DATE: 12/15/10	CONTRACT NUMBER: 25-122431		FIGURE: 3.1
DRAFTER: MM/MN	APPROVED:	REVISED:	



ENVIRON

RFI Soil Boring Locations
Revised Draft RFI Report
BASF Corporation
Plainville, Massachusetts

DATE:	CONTRACT NUMBER:		FIGURE
10/16/2006	25-12243J		4.1.1
DRAFTER: RS	APPROVED:	REVISED: MN	

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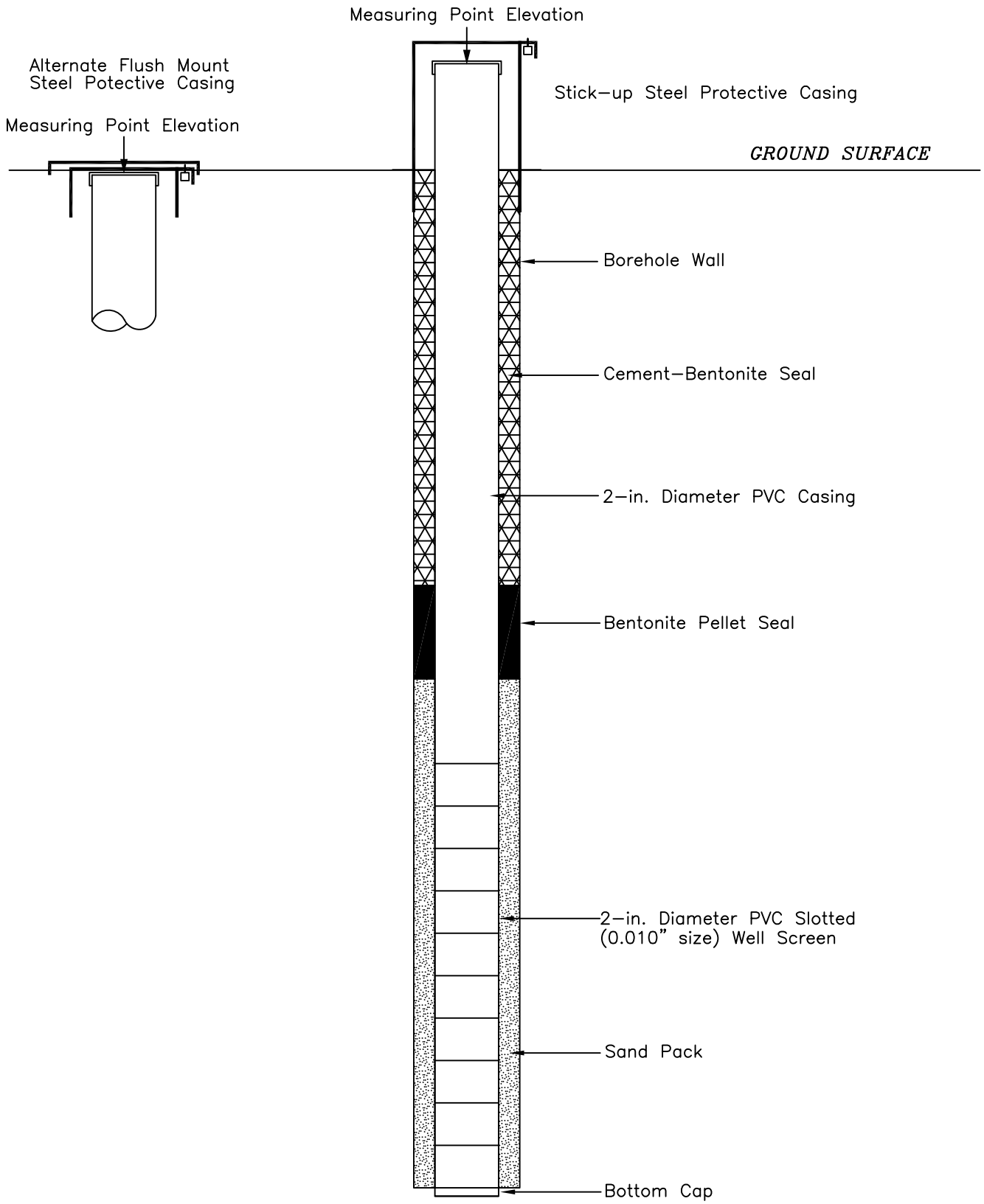


Z:\BASF\AUTOCADFIGURES\FIGURES4.2.1

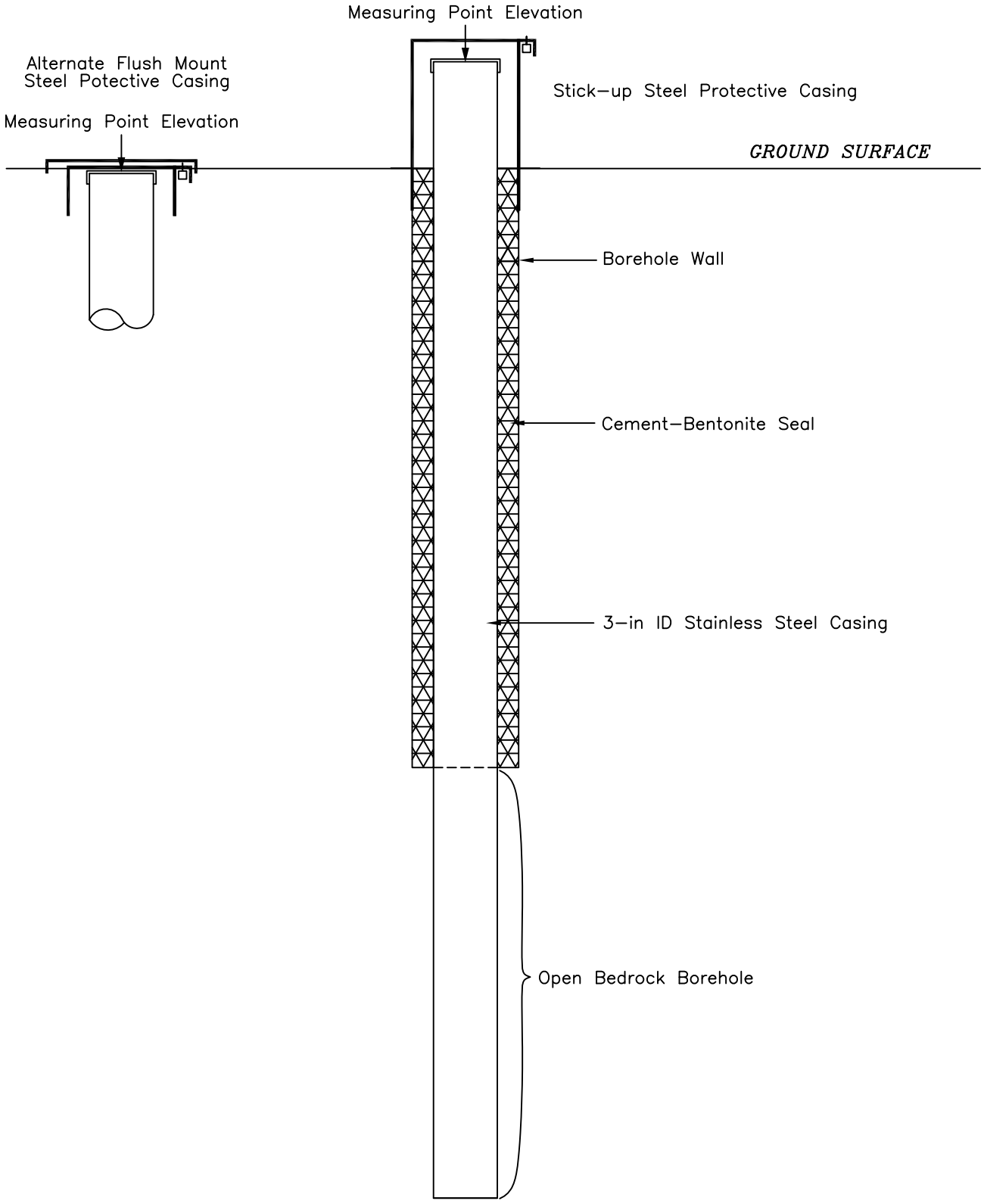
Note: For specific information concerning individual monitoring wells, see boring logs.

ENVIRON

Typical Overburden Groundwater Monitoring Well Construction
Revised Draft RFI Report
BASF Corporation, Plainville, MA

Figure **4.2.1**

Drafter: RS | Date: 10/16/2006 | Contract Number: 25–12243J | Approved: | Revised: MN



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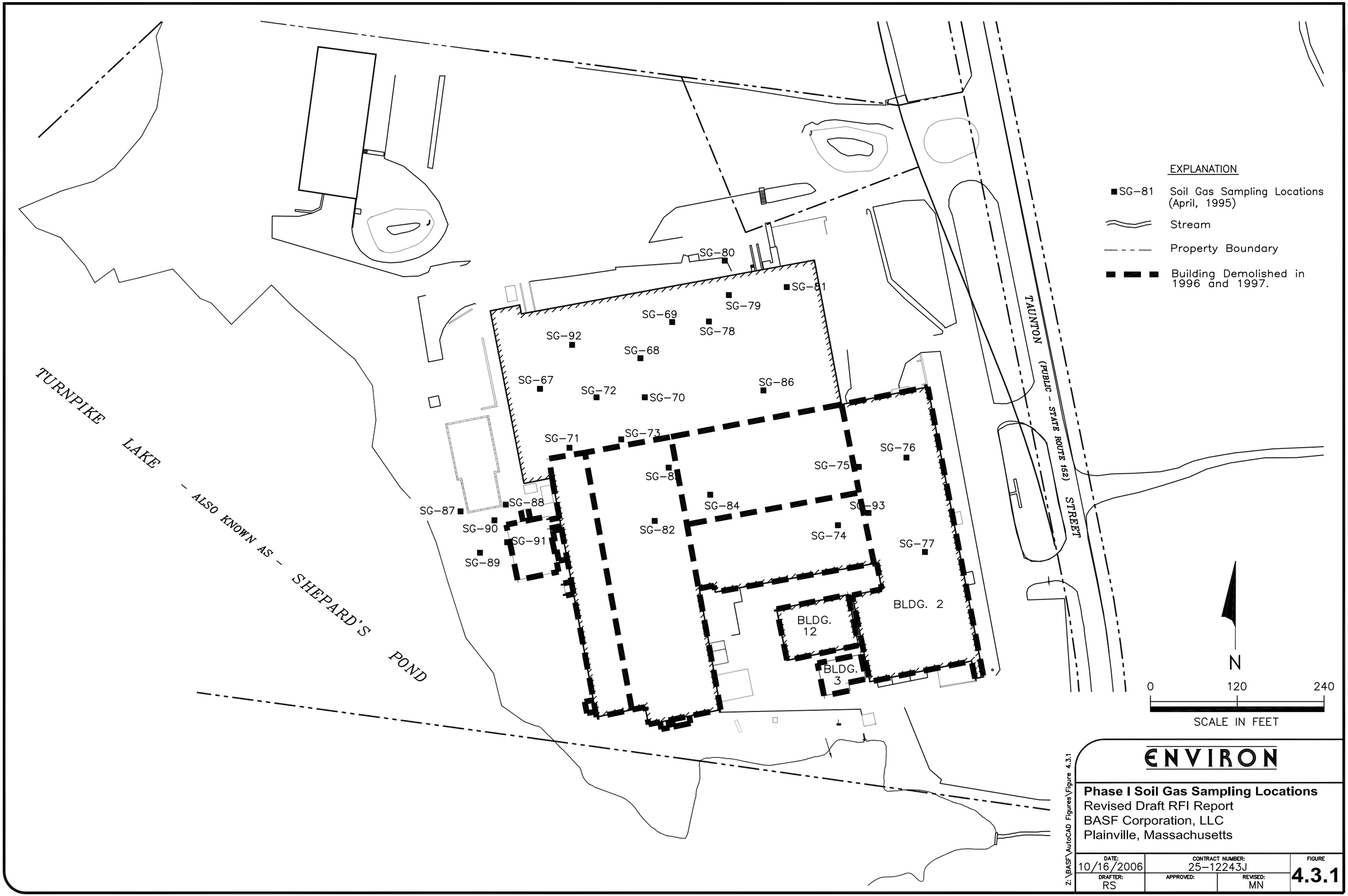
Note: For specific information concerning individual monitoring wells, see boring logs.

ENVIRON

Typical Bedrock Groundwater Monitoring Well Construction
Revised Draft RFI Report
BASF Corporation, LLC, Plainville, MA

Figure
4.2.2

Drafter: RS | Date: 10/16/2006 | Contract Number: 25–12243J | Approved: | Revised: MN



ENVIRON

Phase I Soil Gas Sampling Locations
Revised Draft RFI Report
BASF Corporation, LLC
Plainville, Massachusetts

DATE:	CONTRACT NUMBER:		FIGURE
10/16/2006	25–12243J		4.3.1
DRAFTER: RS	APPROVED:	REVISED: MN	

Z:\BASF\AutoCAD Figures\Figure 4.3.1

EXPLANATION

Stream

Property Boundary

Soil Gas Sampling Location (April, 1995)

SG	ID
TCE	PCE

All concentrations reported in microliters per liter (ppbv)

ND Indicates not detected at, or above, detection limit

D Duplicate Sample

Building Demolished in 1996 and 1997.

N

0 120 240

SCALE IN FEET

ENVIRON

RFI Phase I Soil Gas Sampling Results
Revised Draft RFI Report
BASF Corporation, LLC
Plainville, Massachusetts

DATE:	CONTRACT NUMBER:		FIGURE
10/16/2006	25-12243J		4.3.2
DRAFTER: RS	APPROVED:	REVISED: MN	

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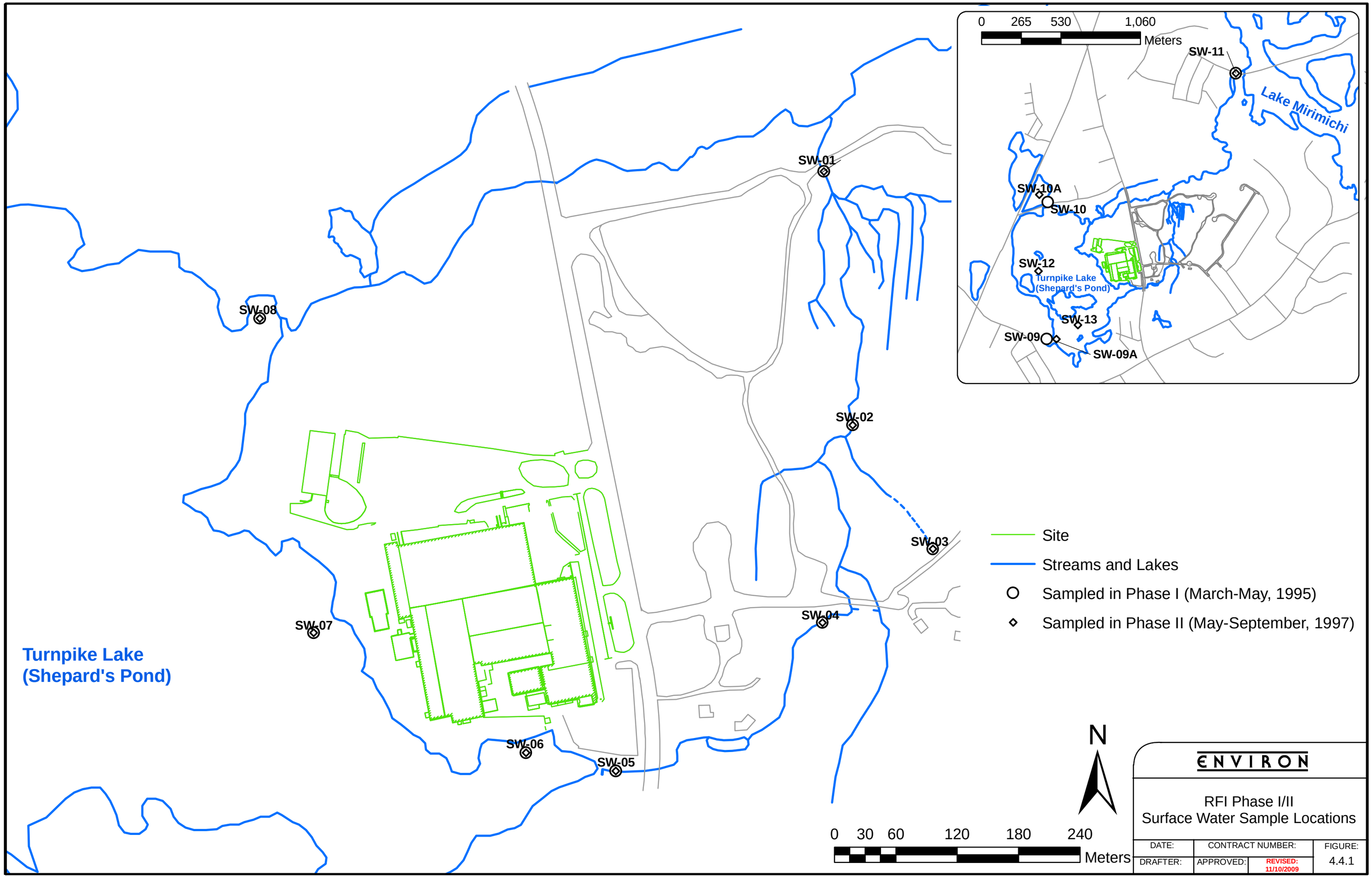
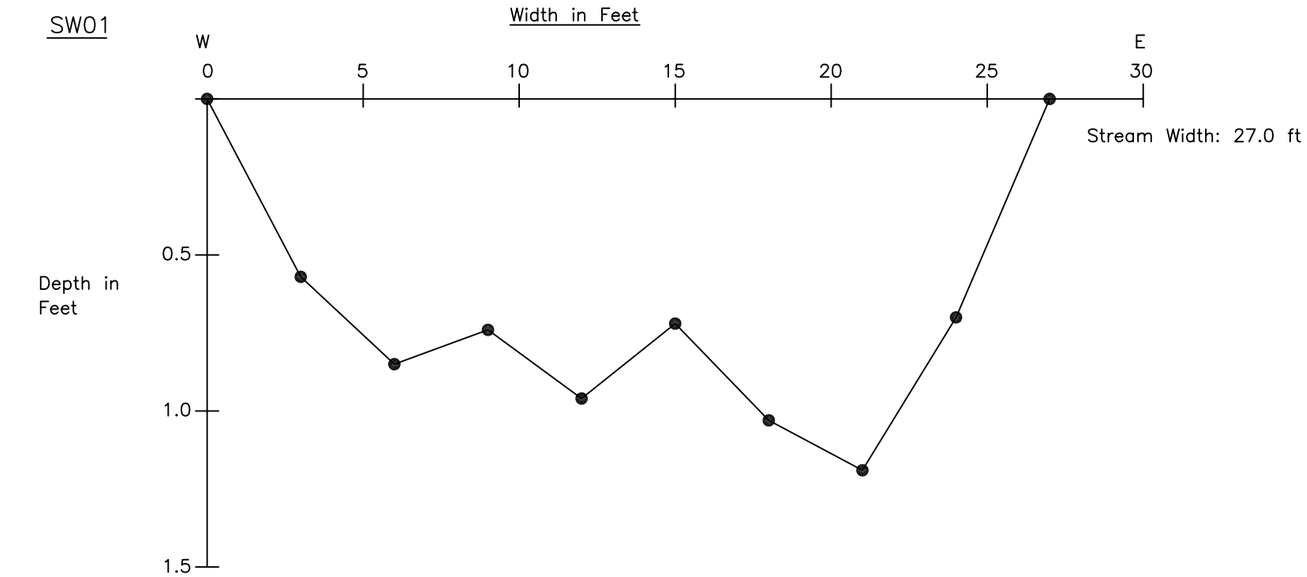
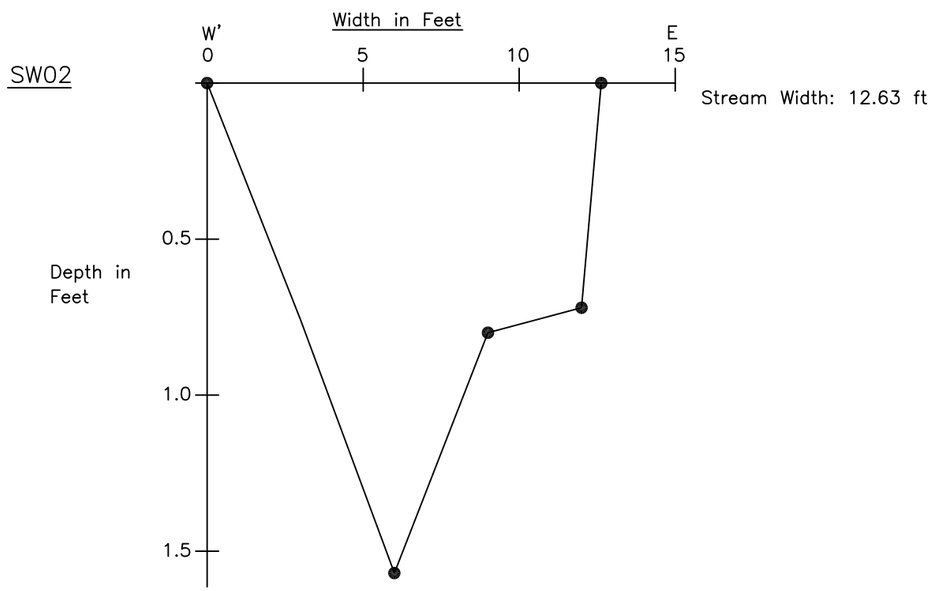
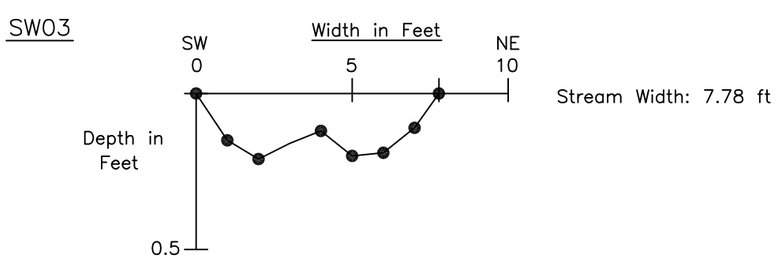
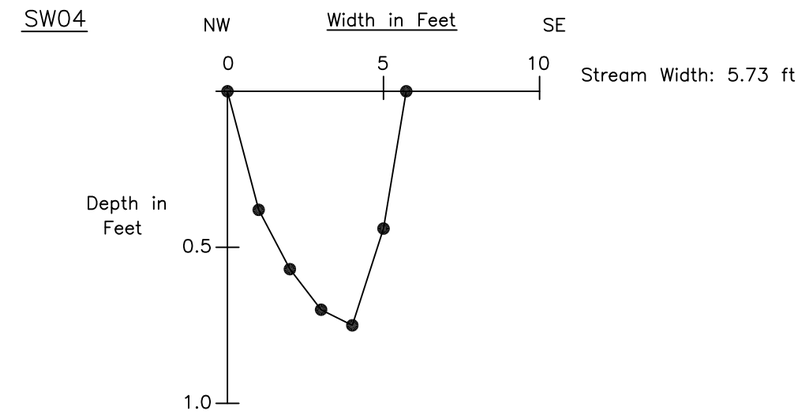
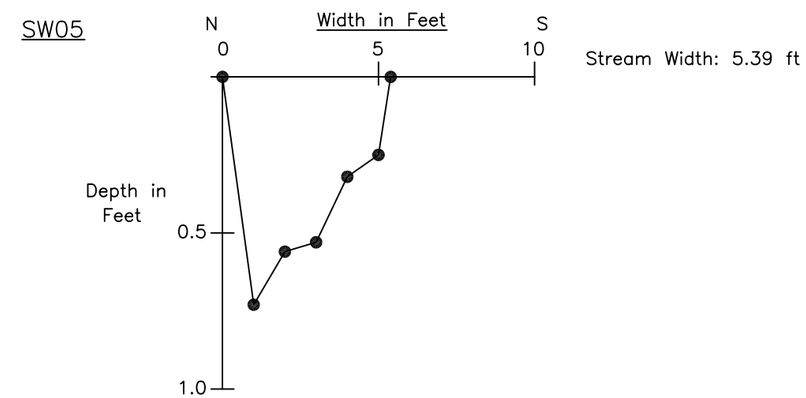

0 265 530 1,060
Meters
SW-11
Lake Mirimichi
SW-10A
SW-10
SW-12
Turnpike Lake
(Shepard's Pond)
SW-13
SW-09
SW-09A
SW-01
SW-08
SW-02
SW-03
SW-04
SW-07
SW-06
SW-05
Turnpike Lake
(Shepard's Pond)
Site
Streams and Lakes
Sampled in Phase I (March-May, 1995)
Sampled in Phase II (May-September, 1997)
N
0 30 60 120 180 240
Meters
ENVIRON
RFI Phase I/II
Surface Water Sample Locations
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
11/10/2009
4.4.1

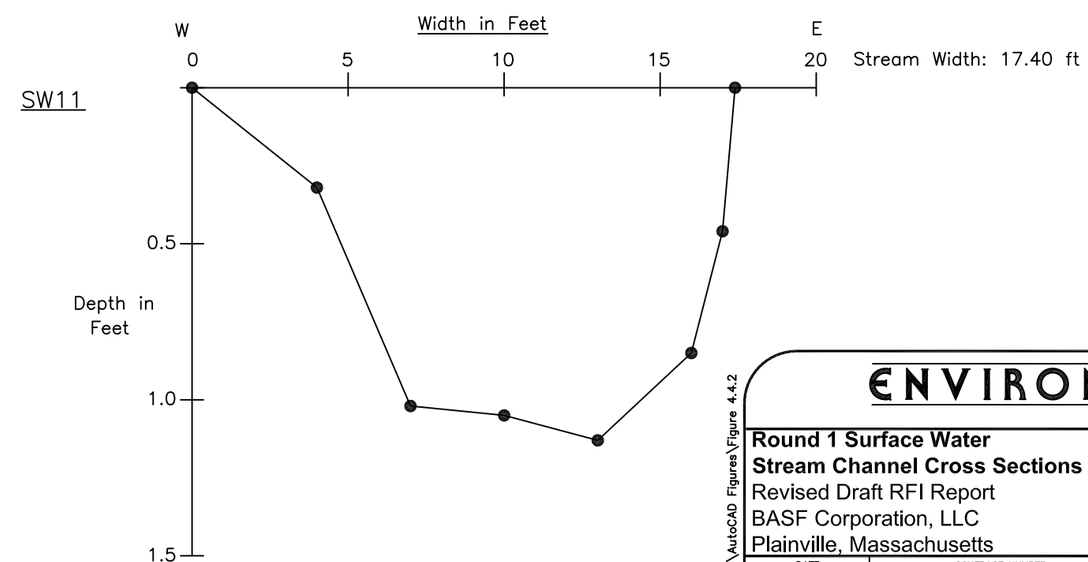










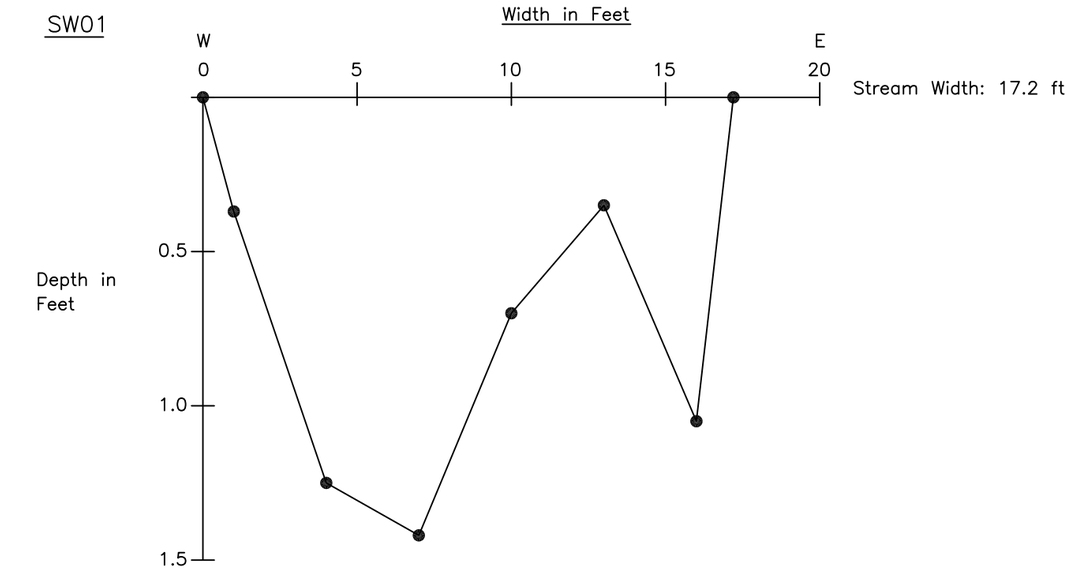


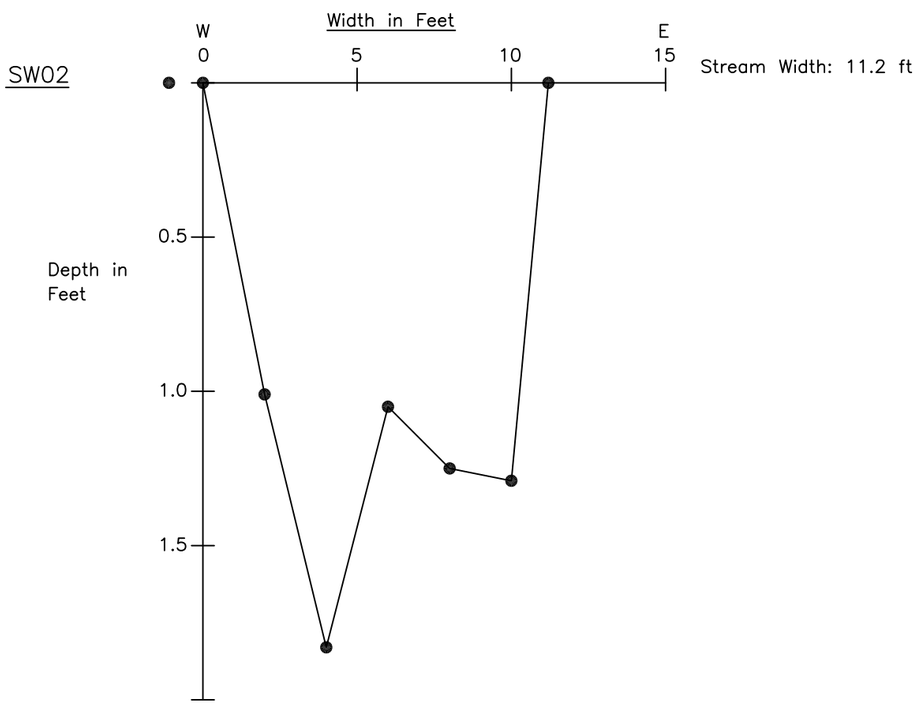
ENVIRON

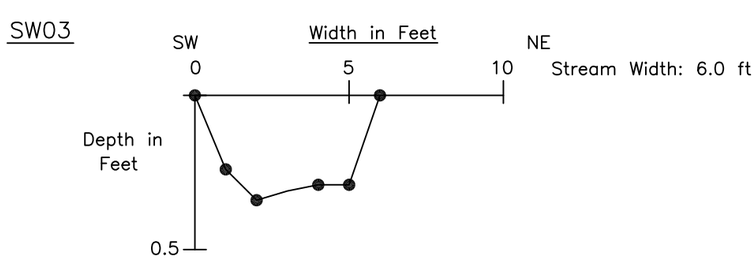
Round 1 Surface Water
Stream Channel Cross Sections (April, 1995)
Revised Draft RFI Report
BASF Corporation, LLC
Plainville, Massachusetts

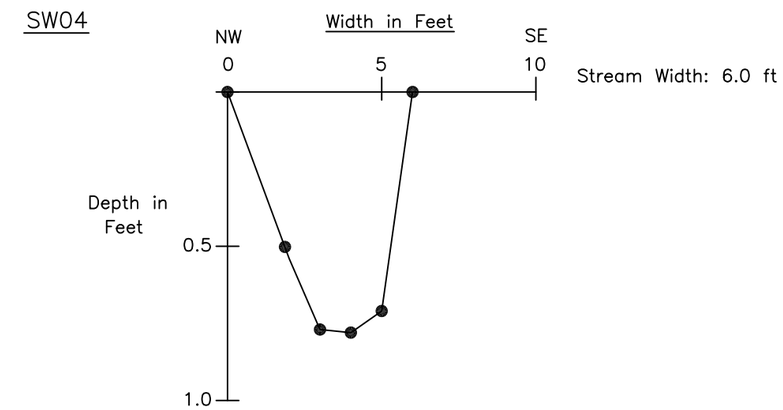
Z:\BASF\AutoCAD Figures\Figure 4.4.2

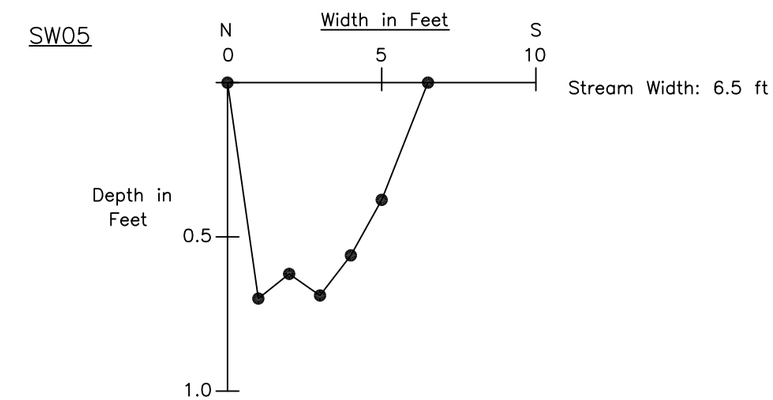
DATE:	CONTRACT NUMBER:		FIGURE
10/17/2006	25-12243J		4.4.2
DRAFTER: RS	APPROVED:	REVISED: MN	

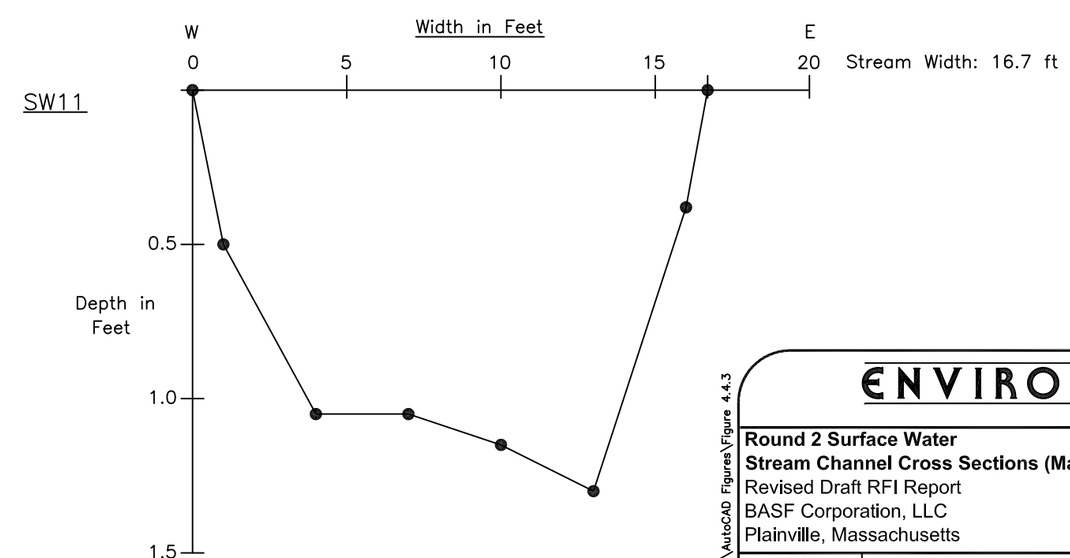












ENVIRON

Round 2 Surface Water
Stream Channel Cross Sections (May, 1995)
Revised Draft RFI Report
BASF Corporation, LLC
Plainville, Massachusetts

DATE:	CONTRACT NUMBER:		FIGURE
10/17/2006	25-12243J		4.4.3
DRAFTER: RS	APPROVED:	REVISED: MN	

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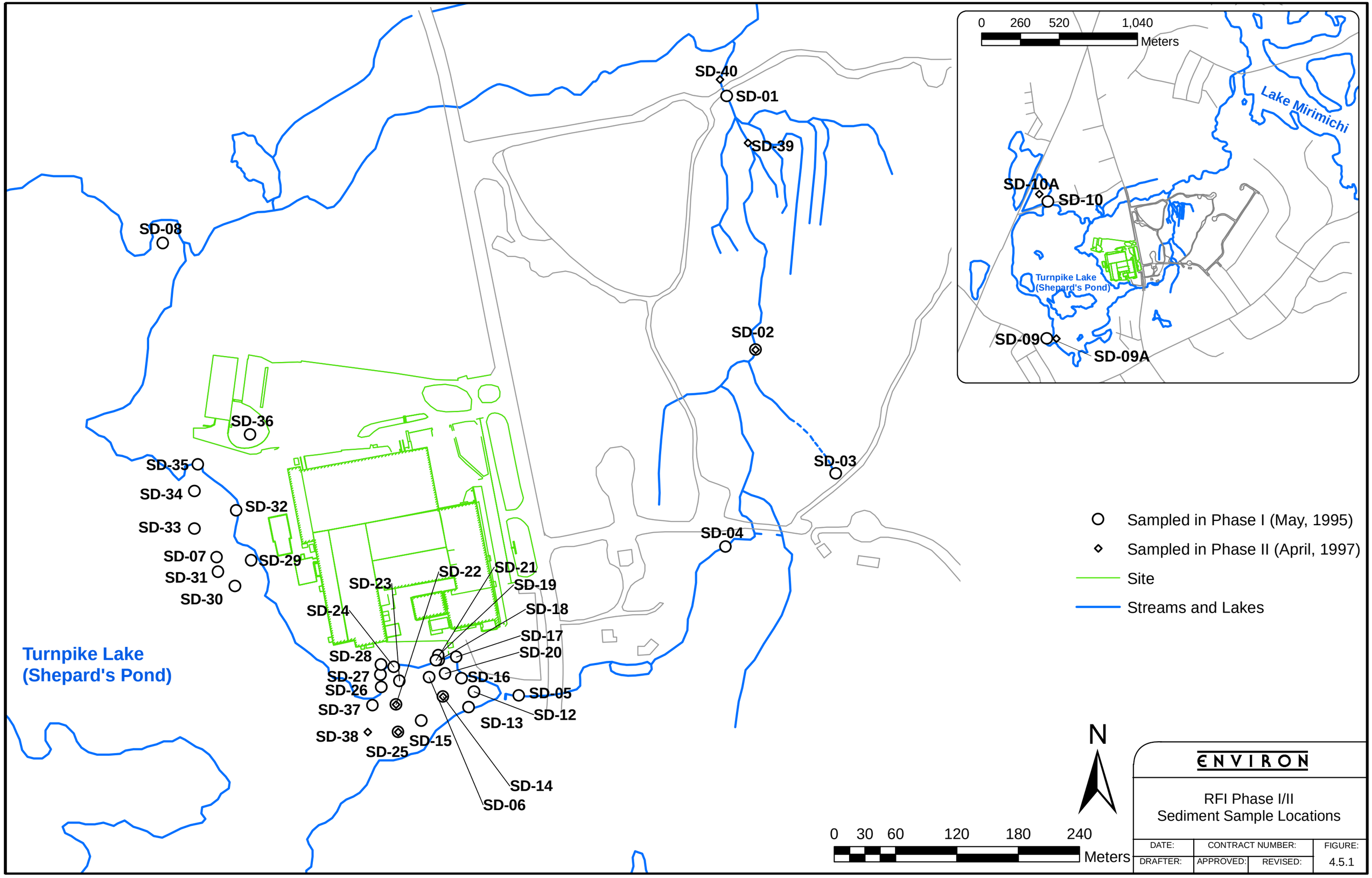
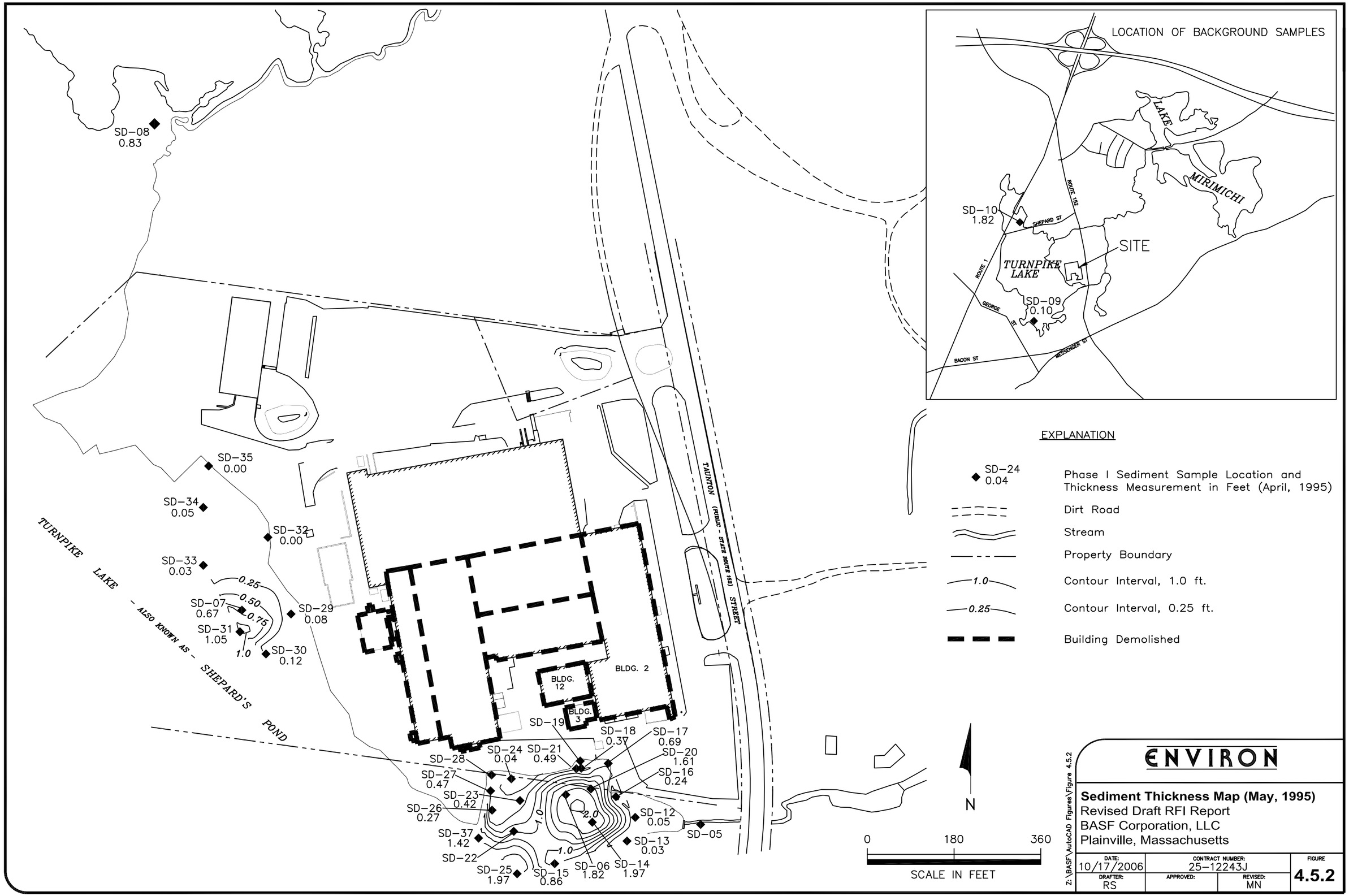
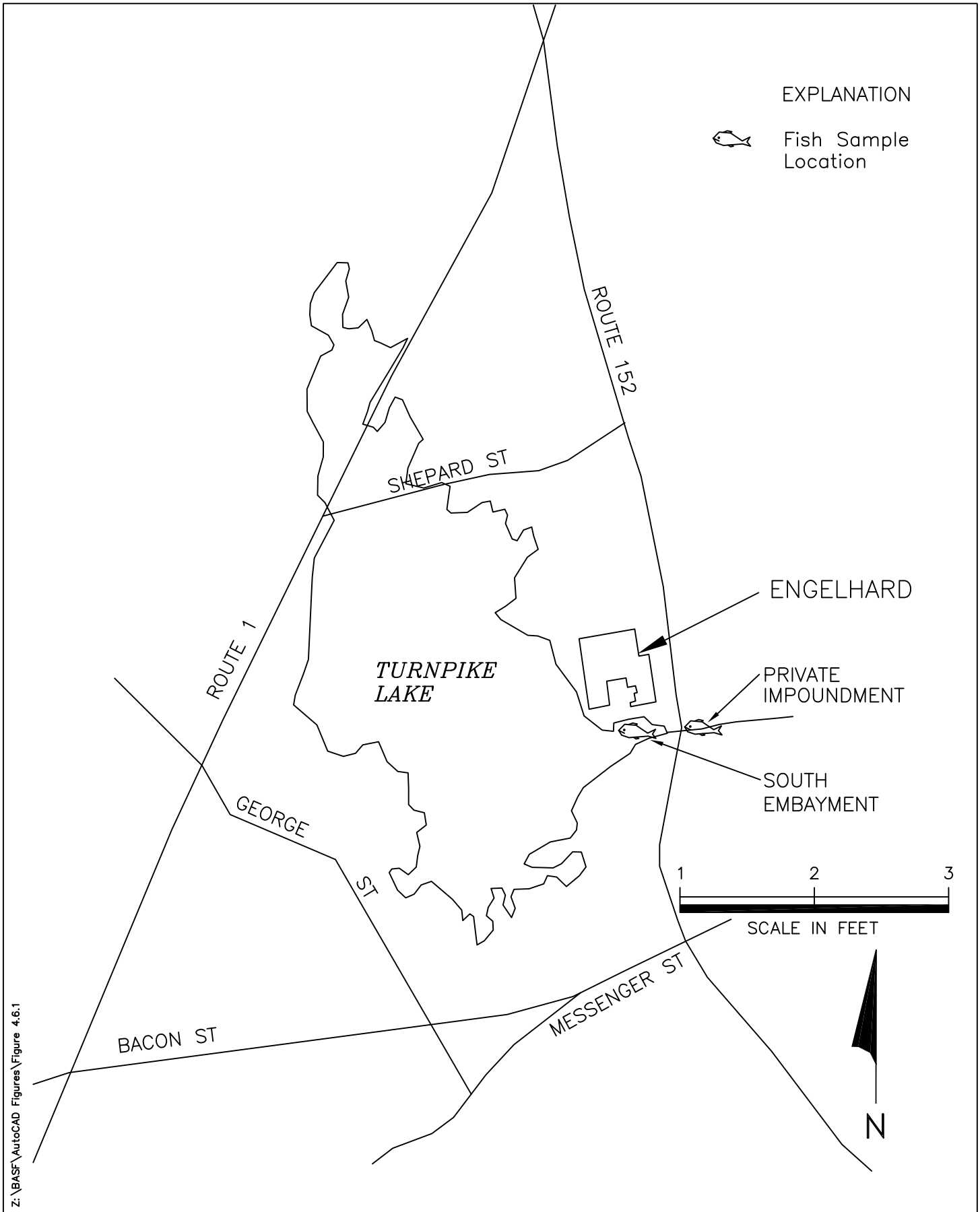

SD-40
SD-01
SD-39
SD-08
SD-02
SD-36
SD-35
SD-34
SD-32
SD-33
SD-07
SD-29
SD-31
SD-30
SD-03
SD-04
SD-23
SD-22
SD-21
SD-19
SD-24
SD-18
SD-17
SD-20
SD-28
SD-27
SD-16
SD-26
SD-05
SD-37
SD-12
SD-13
SD-38
SD-15
SD-25
SD-14
SD-06
Turnpike Lake
(Shepard's Pond)
0 30 60 120 180 240
Meters
N
Sampled in Phase I (May, 1995)
Sampled in Phase II (April, 1997)
Site
Streams and Lakes
0 260 520 1,040
Meters
Lake Mirimichi
SD-10A
SD-10
Turnpike Lake
(Shepard's Pond)
SD-09
SD-09A
ENVIRON
RFI Phase I/II
Sediment Sample Locations
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
4.5.1


LOCATION OF BACKGROUND SAMPLES
LAKE
MIRIMICHI
ROUTE 152
SD-10
1.82
SHEPARD ST
SITE
TURNPIKE LAKE
ROUTE 1
SD-09
0.10
GEORGE ST
BACON ST
MESSENGER ST
SD-08
0.83
SD-35
0.00
SD-34
0.05
SD-32
0.00
SD-33
0.03
SD-07
0.67
SD-31
1.05
SD-29
0.08
SD-30
0.12
0.25
0.50
0.75
1.0
TURNPIKE LAKE
- ALSO KNOWN AS -
SHEPARD'S POND
TAUNTON (PUBLIC - STATE ROUTE 152) STREET
BLDG. 2
BLDG. 12
BLDG. 3
SD-19
SD-18
0.37
SD-17
0.69
SD-20
1.61
SD-16
0.24
SD-24
0.04
SD-21
0.49
SD-28
SD-27
0.47
SD-23
0.42
SD-26
0.27
SD-37
1.42
SD-22
SD-25
1.97
SD-15
0.86
SD-06
1.82
SD-14
1.97
SD-13
0.03
SD-12
0.05
SD-05
2.0
EXPLANATION
SD-24
0.04
Phase I Sediment Sample Location and Thickness Measurement in Feet (April, 1995)
Dirt Road
Stream
Property Boundary
Contour Interval, 1.0 ft.
Contour Interval, 0.25 ft.
Building Demolished
N
0
180
360
SCALE IN FEET
Z:\BASF\AutoCAD Figures\Figure 4.5.2
ENVIRON
Sediment Thickness Map (May, 1995)
Revised Draft RFI Report
BASF Corporation, LLC
Plainville, Massachusetts
DATE:
10/17/2006
CONTRACT NUMBER:
25-12243J
FIGURE
4.5.2
DRAFTER:
RS
APPROVED:
REVISED:
MN



Z:\BASF\AutoCAD Figures\Figure 4.6.1

ENVIRON

Fish TissueSampling Locations (May, 1995)
Revised Draft RFI Report
BASF Corporation
Plainville, Massachusetts

Figure 4.6.1

Drafter: RS | Date: 10/17/2006 | Contract Number: 25-12243J | Approved: | Revised: MN

Source: U.S. Geological Survey, Wrentham, MA 1989, Terraserver

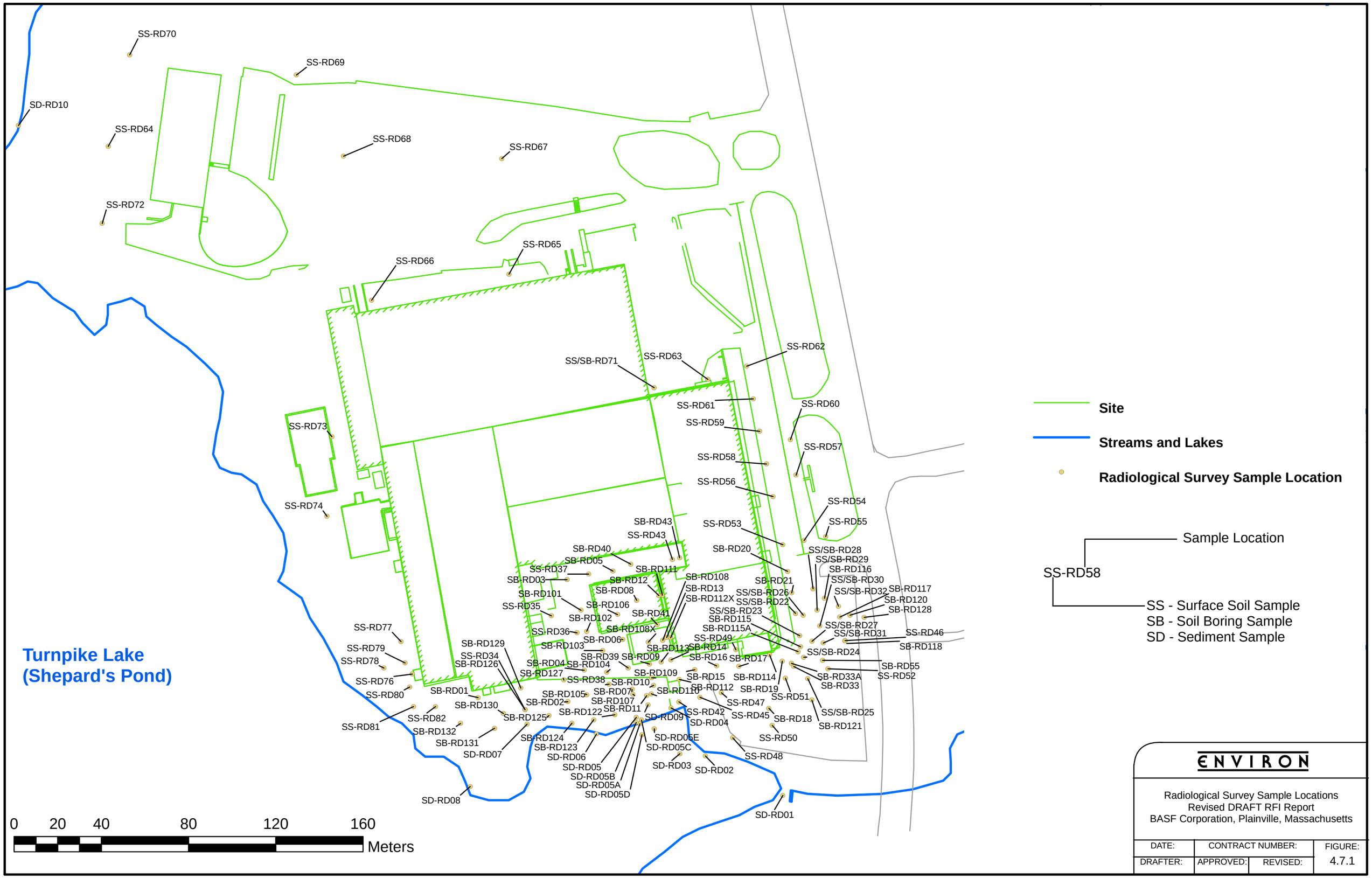
Z:\AutoCAD Figures\Figure 4.6.2

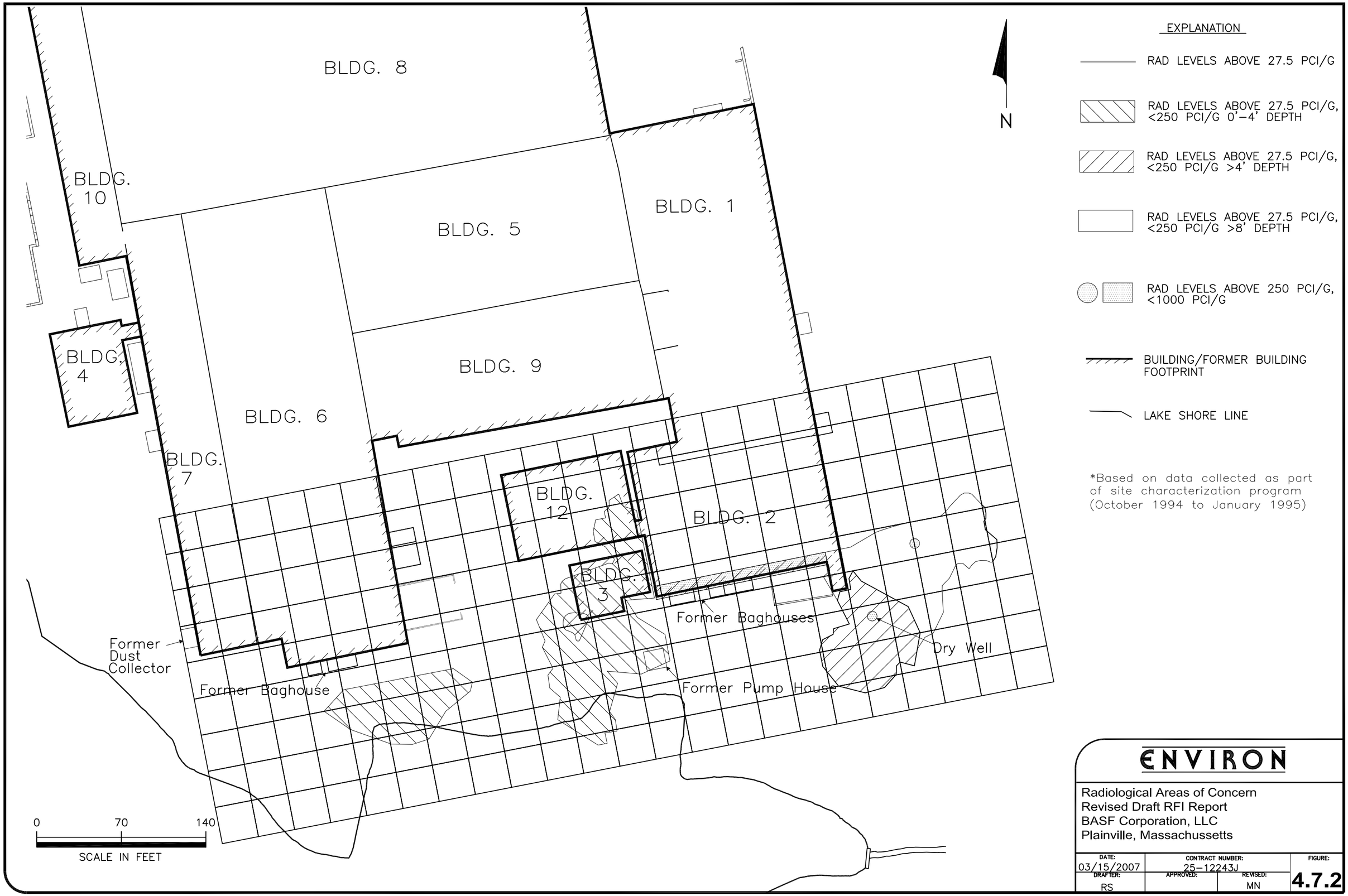
ENVIRON

Background Fish Tissue Sampling Locations (May, 1995)
Revised Draft RFI Report
BASF Corporation
Plainville, Massachusetts

Figure
4.6.2

Drafter: RS | Date: 10/18/2006 | Contract Number: 25-12243J | Approved: | Revised: MN

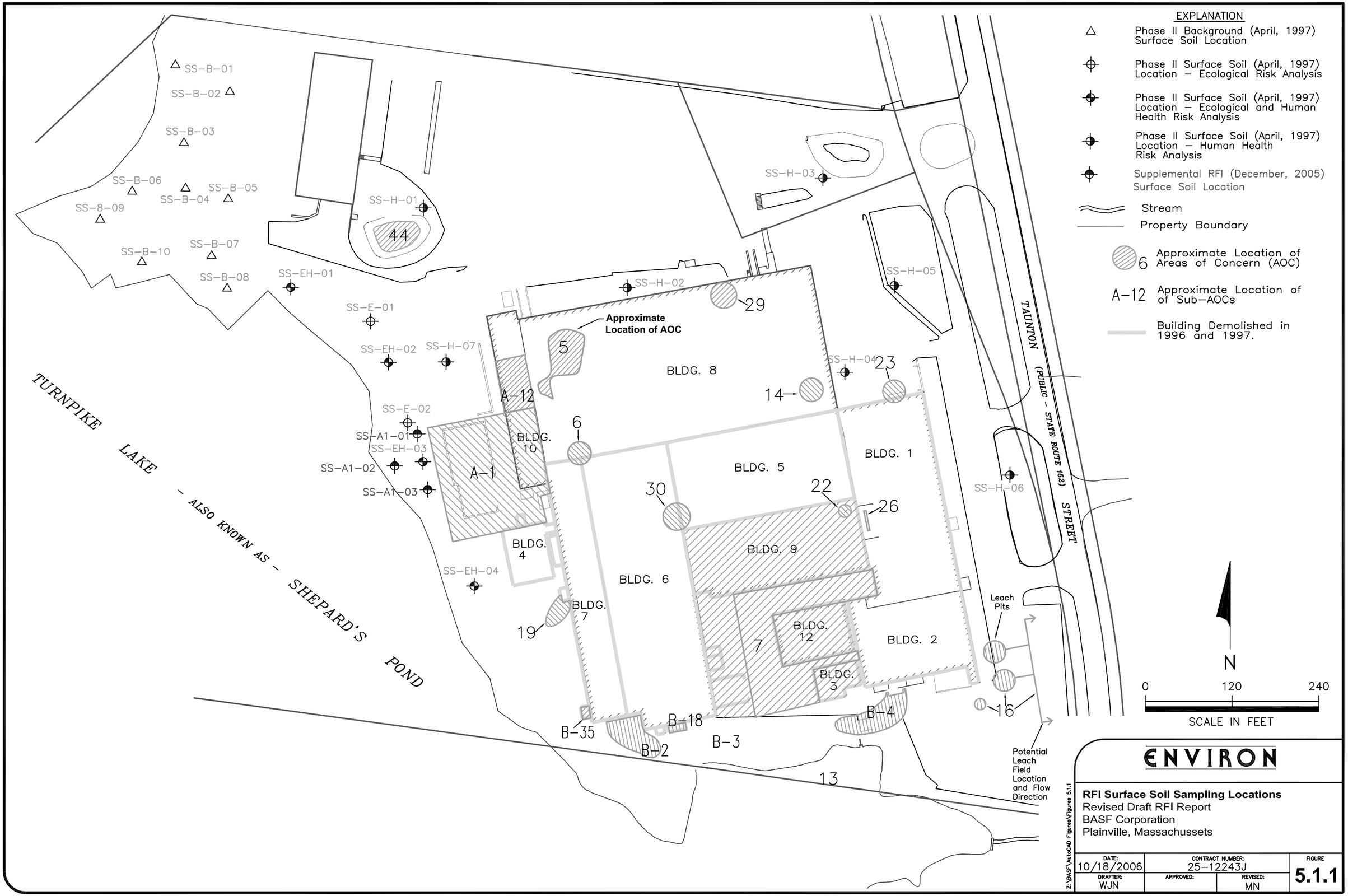

SS-RD70
SS-RD69
SD-RD10
SS-RD64
SS-RD68
SS-RD67
SS-RD72
SS-RD65
SS-RD66
SS/SB-RD71
SS-RD63
SS-RD62
SS-RD61
SS-RD60
SS-RD59
SS-RD73
SS-RD57
SS-RD58
SS-RD56
SS-RD74
SS-RD54
SS-RD55
SB-RD43
SS-RD43
SS-RD53
SB-RD40
SB-RD20
SS/SB-RD28
SS/SB-RD29
SB-RD05
SS-RD37
SB-RD111
SB-RD116
SB-RD03
SB-RD12
SB-RD108
SS/SB-RD30
SB-RD21
SB-RD08
SB-RD13
SS/SB-RD26
SS/SB-RD32
SB-RD117
SB-RD101
SB-RD112X
SS/SB-RD22
SB-RD120
SS-RD35
SB-RD106
SB-RD41
SS/SB-RD23
SB-RD128
SB-RD102
SB-RD115
SS-RD77
SS-RD36
SB-RD108X
SB-RD115A
SS/SB-RD27
SS/SB-RD31
SS-RD46
SB-RD06
SS-RD49
SB-RD129
SB-RD103
SB-RD113
SB-RD14
SB-RD118
SS-RD79
SS-RD34
SS/SB-RD24
SS-RD78
SB-RD126
SB-RD39
SB-RD09
SB-RD16
SB-RD17
SB-RD04
SB-RD104
SB-RD55
SS-RD52
SS-RD76
SB-RD127
SB-RD109
SB-RD15
SB-RD114
SB-RD33A
SS-RD38
SB-RD10
SB-RD33
SS-RD80
SB-RD01
SB-RD105
SB-RD07
SB-RD112
SB-RD19
SS-RD51
SB-RD02
SB-RD107
SB-RD110
SS-RD47
SB-RD130
SB-RD11
SS-RD42
SS-RD45
SS/SB-RD25
SS-RD81
SS-RD82
SB-RD125
SB-RD122
SD-RD09
SD-RD04
SB-RD18
SB-RD121
SB-RD132
SB-RD124
SD-RD05E
SS-RD50
SB-RD131
SB-RD123
SD-RD05C
SS-RD48
SD-RD07
SD-RD06
SD-RD05
SD-RD03
SD-RD02
SD-RD05B
SD-RD05A
SD-RD05D
SD-RD08
SD-RD01
Turnpike Lake
(Shepard's Pond)
0
20
40
80
120
160
Meters
Site
Streams and Lakes
Radiological Survey Sample Location
Sample Location
SS-RD58
SS - Surface Soil Sample
SB - Soil Boring Sample
SD - Sediment Sample
ENVIRON
Radiological Survey Sample Locations
Revised DRAFT RFI Report
BASF Corporation, Plainville, Massachusetts
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
4.7.1



ENVIRON

Radiological Areas of Concern
Revised Draft RFI Report
BASF Corporation, LLC
Plainville, Massachussetts

DATE:	CONTRACT NUMBER:		FIGURE:
03/15/2007	25–12243J		4.7.2
DRAFTER: RS	APPROVED:	REVISED: MN	


EXPLANATION
Phase II Background (April, 1997) Surface Soil Location
Phase II Surface Soil (April, 1997) Location – Ecological Risk Analysis
Phase II Surface Soil (April, 1997) Location – Ecological and Human Health Risk Analysis
Phase II Surface Soil (April, 1997) Location – Human Health Risk Analysis
Supplemental RFI (December, 2005) Surface Soil Location
Stream
Property Boundary
6 Approximate Location of Areas of Concern (AOC)
A-12 Approximate Location of of Sub-AOCs
Building Demolished in 1996 and 1997.
TURNPIKE LAKE - ALSO KNOWN AS - SHEPARD'S POND
TAUNTON (PUBLIC - STATE ROUTE 152) STREET
Approximate Location of AOC
BLDG. 8
BLDG. 10
BLDG. 5
BLDG. 1
BLDG. 4
BLDG. 6
BLDG. 9
BLDG. 7
BLDG. 12
BLDG. 2
BLDG. 3
A-1
A-12
SS-B-01
SS-B-02
SS-B-03
SS-B-06
SS-B-05
SS-B-04
SS-8-09
SS-B-10
SS-B-07
SS-B-08
SS-EH-01
SS-E-01
SS-EH-02
SS-H-07
SS-E-02
SS-A1-01
SS-EH-03
SS-A1-02
SS-A1-03
SS-EH-04
SS-H-01
SS-H-02
SS-H-03
SS-H-05
SS-H-04
SS-H-06
44
29
5
23
14
6
30
22
26
19
7
16
B-35
B-2
B-18
B-3
B-4
13
Leach Pits
Potential Leach Field Location and Flow Direction
N
0 120 240
SCALE IN FEET
ENVIRON
RFI Surface Soil Sampling Locations
Revised Draft RFI Report
BASF Corporation
Plainville, Massachussets
DATE: 10/18/2006
CONTRACT NUMBER: 25-12243J
FIGURE 5.1.1
DRAFTER: WJN
APPROVED:
REVISED: MN
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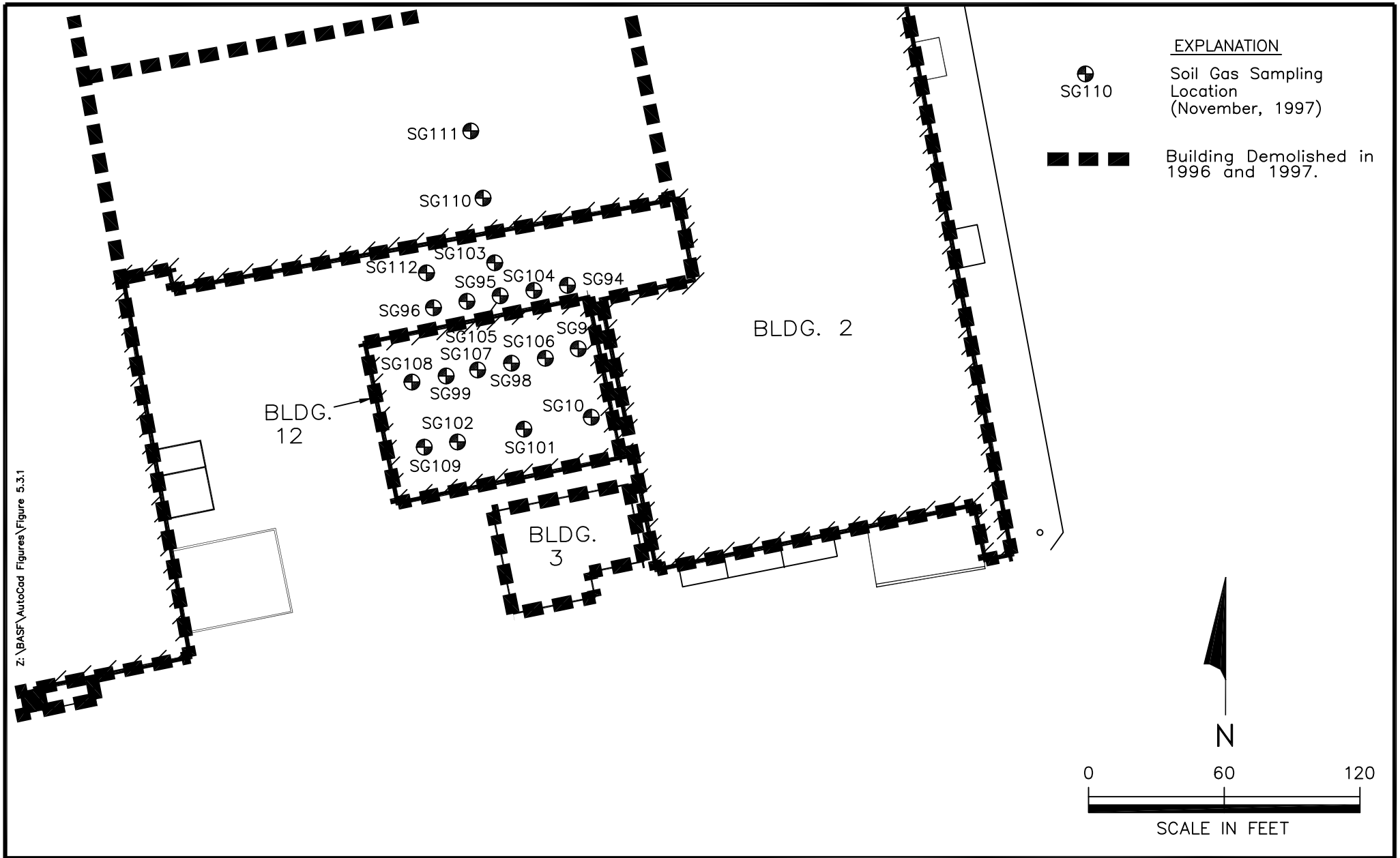
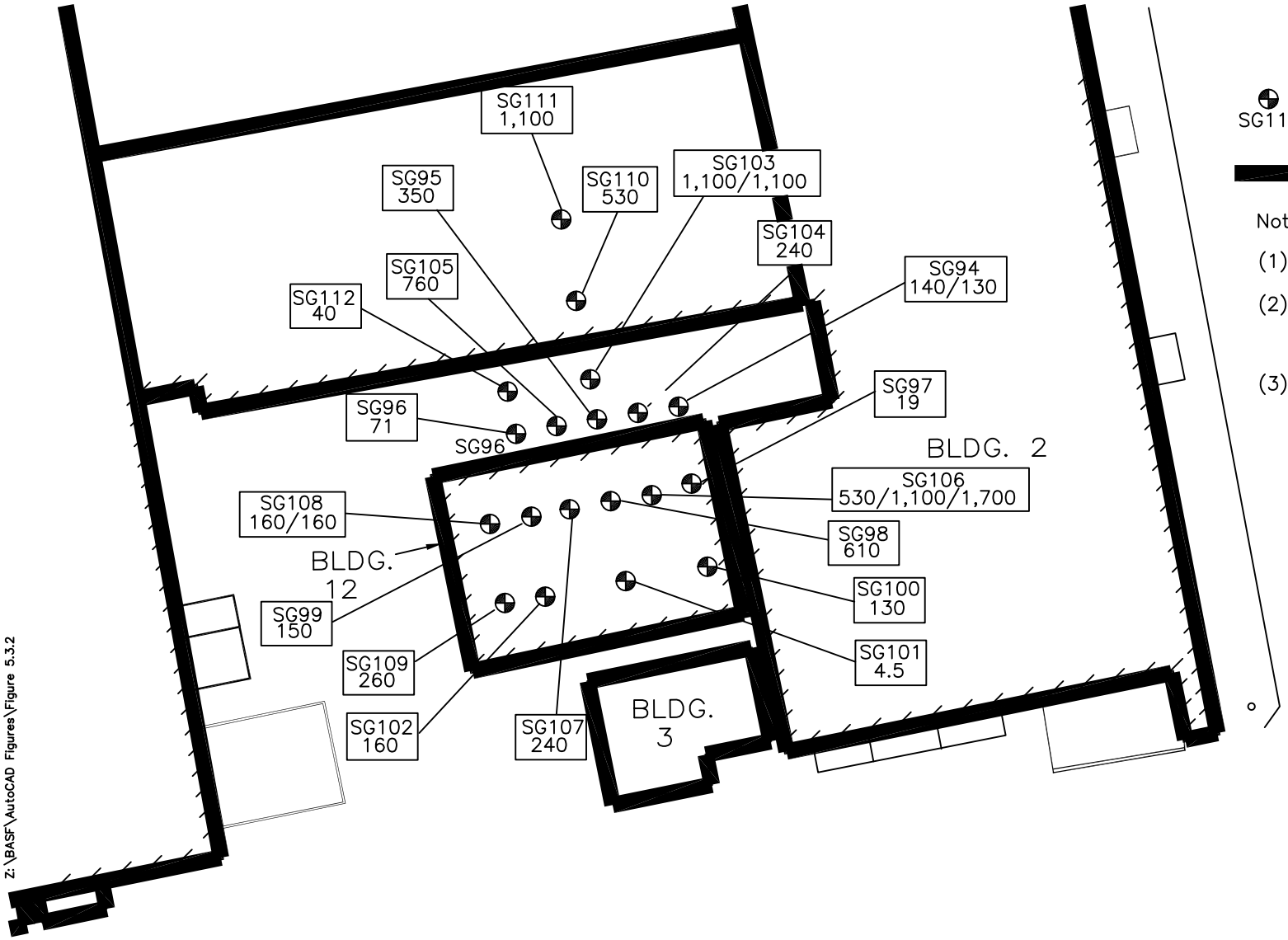


ENVIRON

Phase II Soil Gas Sampling Locations-November 1997
Revised Draft RFI Report
BASF Corporation,
Plainville, Massachusetts

Figure **5.3.1**

Drafter: RS Date: 10/24/2006 Contract Number: 25-12243J Approved: Revised:MN



EXPLANATION

SG110 — Soil Gas Sampling Location

Building Demolished in 1996 and 1997.

Notes:

(1) Concentrations in ppb–v.

(2) "xx/xx" indicates primary and duplicate sample results or primary and resample results.

(3) Soil gas samples collected on November 5 and 6, 1997.

N

0 60 120

SCALE IN FEET

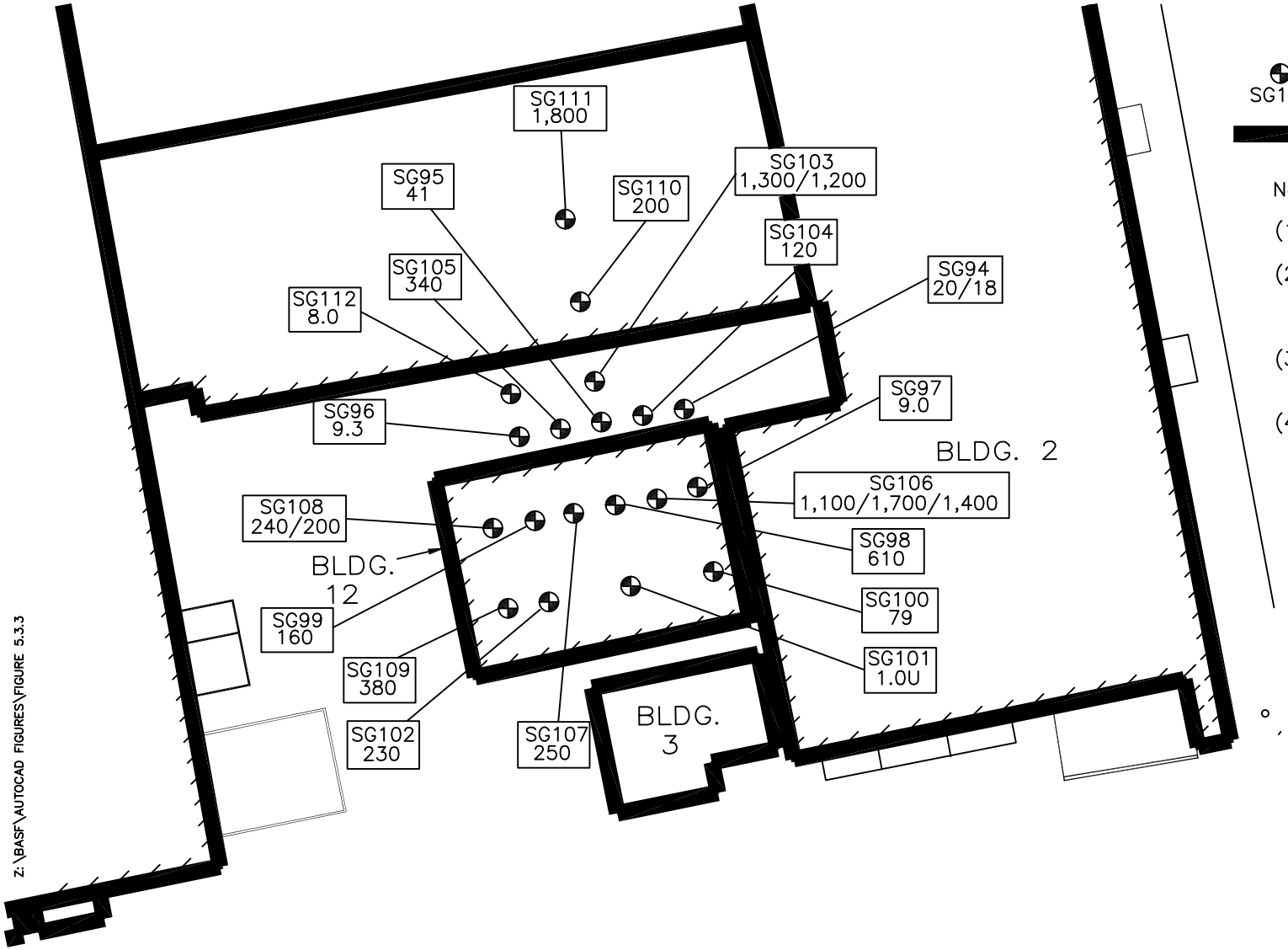
Z:\BASF\AutoCAD Figures\Figure 5.3.2

ENVIRON

Phase II Soil Gas Samples: 1,1,1-Trichloroethane Results
Revised Draft RFI Report
BASF Corporation,
Plainville, Massachusetts

Figure **5.3.2**

Drafter: RS Date: 10/24/2006 Contract Number: 25–12243J Approved: Revised: MN



EXPLANATION

SG110 — Soil Gas Sampling Location

Building Demolished in 1996 and 1997.

Notes:

(1) Concentrations in ppb–v.

(2) "xx/xx" indicates primary and duplicate sample results or primary and resample results.

(3) "xx U" qualifier indicates not detected above detection limit xx.

(4) Soil gas samples collected on November 5 and 6, 1997.

N

0 60 120

SCALE IN FEET

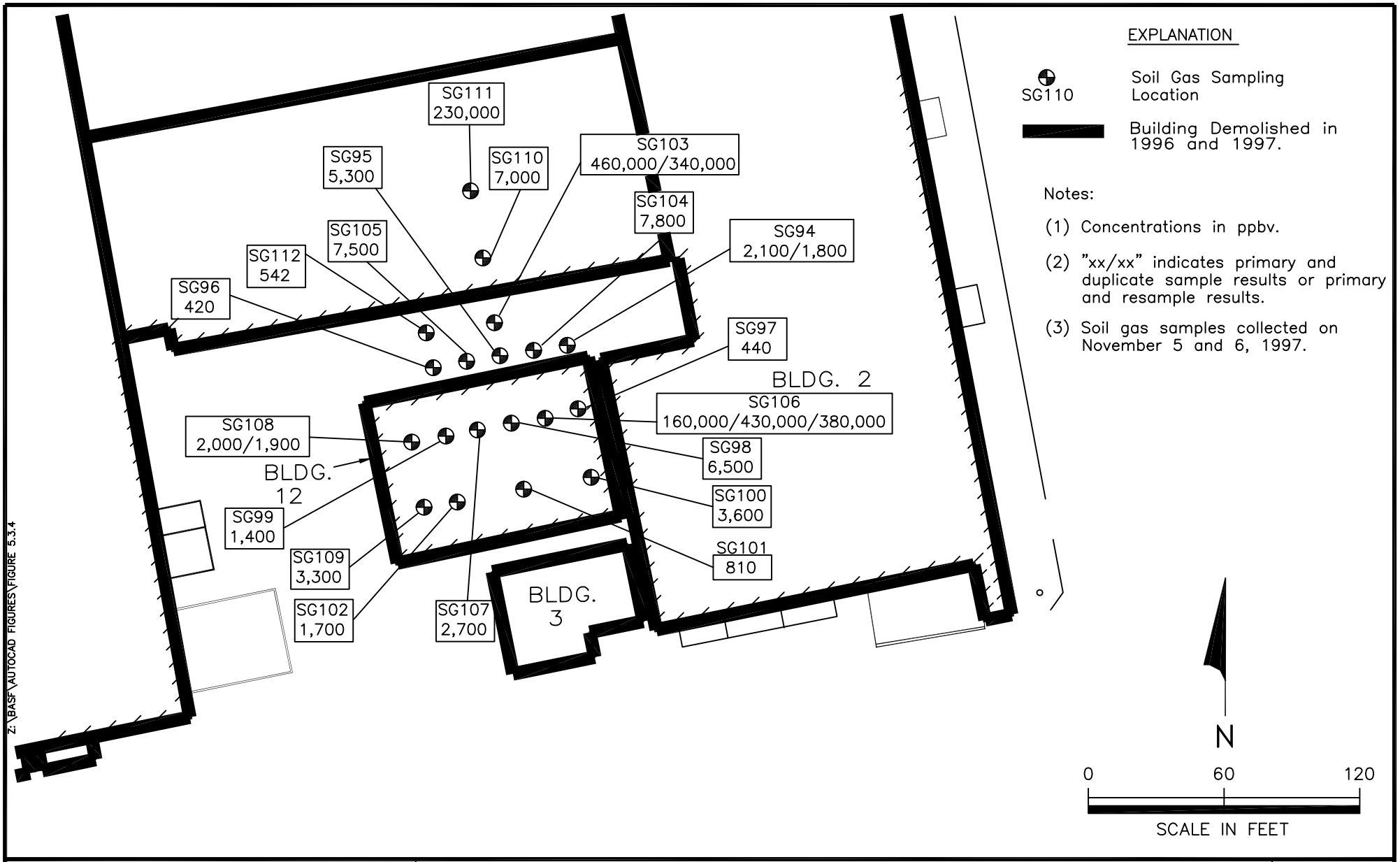
Z:\BASF\AUTOCAD FIGURES\FIGURE 5.3.3

ENVIRON

Phase II Soil Gas Samples: Trichloroethene Results
Revised Draft RFI Report
BASF Corporation,
Plainville, Massachusetts

Figure **5.3.3**

Drafter: RS Date: 10/24/2006 Contract Number: 25–12243J Approved: Revised: MN

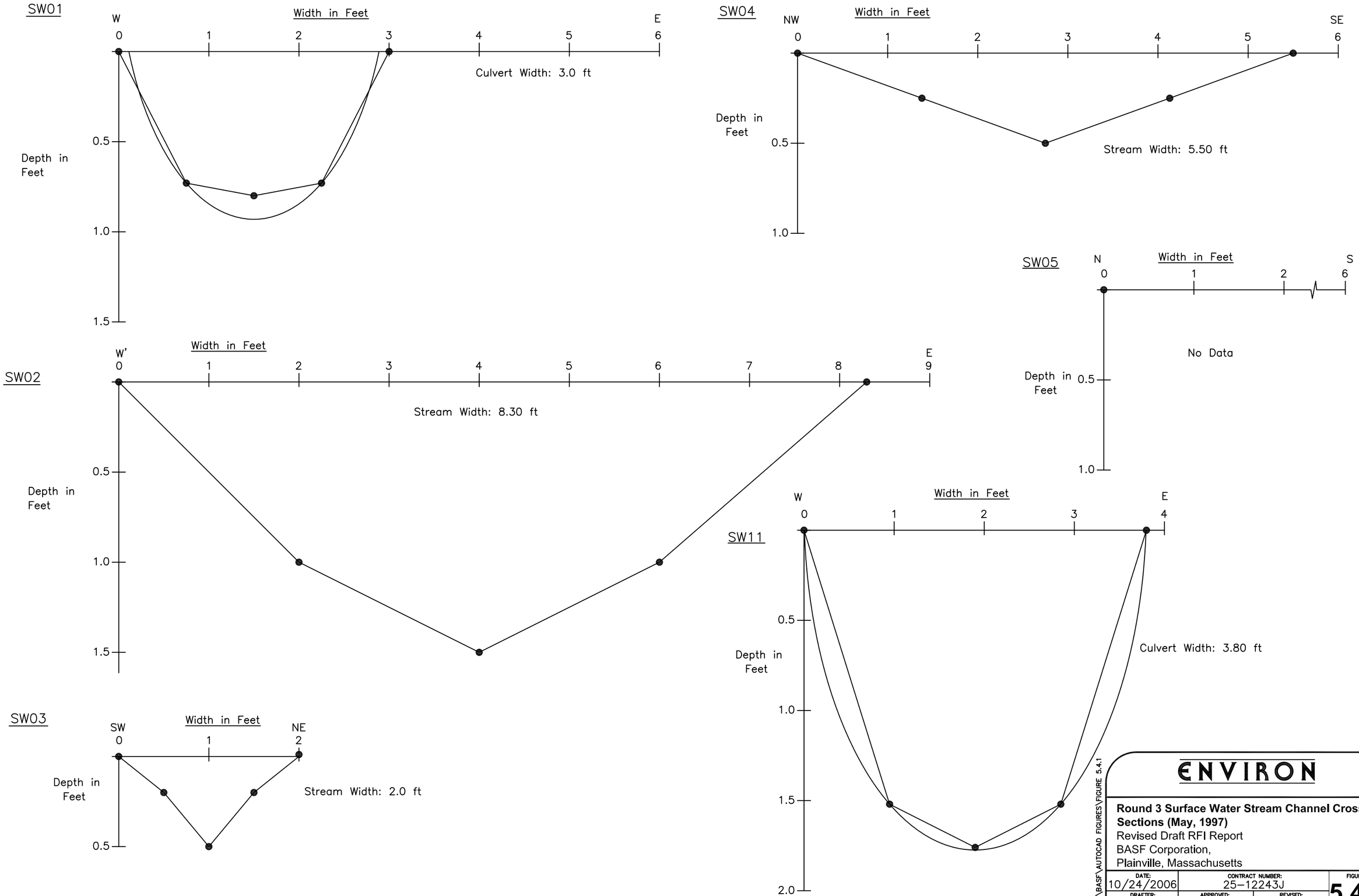


ENVIRON

Phase II Soil Gas Samples: Tetrachloroethene Results
Revised Draft RFI Report
BASF Corporation,
Plainville, Massachusetts

Figure
5.3.4

Drafter: RS | Date: 10/24/2006 | Contract Number: 25–12243J | Approved: | Revised: MN

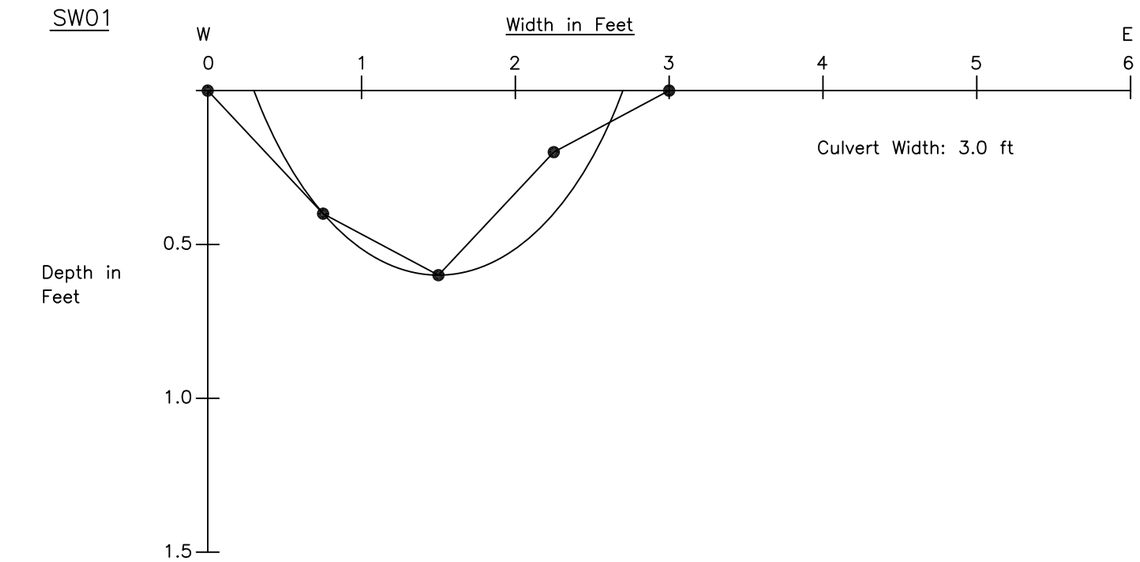


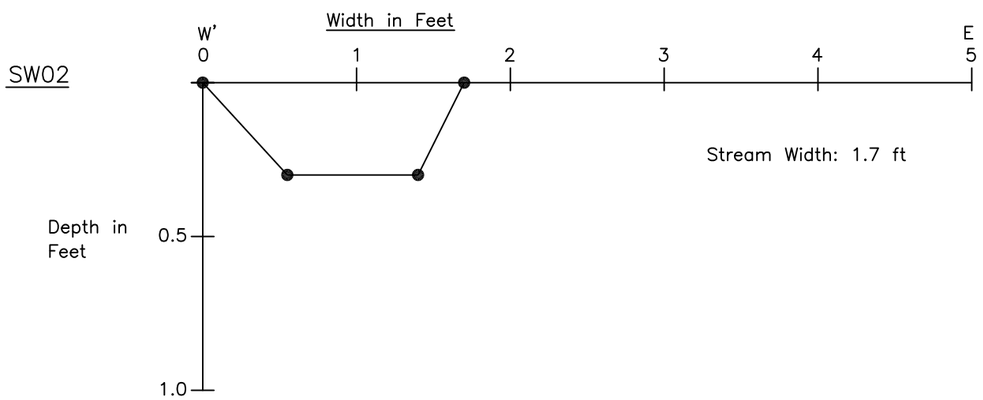
ENVIRON

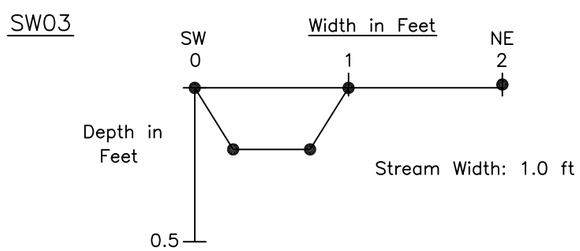
Round 3 Surface Water Stream Channel Cross Sections (May, 1997)
Revised Draft RFI Report
BASF Corporation,
Plainville, Massachusetts

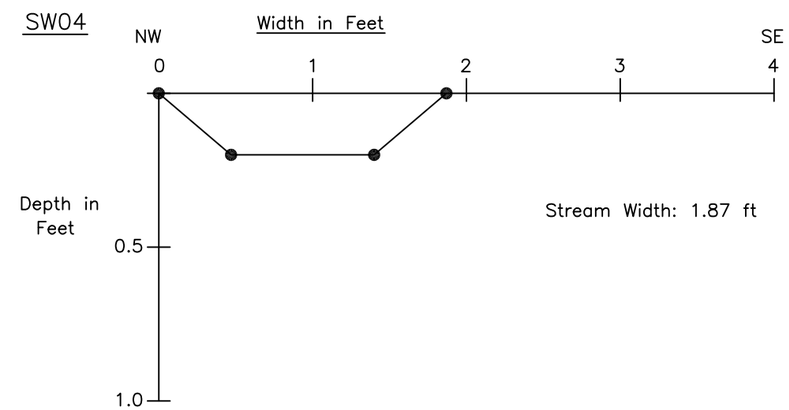
Z:\BASF\AUTOCAD FIGURES\FIGURE 5.4.1

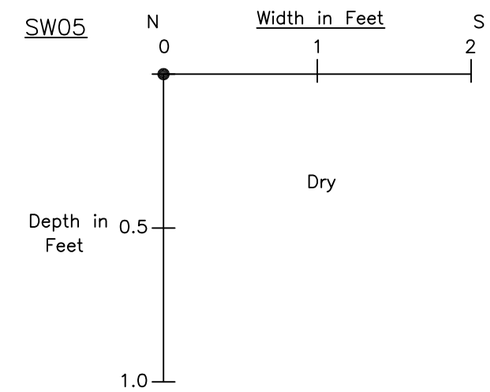
DATE:	CONTRACT NUMBER:		FIGURE
10/24/2006	25-12243J		5.4.1
DRAFTER: RS	APPROVED:	REVISED: MN	

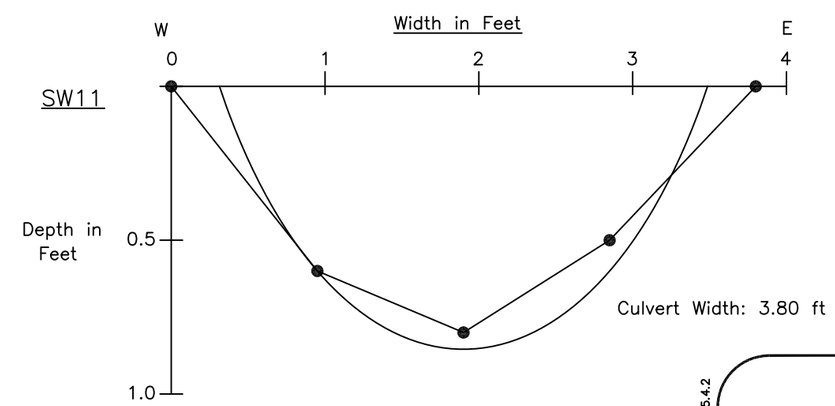










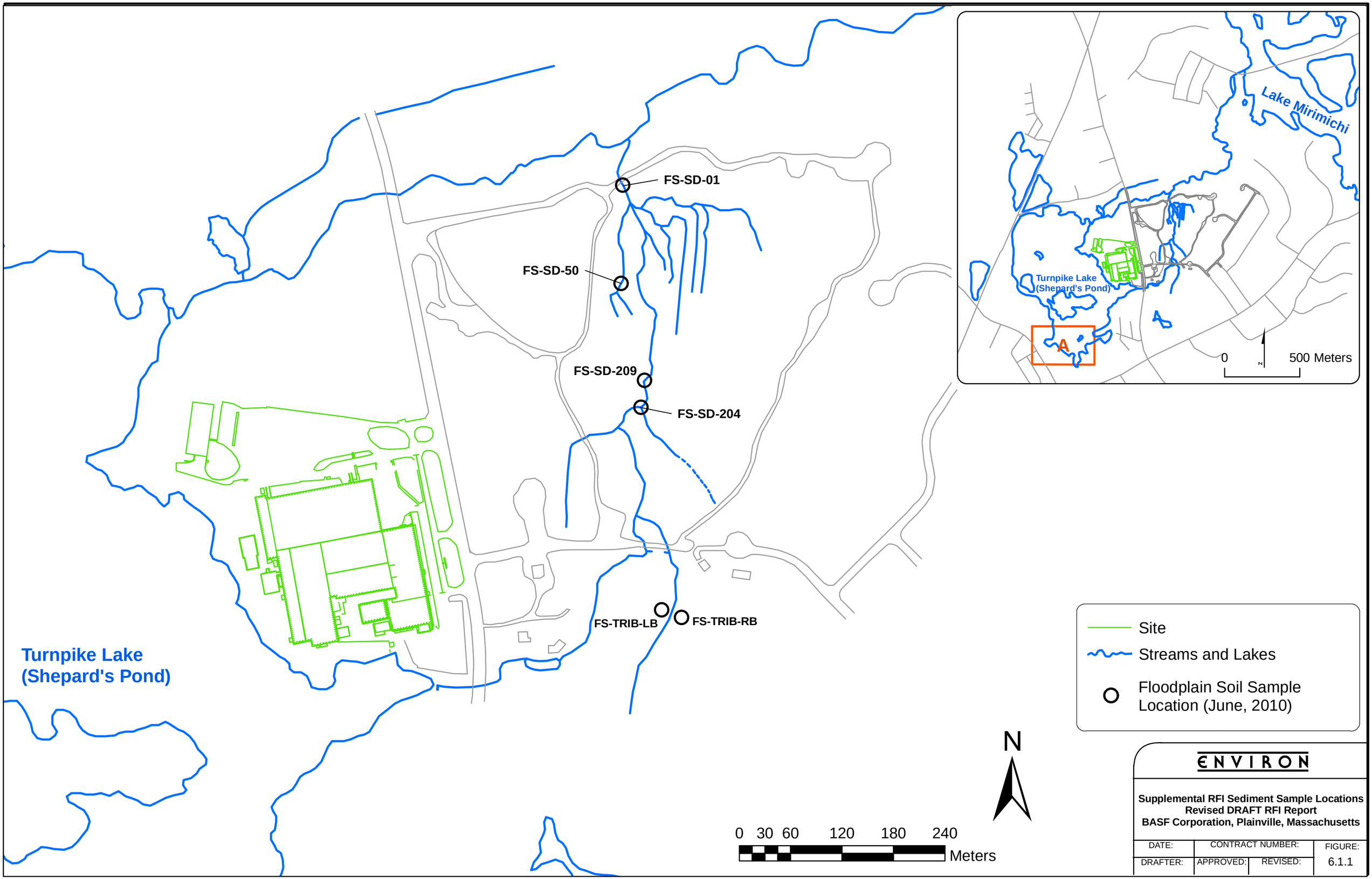


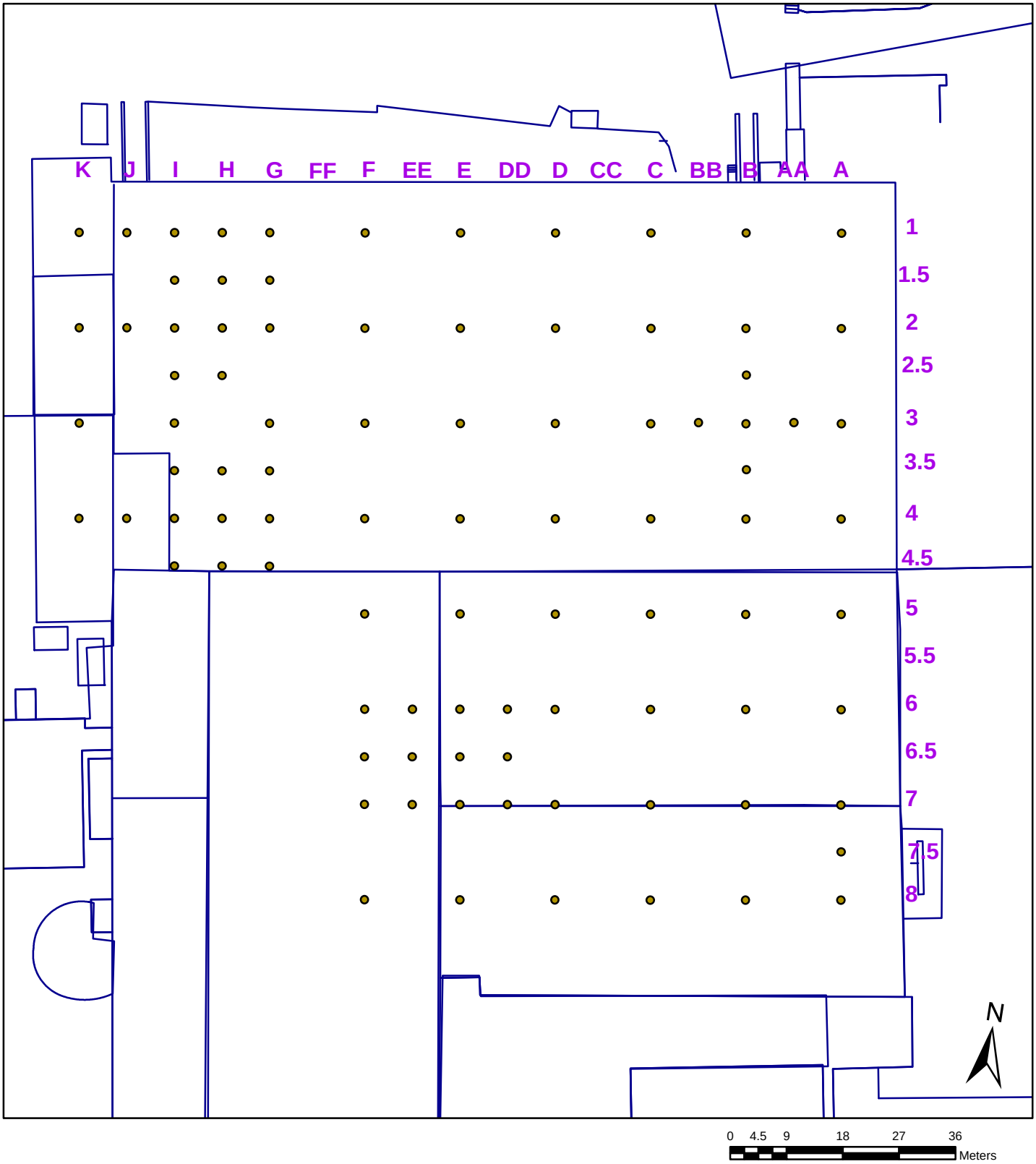
Z:\BASF\AutoCAD Figures\Figure 5.4.2

ENVIRON

Round 4 Surface Water Stream Channel Cross Sections (September, 1997)
Revised Draft RFI Report
BASF Corporation,
Plainville, Massachusetts

DATE:	CONTRACT NUMBER:		FIGURE
10/24/2006	25-12243J		5.4.2
DRAFTER: RS	APPROVED:	REVISED:	


FS-SD-01
FS-SD-50
FS-SD-209
FS-SD-204
FS-TRIB-LB
FS-TRIB-RB
Turnpike Lake
(Shepard's Pond)
Lake Mirimichi
Turnpike Lake
(Shepard's Pond)
A
0
500 Meters
Site
Streams and Lakes
Floodplain Soil Sample
Location (June, 2010)
N
0 30 60 120 180 240
Meters
ENVIRON
Supplemental RFI Sediment Sample Locations
Revised DRAFT RFI Report
BASF Corporation, Plainville, Massachusetts
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
6.1.1

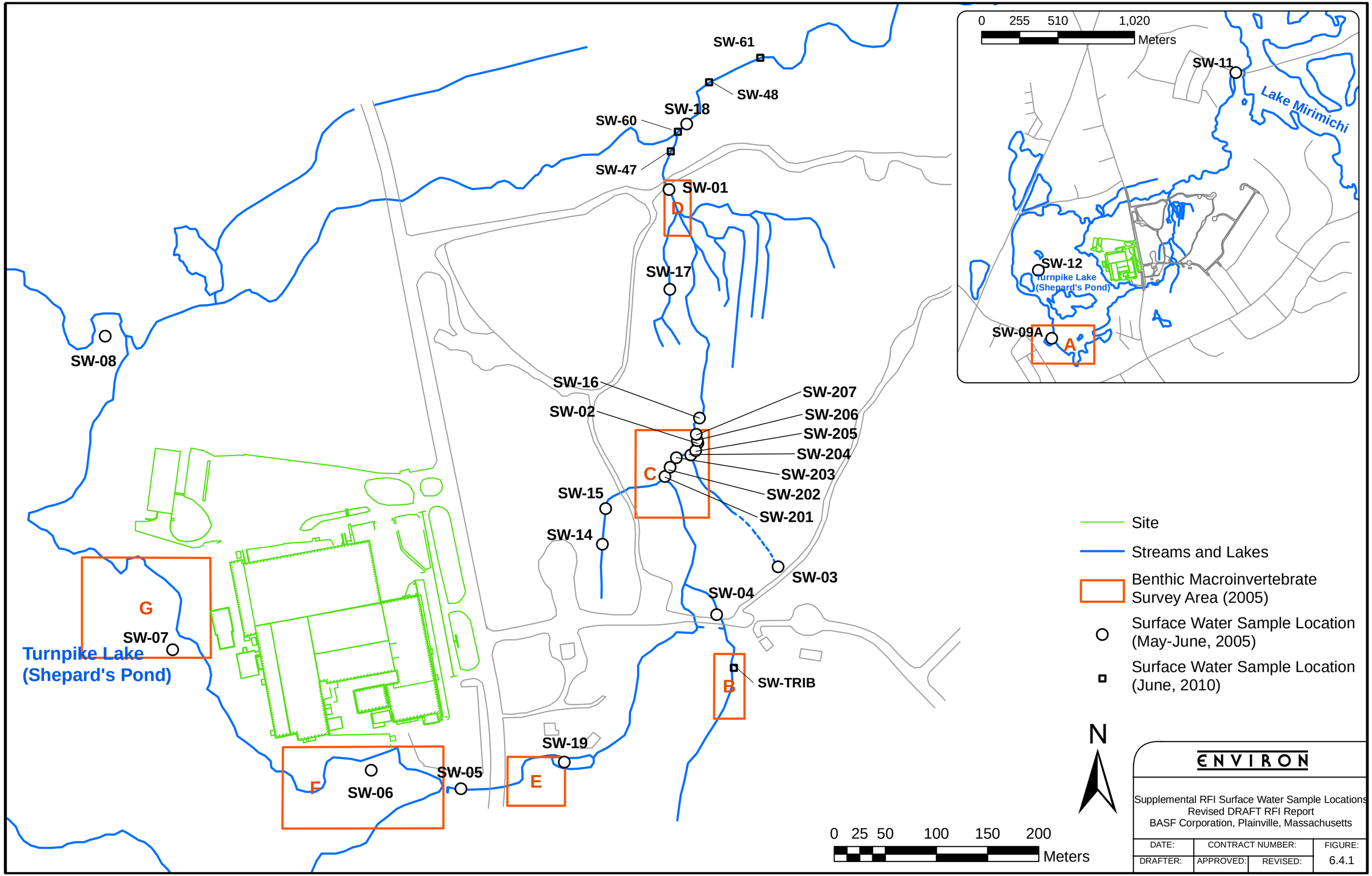


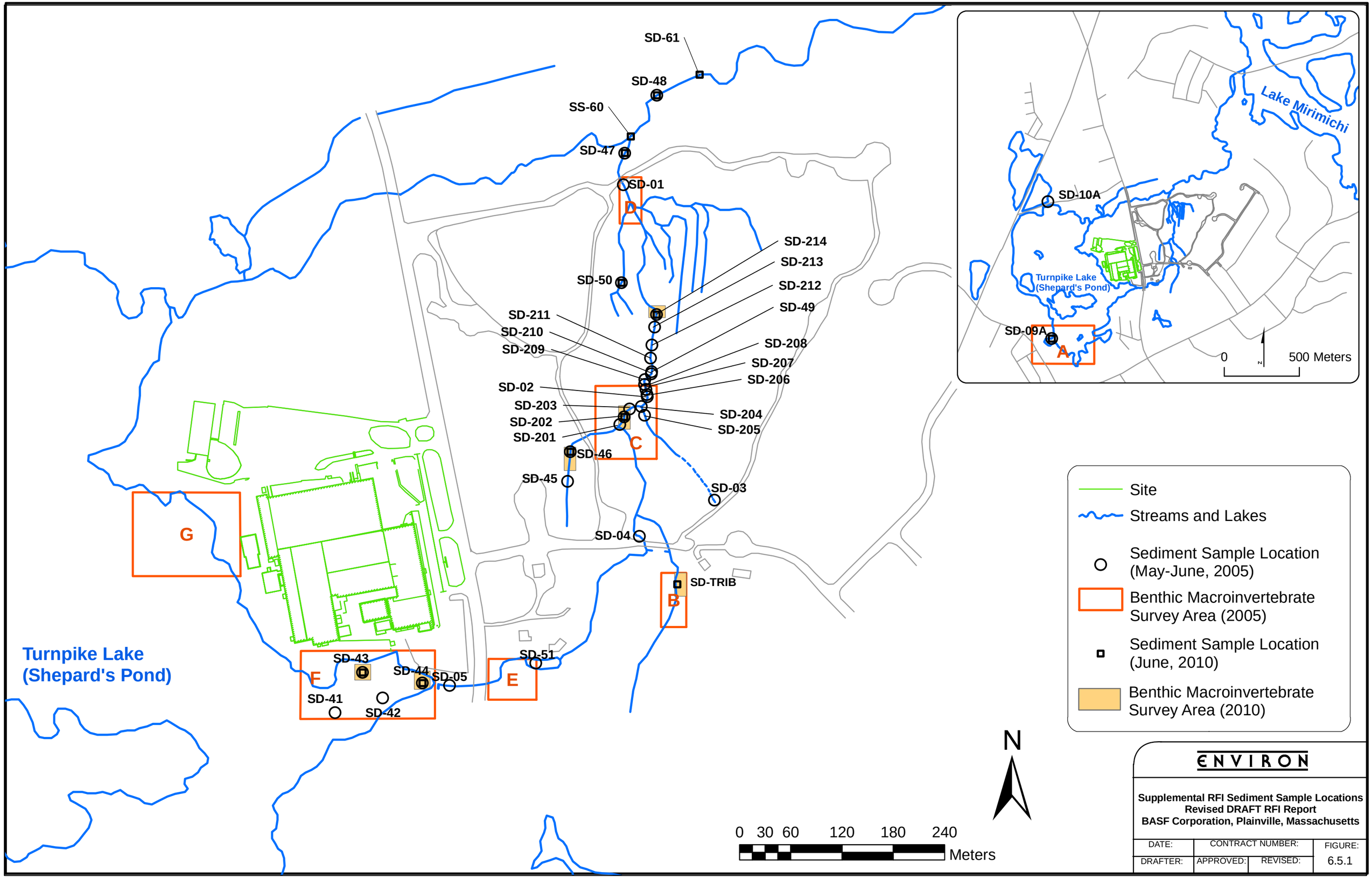
Soil Gas Sampling Location

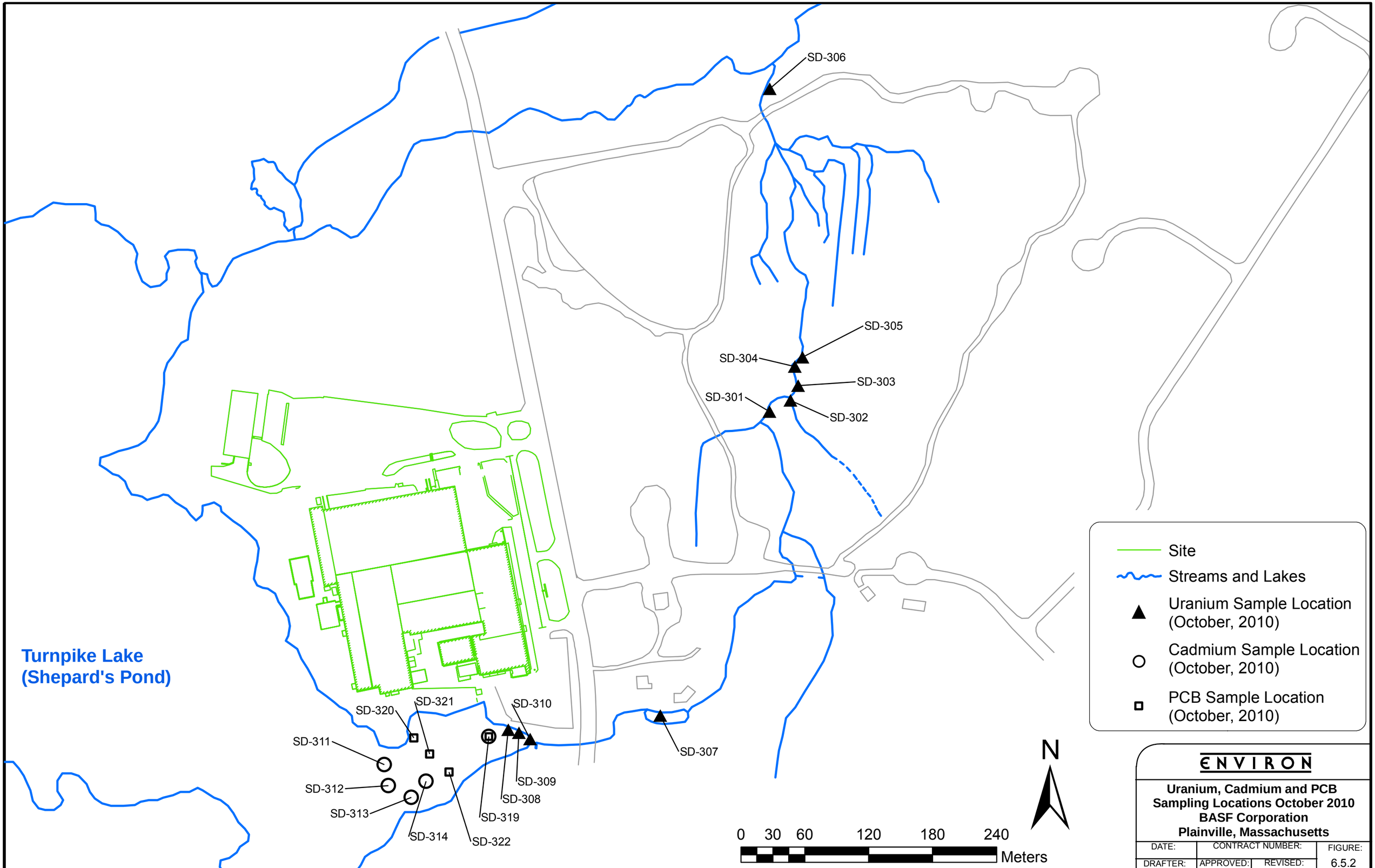
ENVIRON

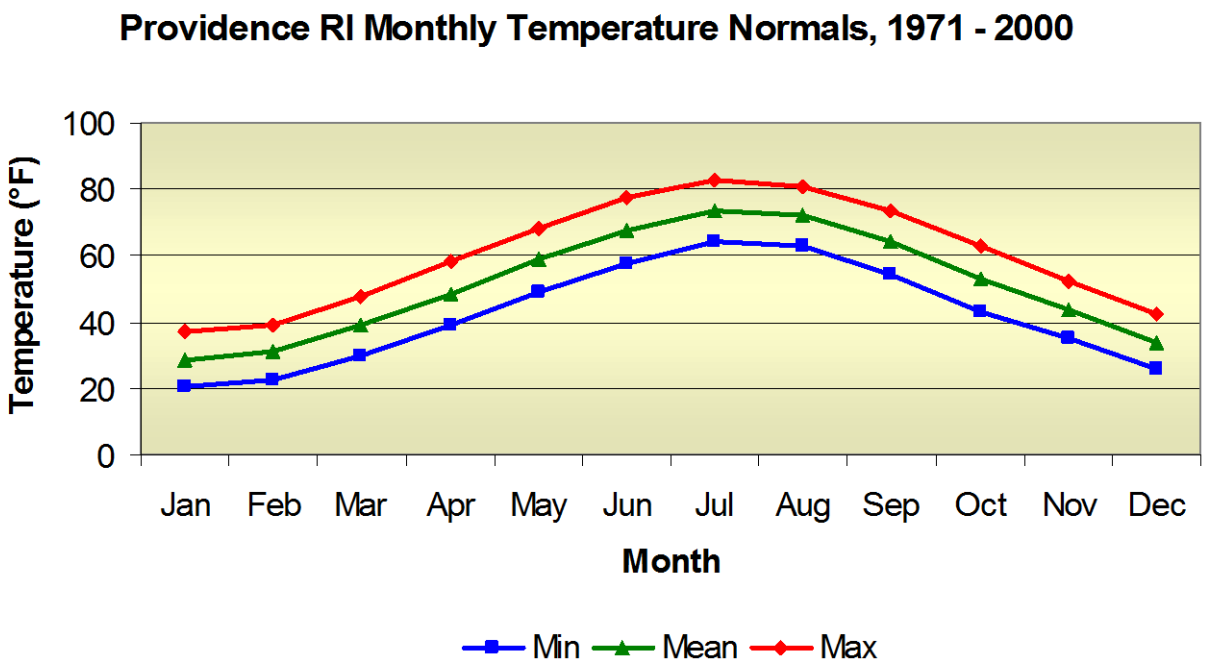
Supplemental RFI Soil Gas Sampling Locations
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

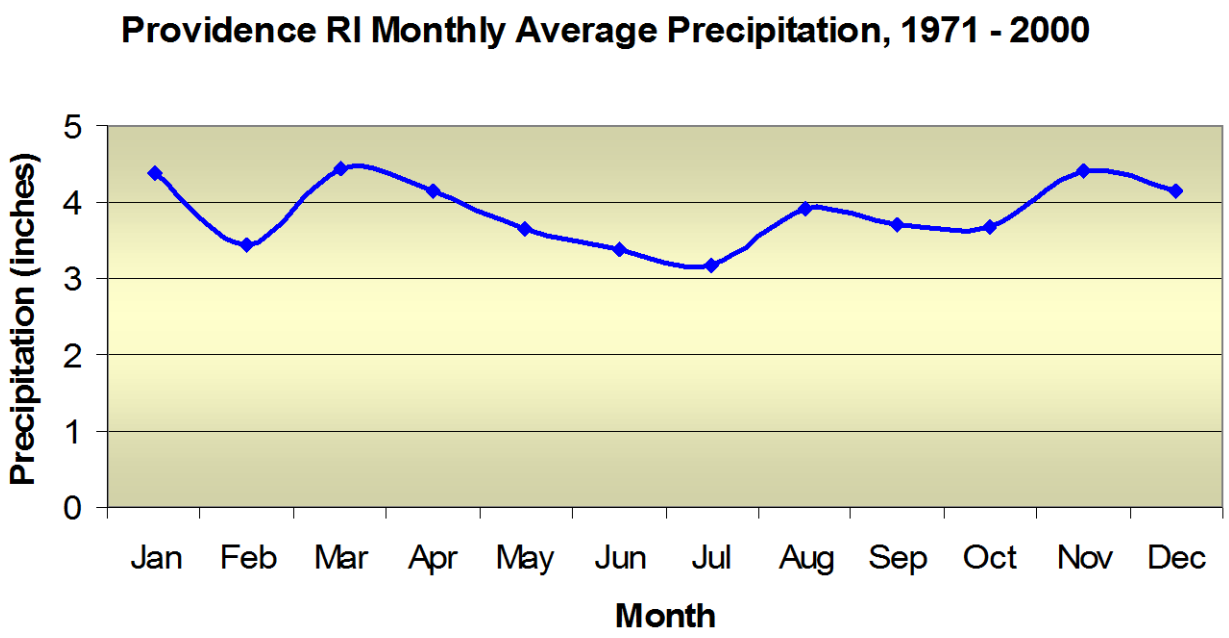
Figure 6.3.1


SW-61
SW-48
SW-18
SW-60
SW-47
SW-01
D
SW-17
SW-08
SW-16
SW-02
SW-207
SW-206
SW-205
SW-204
SW-203
SW-202
SW-201
C
SW-15
SW-14
SW-03
SW-04
G
SW-07
Turnpike Lake
(Shepard's Pond)
B
SW-TRIB
SW-19
E
SW-05
F
SW-06
0 25 50 100 150 200
Meters
0 255 510 1,020
Meters
SW-11
Lake Mirimichi
SW-12
Turnpike Lake
(Shepard's Pond)
SW-09A
A
Site
Streams and Lakes
Benthic Macroinvertebrate Survey Area (2005)
Surface Water Sample Location (May-June, 2005)
Surface Water Sample Location (June, 2010)
N
ENVIRON
Supplemental RFI Surface Water Sample Locations
Revised DRAFT RFI Report
BASF Corporation, Plainville, Massachusetts
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
6.4.1


SD-61
SD-48
SS-60
SD-47
SD-01
D
SD-50
SD-214
SD-213
SD-212
SD-49
SD-211
SD-210
SD-209
SD-208
SD-207
SD-206
SD-02
SD-203
SD-202
SD-201
SD-204
SD-205
C
SD-46
SD-45
SD-03
SD-04
G
SD-TRIB
B
Turnpike Lake
(Shepard's Pond)
SD-43
SD-44
SD-05
F
SD-41
SD-42
SD-51
E
Lake Mirimichi
SD-10A
Turnpike Lake
(Shepard's Pond)
SD-09A
A
0
500 Meters
Site
Streams and Lakes
Sediment Sample Location
(May-June, 2005)
Benthic Macroinvertebrate
Survey Area (2005)
Sediment Sample Location
(June, 2010)
Benthic Macroinvertebrate
Survey Area (2010)
N
0 30 60 120 180 240
Meters
ENVIRON
Supplemental RFI Sediment Sample Locations
Revised DRAFT RFI Report
BASF Corporation, Plainville, Massachusetts
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
6.5.1


SD-306
SD-305
SD-304
SD-303
SD-301
SD-302
Turnpike Lake
(Shepard's Pond)
SD-320
SD-321
SD-310
SD-311
SD-312
SD-313
SD-314
SD-322
SD-319
SD-308
SD-309
SD-307
Site
Streams and Lakes
Uranium Sample Location (October, 2010)
Cadmium Sample Location (October, 2010)
PCB Sample Location (October, 2010)
N
0 30 60 120 180 240
Meters
ENVIRON
Uranium, Cadmium and PCB Sampling Locations October 2010
BASF Corporation
Plainville, Massachusetts
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
6.5.2

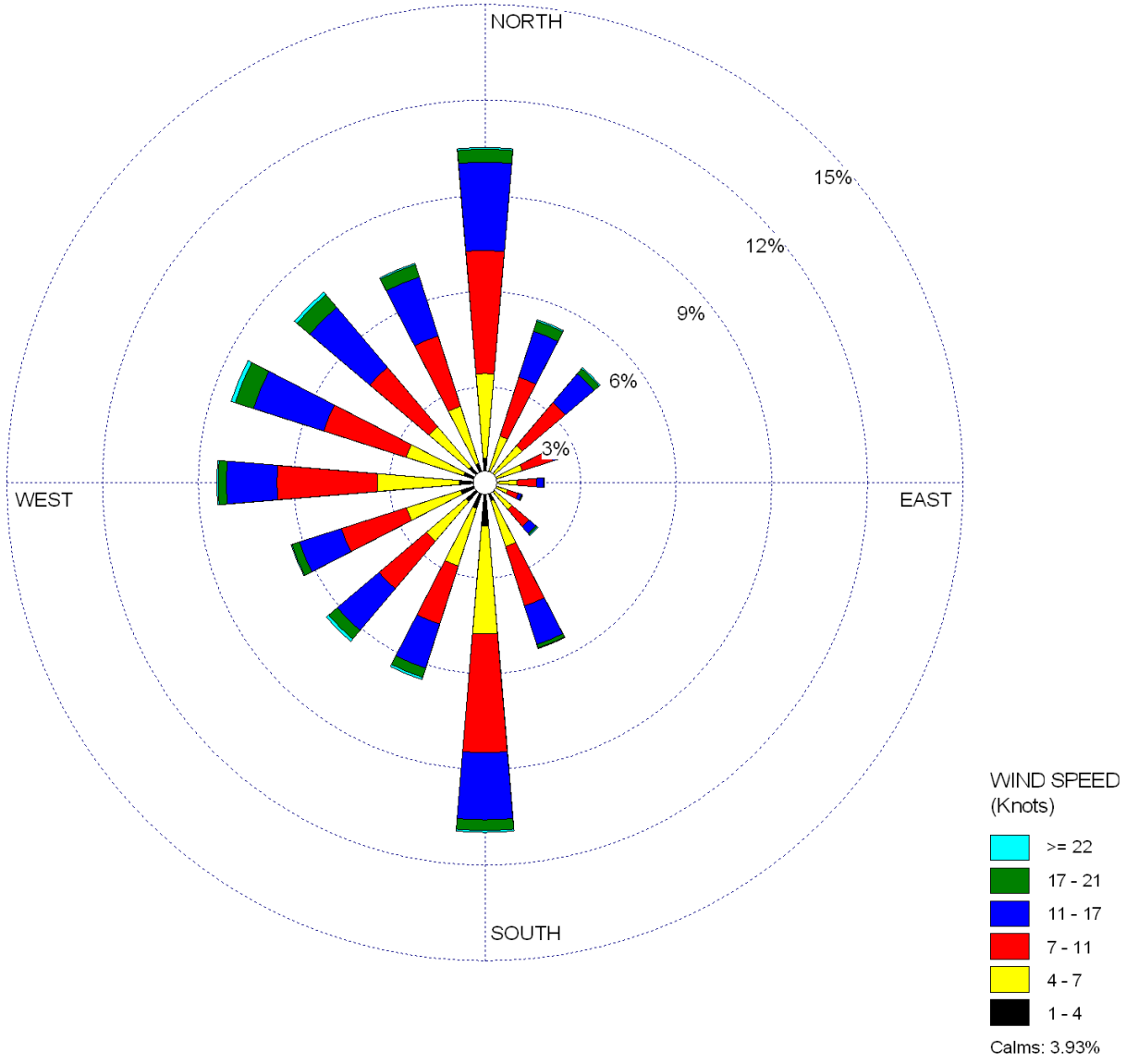




ENVIRON

Temperature and Precipitation Normals
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

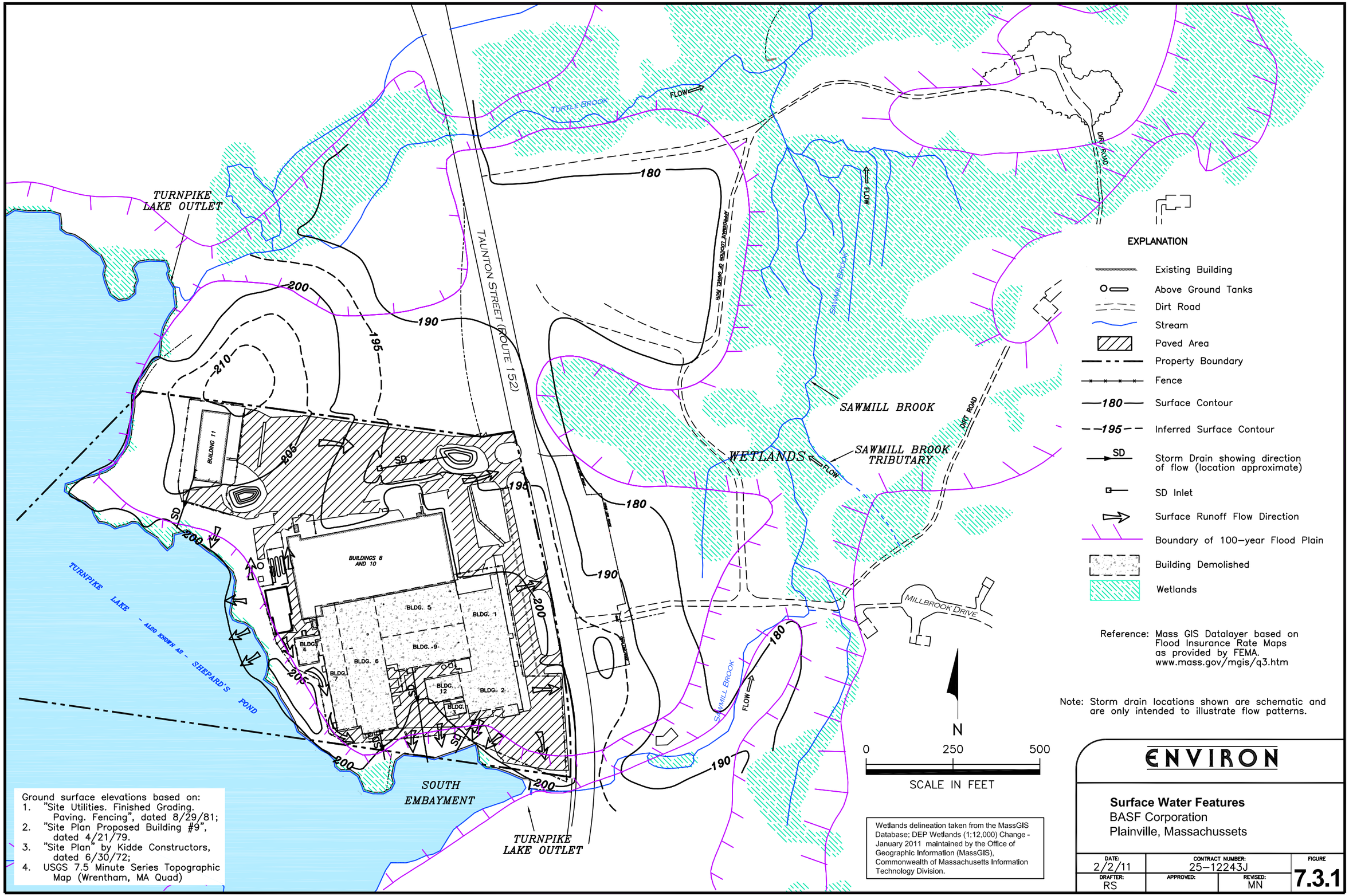
Figure 7.2.1



ENVIRON

Wind Rose for Providence RI – 1981 - 1990
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

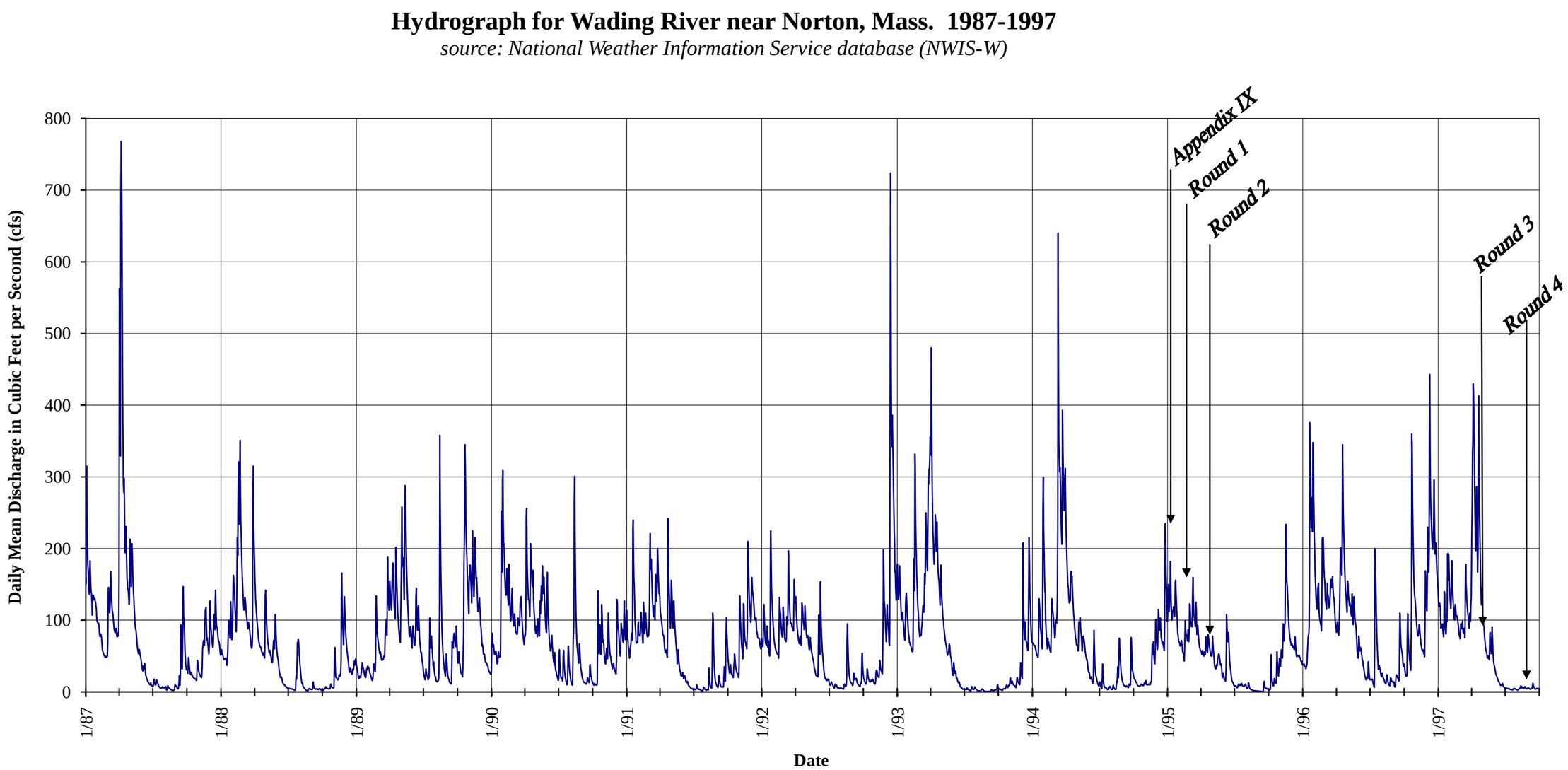
Figure 7.2.2


TURNPIKE LAKE OUTLET
TURTLE BROOK
FLOW
TAUNTON STREET (ROUTE 152)
APPROXIMATE LOCATION OF DIRT ROAD
SAWMILL BROOK
SAWMILL BROOK TRIBUTARY
WETLANDS
DIRT ROAD
MILLBROOK DRIVE
BUILDING 11
BUILDINGS 8 AND 10
BLDG. 5
BLDG. 1
BLDG. 9
BLDG. 6
BLDG. 4
BLDG. 7
BLDG. 12
BLDG. 2
BLDG. 3
SD
TURNPIKE LAKE - ALSO KNOWN AS - SHEPARD'S POND
SOUTH EMBAYMENT
TURNPIKE LAKE OUTLET
180
190
195
200
205
210
EXPLANATION
Existing Building
Above Ground Tanks
Dirt Road
Stream
Paved Area
Property Boundary
Fence
180 Surface Contour
195 Inferred Surface Contour
SD Storm Drain showing direction of flow (location approximate)
SD Inlet
Surface Runoff Flow Direction
Boundary of 100-year Flood Plain
Building Demolished
Wetlands
Reference: Mass GIS Datalayer based on Flood Insurance Rate Maps as provided by FEMA. www.mass.gov/mgis/q3.htm
Note: Storm drain locations shown are schematic and are only intended to illustrate flow patterns.
N
0 250 500
SCALE IN FEET
Ground surface elevations based on:
1. "Site Utilities. Finished Grading. Paving. Fencing", dated 8/29/81;
2. "Site Plan Proposed Building #9", dated 4/21/79.
3. "Site Plan" by Kidde Constructors, dated 6/30/72;
4. USGS 7.5 Minute Series Topographic Map (Wrentham, MA Quad)
Wetlands delineation taken from the MassGIS Database: DEP Wetlands (1:12,000) Change - January 2011 maintained by the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division.
ENVIRON
Surface Water Features
BASF Corporation
Plainville, Massachussets
DATE: 2/2/11
CONTRACT NUMBER: 25-12243J
FIGURE 7.3.1
DRAFTER: RS
APPROVED:
REVISED: MN
Q:\DRAWINGS\2512243J\Figure 7.3.1.dwg - Thu, 10 Mar 2011 - 10:12am

ENVIRON

The Taunton River Basin
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

Figure 7.3.2

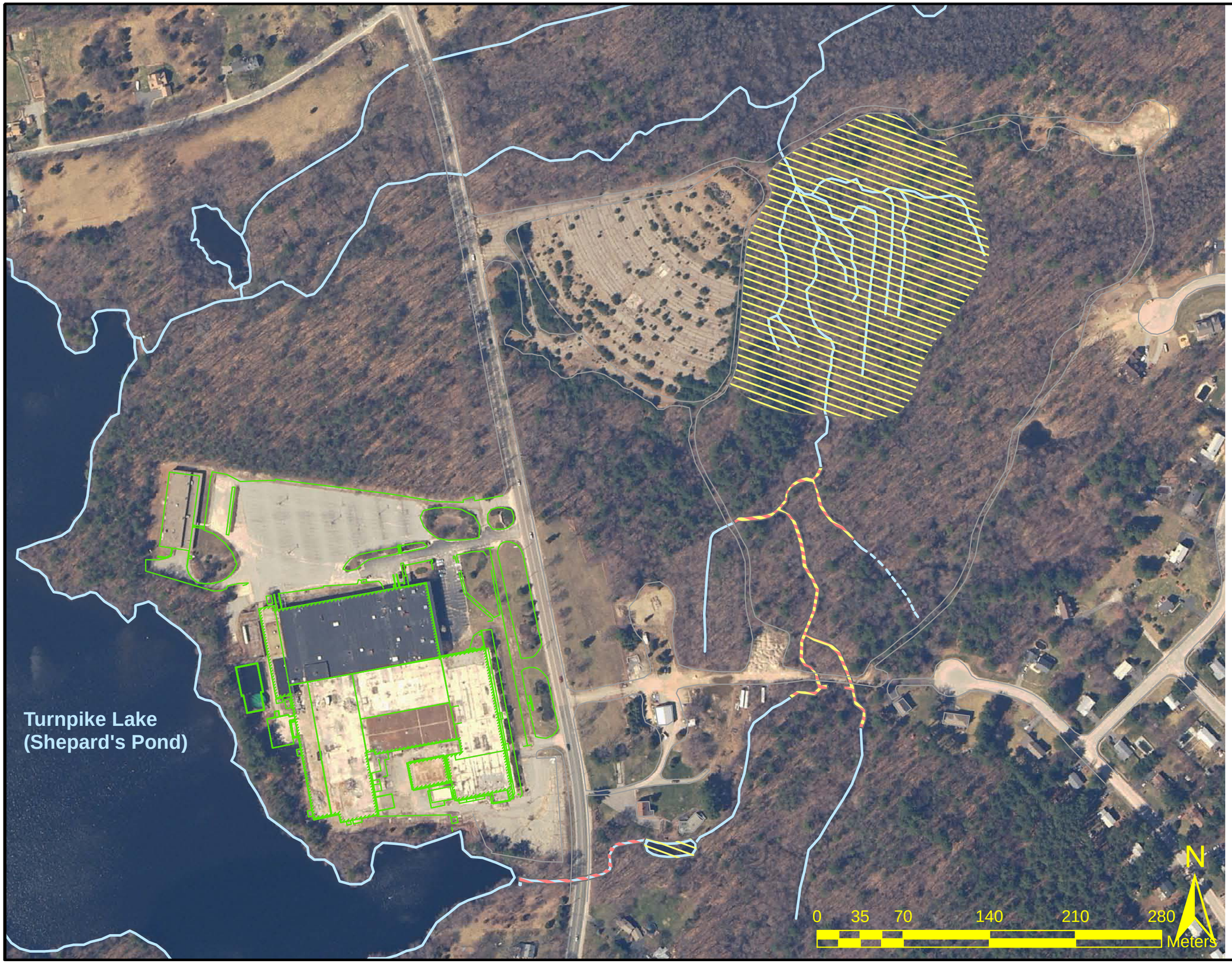


ENVIRON

Hydrograph of Wading River Near Norton, Massachusetts: 1987-1997
Revised Draft RFI Report
BASF Corporation
Plainville, Massachusetts

Figure
7.3.3

Drafter: MNF Date: 3/27/98 Contract Number: 25-12243E Approved: Revised:



Site

Approximate Area of Deposition

Approximate Area Exhibiting Seasonal Variation of Erosion and Deposition

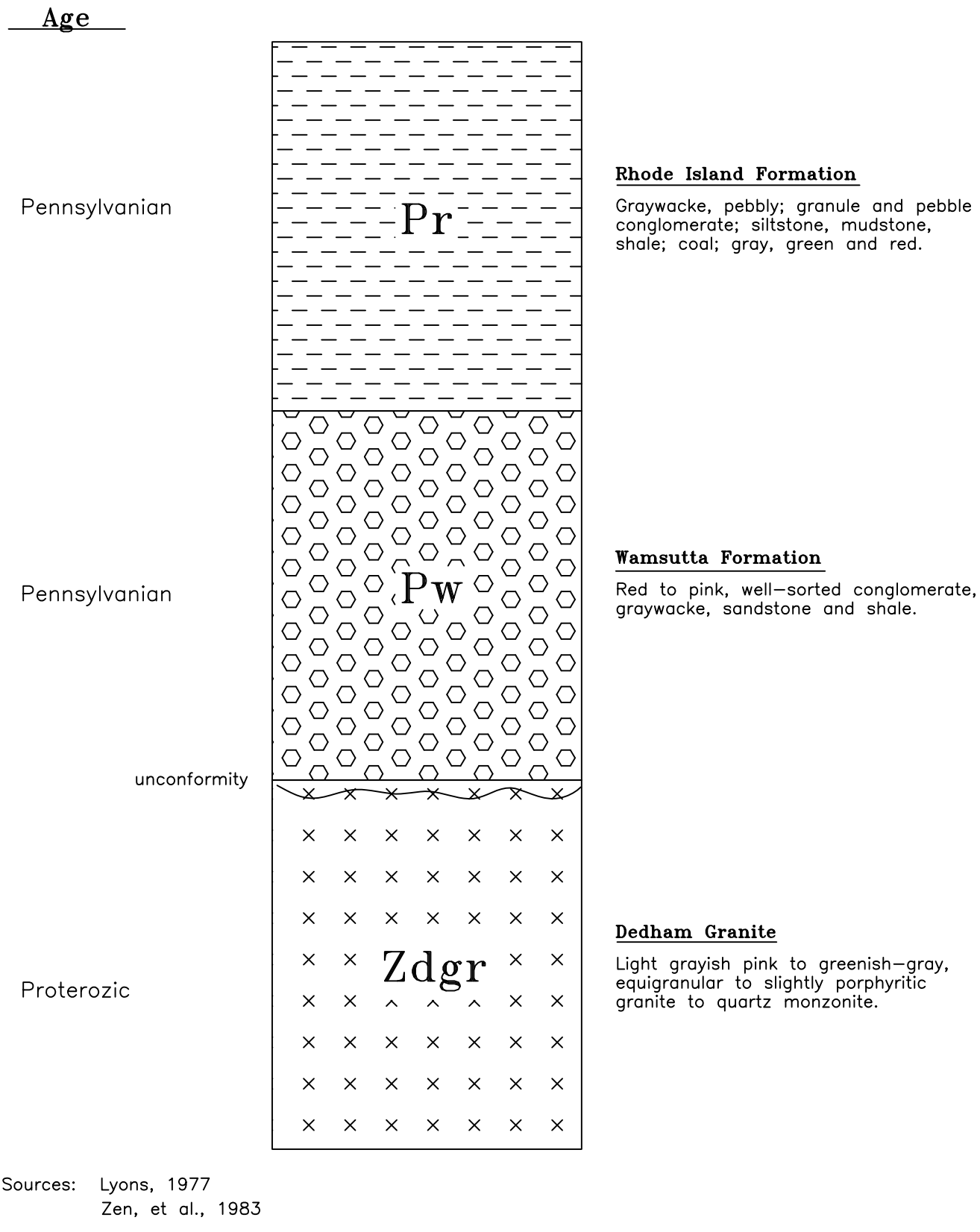
Approximate Area of Erosion

Streams and Lakes

ENVIRON

Erosional and Depositional Areas in Sawmill Brook
Revised RFI Report
BASF Corporation, Plainville, Massachusetts

DATE:	CONTRACT NUMBER:		FIGURE:
DRAFTER:	APPROVED:	REVISED:	7.3.4



Sources: Lyons, 1977
Zen, et al., 1983

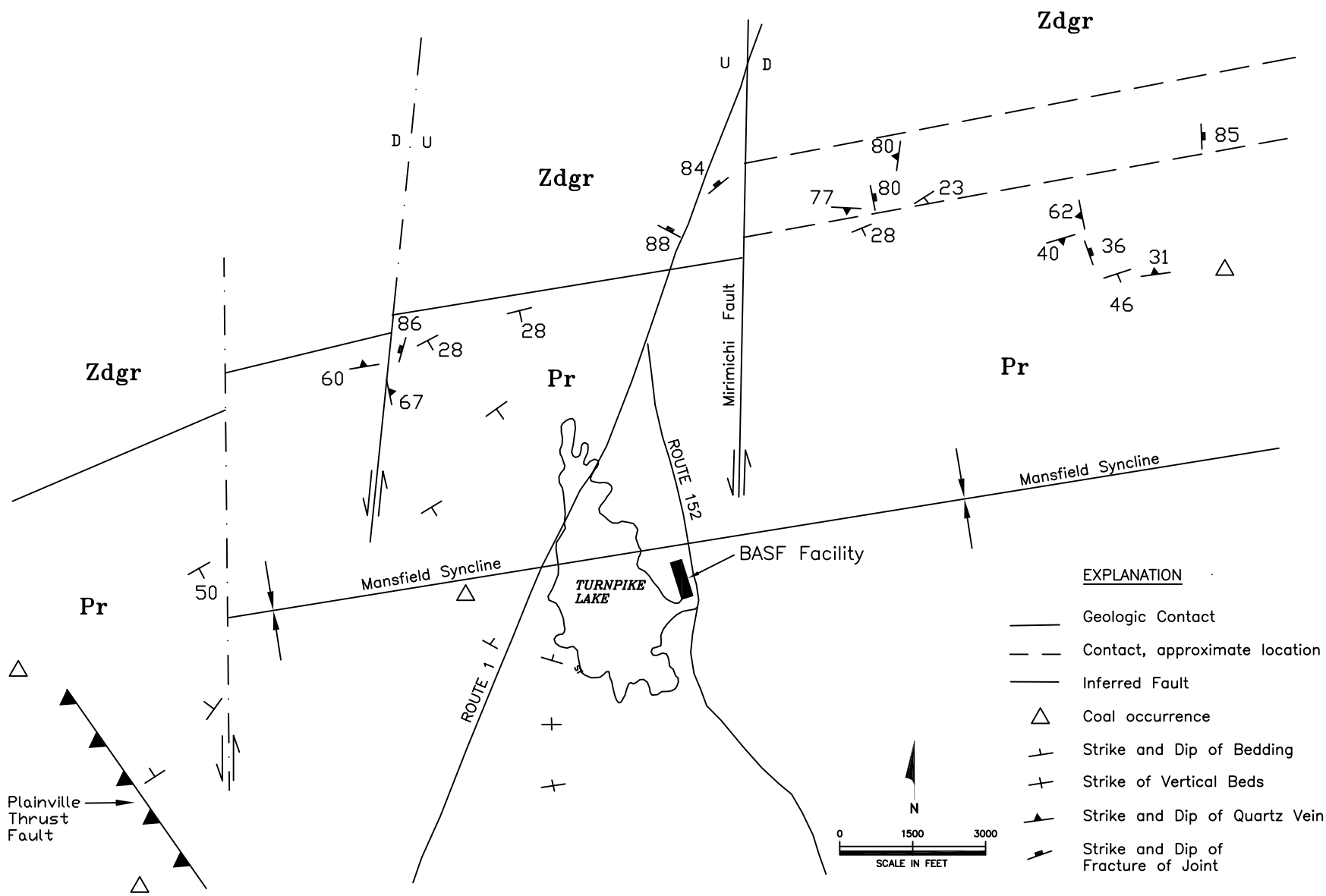
Z:\BASF\AutoCAD Figures\Figure 7.4.1

ENVIRON

Stratigraphy of the Narragansett Basin
Massachusetts
BASF Corporation
Plainville, Massachusetts

Figure 7.4.1

Drafter: RS | Date: 12/13/2006 | Contract Number: 25-12243E | Approved: | Revised: MN



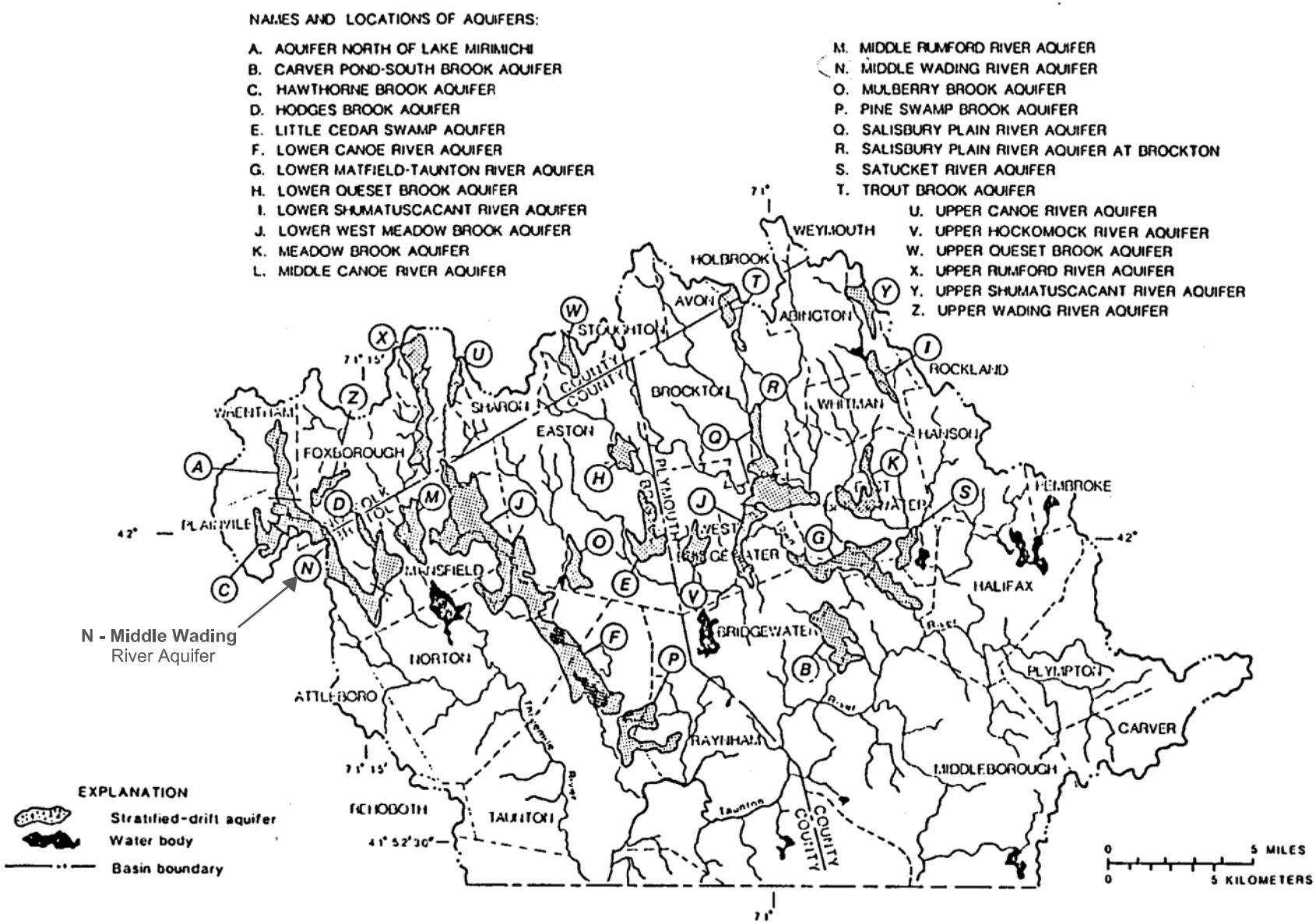
Z:\BASF\AUTOCAD FIGURES\FIGURE 7.4.2

ENVIRON

Bedrock Geologic Map of the Plainville Massachusetts Area
(from Lyons, 1977)
BASF Corporation
Plainville, Massachusetts

Figure
7.4.2

Drafter: RS | Date: 12/13/2006 | Contract Number: 25-12243E | Approved: | Revised: MN



ENVIRON

Location of Middle Wading River Aquifer
BASF Corporation
Plainville, Massachussetts

Figure
7.4.3a

Drafter: RS Date: 1/19/2007 Contract Number: 2512243E Approved: Revised: MN

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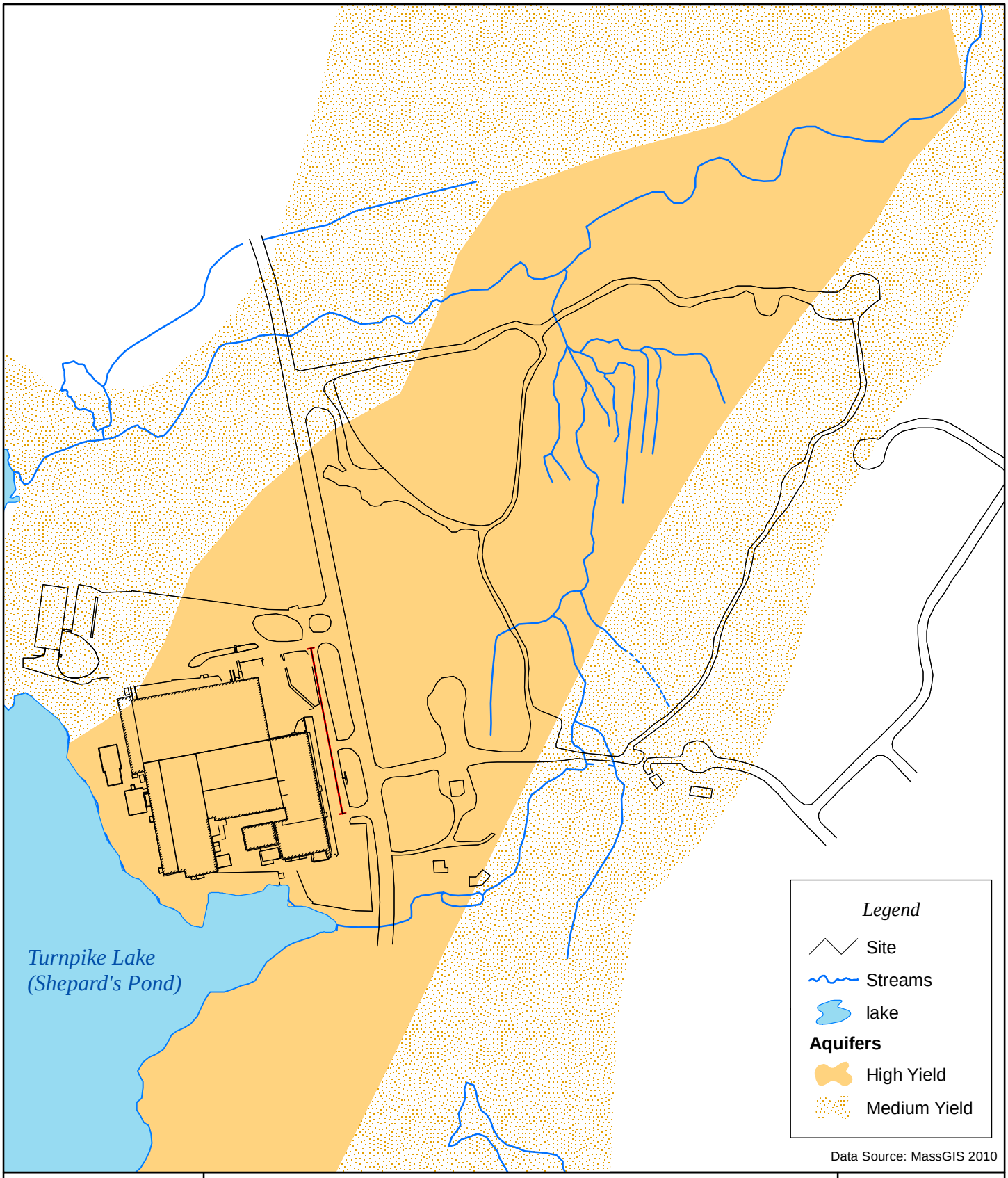

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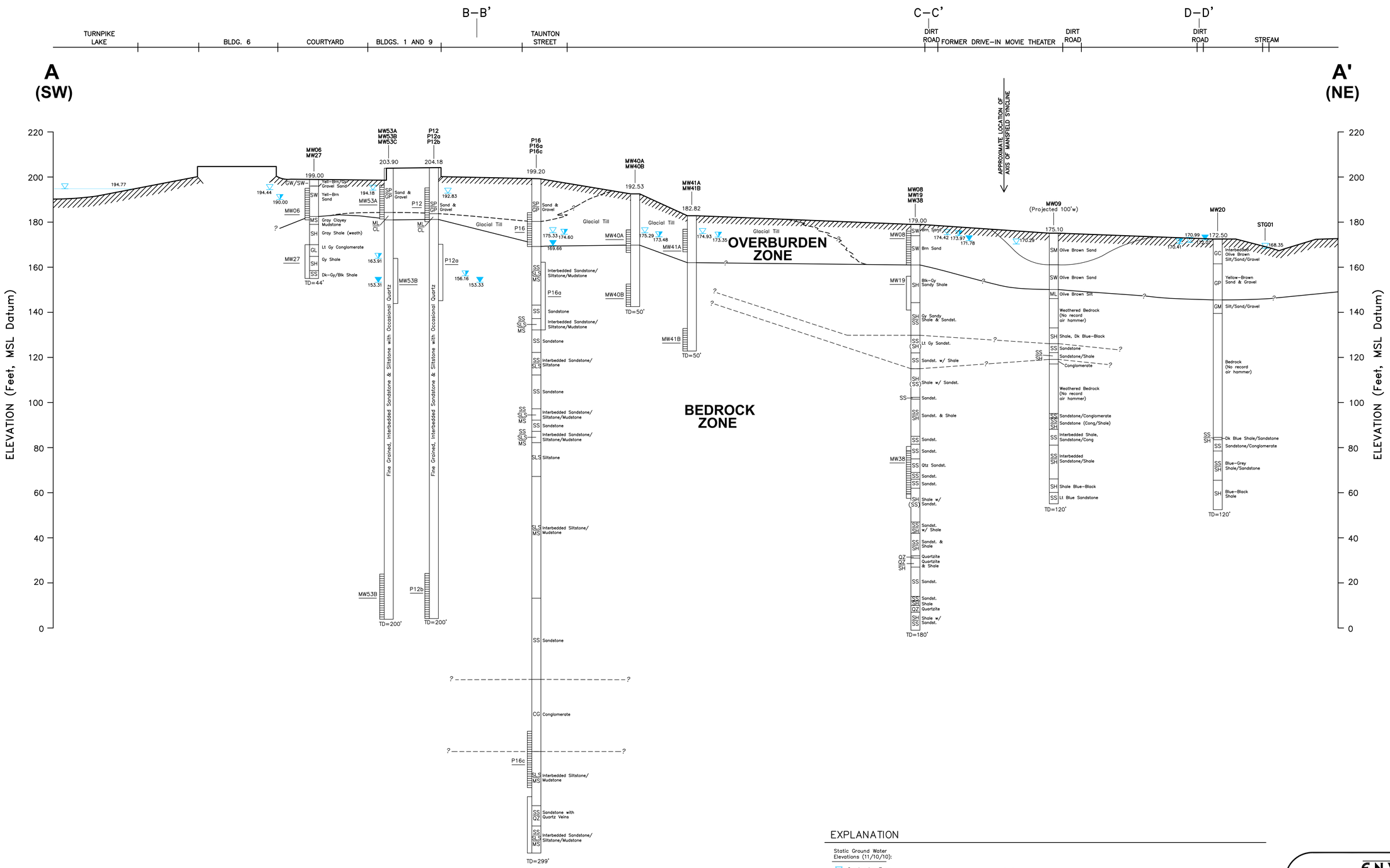
0 100 Meters

MassDEP Priority Resource Map Showing Aquifers by Yield

Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

Figure 7.4.3b

25-12243J



EXPLANATION

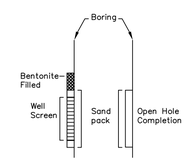
Static Ground Water Elevations (11/10/10):

- Overburden Zone
- Bedrock Zone
- Deep Bedrock Zone

0 100 200

SCALE IN FEET

VERTICAL EXAGGERATION = 5X



Notes:

1. See Figure 7.4.8 for cross section location.
2. Stratigraphy shown is from the deepest boring in each cluster except where noted otherwise. Occasionally, similar soil units have been grouped together where necessary for clarity.
3. Soils are classified in accordance with the Unified Soil Classification System.

ENVIRON

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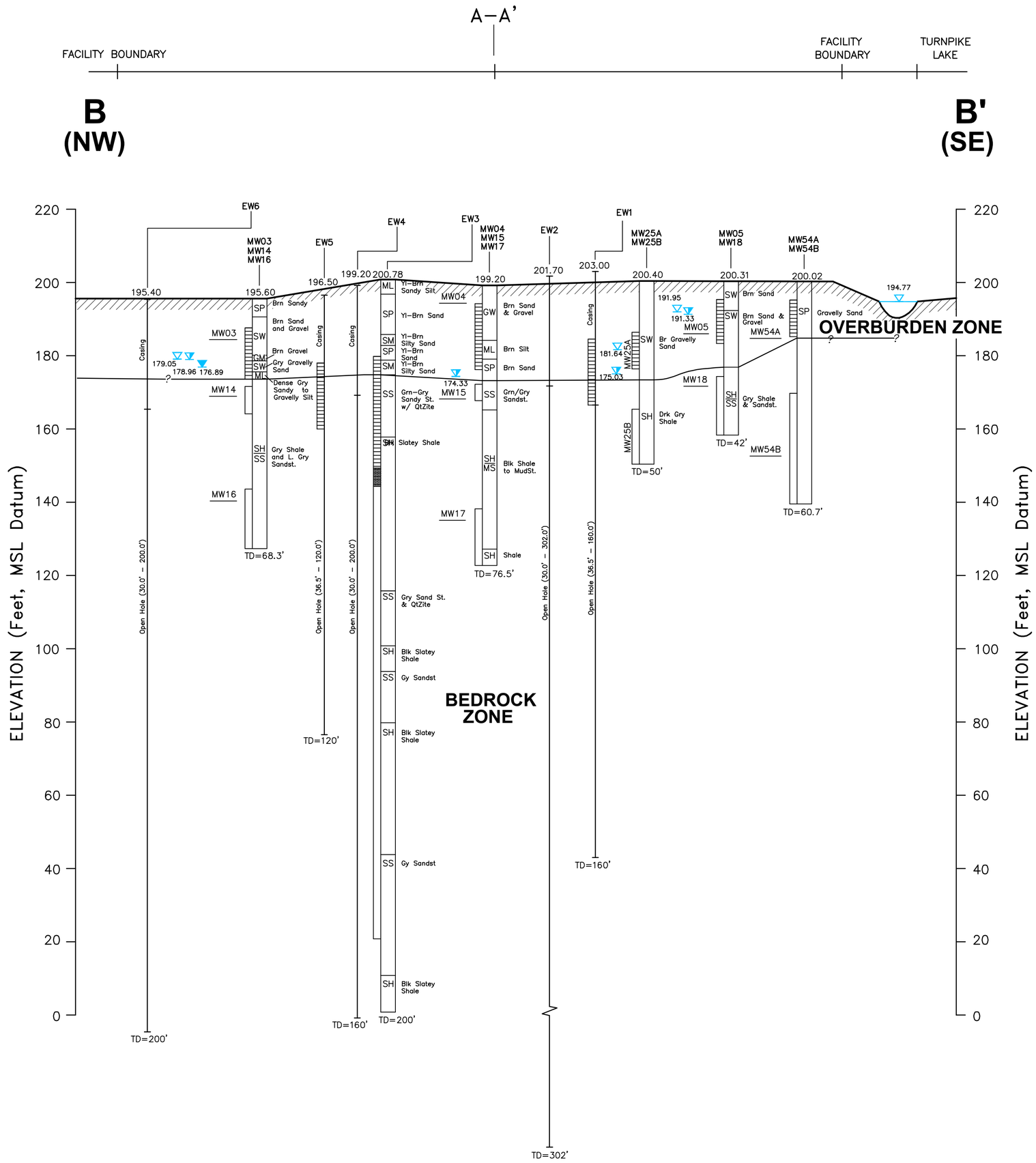
Schematic Subsurface Cross-Section A-A'
BASF Corporation
Plainville, Massachussets

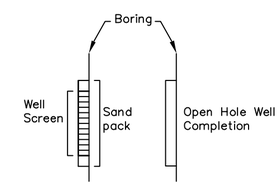
DATE:	CONTRACT NUMBER:		FIGURE
12/17/10	25–12243J		7.4.4
DRAFTER: RS	APPROVED:	REVISED:	



EXPLANATION

Static Ground Water Elevations (11/10/10):

- Overburden Zone
- Bedrock Zone
- Deep Bedrock Zone



Notes:

1. See Figure 7.4.8 for cross section location.
2. Stratigraphy shown is from the deepest boring in each cluster except where noted otherwise. Occasionally, similar soil units have been grouped together where necessary for clarity.
3. Soils are classified in accordance with the Unified Soil Classification System.

0 100 200
SCALE IN FEET

VERTICAL EXAGGERATION = 5X

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ENVIRON
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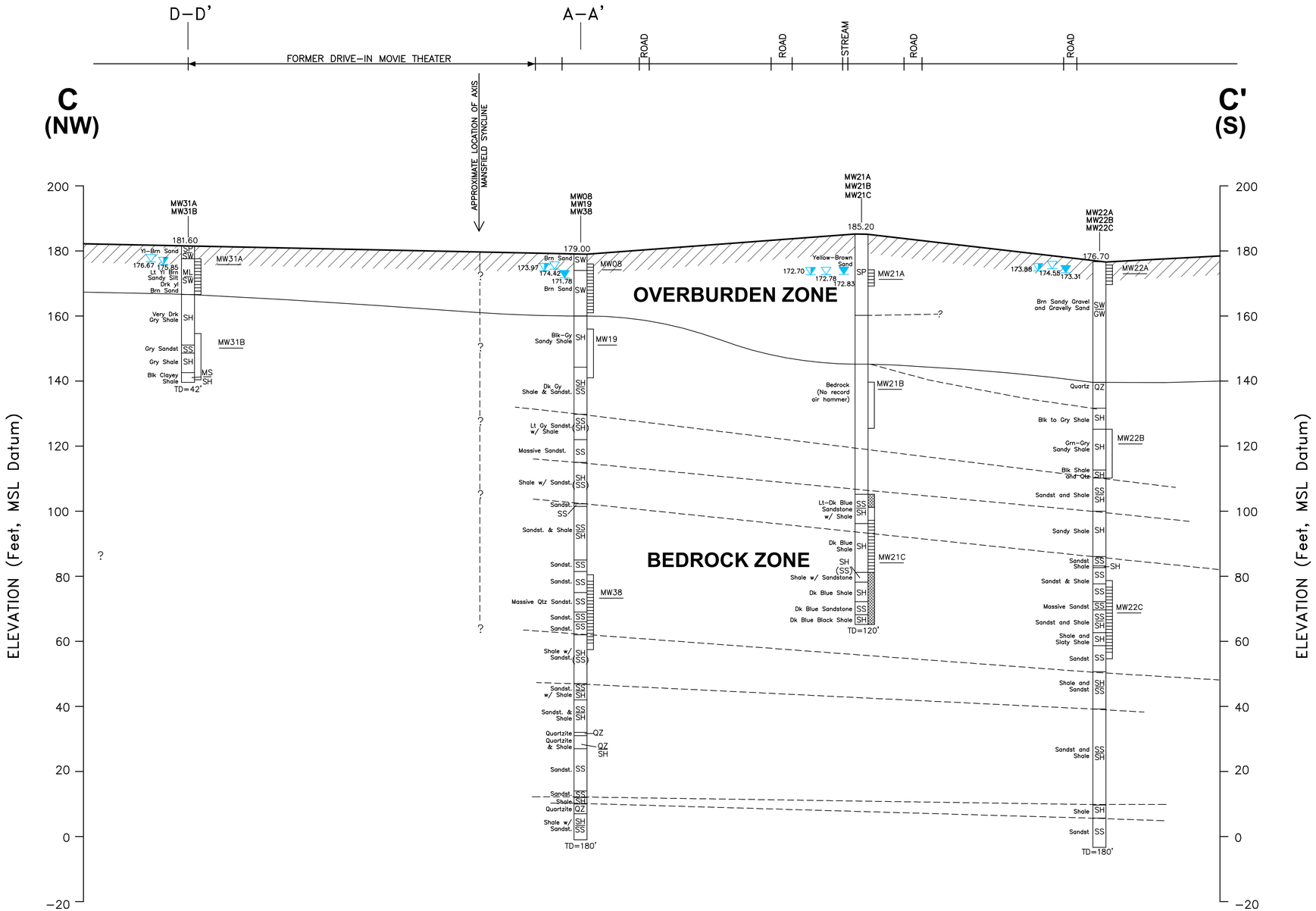
Schematic Subsurface Cross-Section B-B'
BASF Corporation
Plainville, Massachussets

DATE: 12/17/10	CONTRACT NUMBER: 25–12243J		FIGURE 7.4.5
DRAFTER: RS	APPROVED:	REVISED:	



EXPLANATION

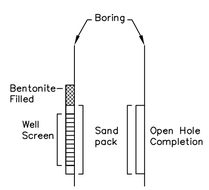
Static Ground Water Elevations (11/10/10)

- Overburden Zone
- Bedrock Zone
- Deep Bedrock Zone

0 100 200

SCALE IN FEET

VERTICAL EXAGGERATION = 5X



Notes:

1. See Figure 7.4.8 for cross section location.
2. Stratigraphy shown is from the deepest boring in each cluster except where noted otherwise. Occasionally, similar soil units have been grouped together where necessary for clarity.
3. Soils are classified in accordance with the Unified Soil Classification System.

ENVIRON

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Schematic Subsurface Cross-Section C-C'

BASF Corporation

Plainville, Massachussets

DATE: 12/17/10	CONTRACT NUMBER: 25-12243J		FIGURE
DRAFTER: RS	APPROVED:	REVISED:	7.4.6

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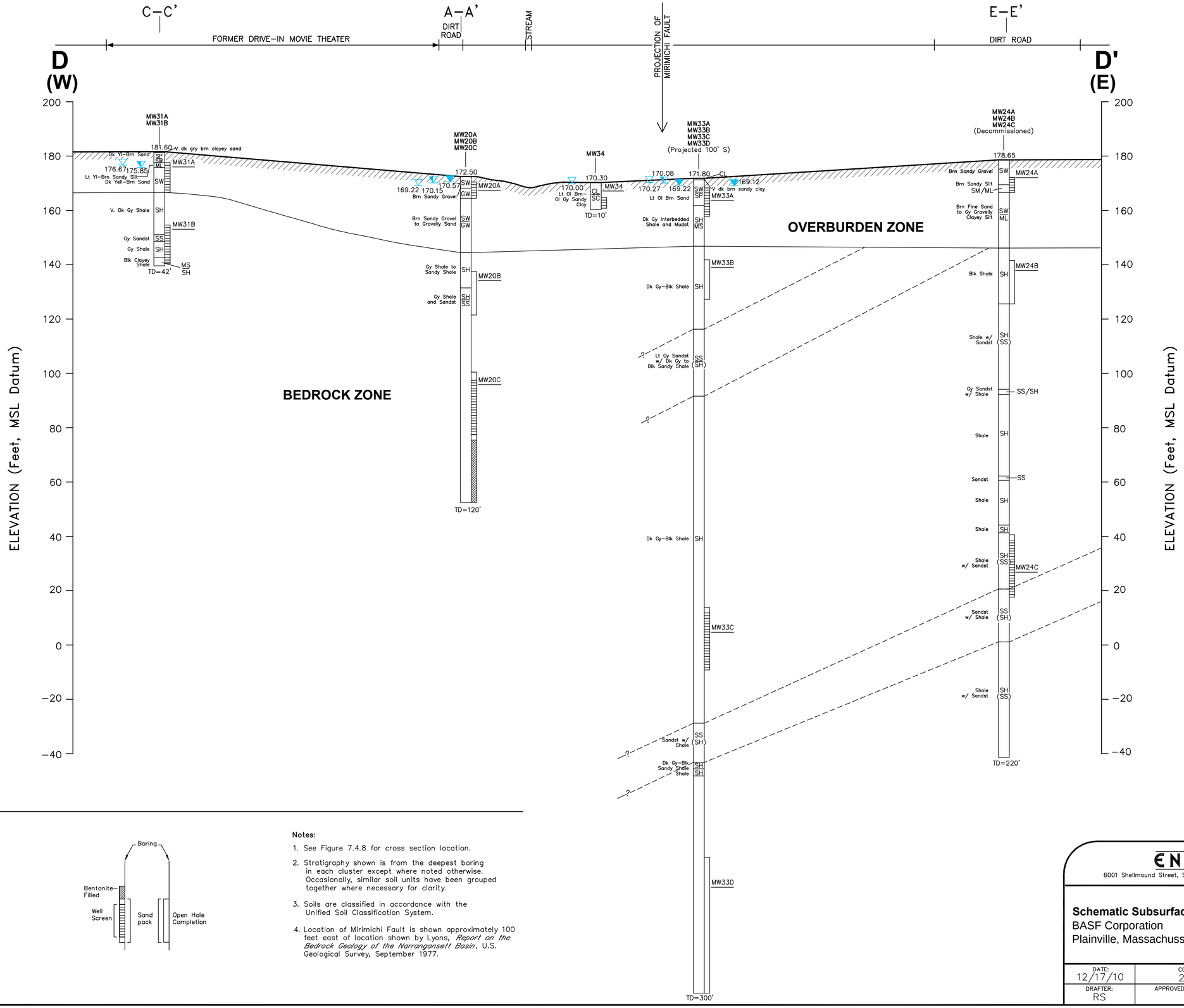

EXPLANATION

Static Ground Water Elevations (11/10/10)

- Overburden Zone
- Bedrock Zone
- Deep Bedrock Zone

0 100 200

SCALE IN FEET

VERTICAL EXAGGERATION = 5X

Notes:

1. See Figure 7.4.8 for cross section location.
2. Stratigraphy shown is from the deepest boring in each cluster except where noted otherwise. Occasionally, similar soil units have been grouped together where necessary for clarity.
3. Soils are classified in accordance with the Unified Soil Classification System.
4. Location of Mirimichi Fault is shown approximately 100 feet east of location shown by Lyons, *Report on the Bedrock Geology of the Narragansett Basin*, U.S. Geological Survey, September 1977.

ENVIRON

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Schematic Subsurface Cross-Section D-D'

BASF Corporation

Plainville, Massachussets

DATE:	CONTRACT NUMBER:		FIGURE
12/17/10	25–12243J		**7.4.7**
DRAFTER: RS	APPROVED:	REVISED:	

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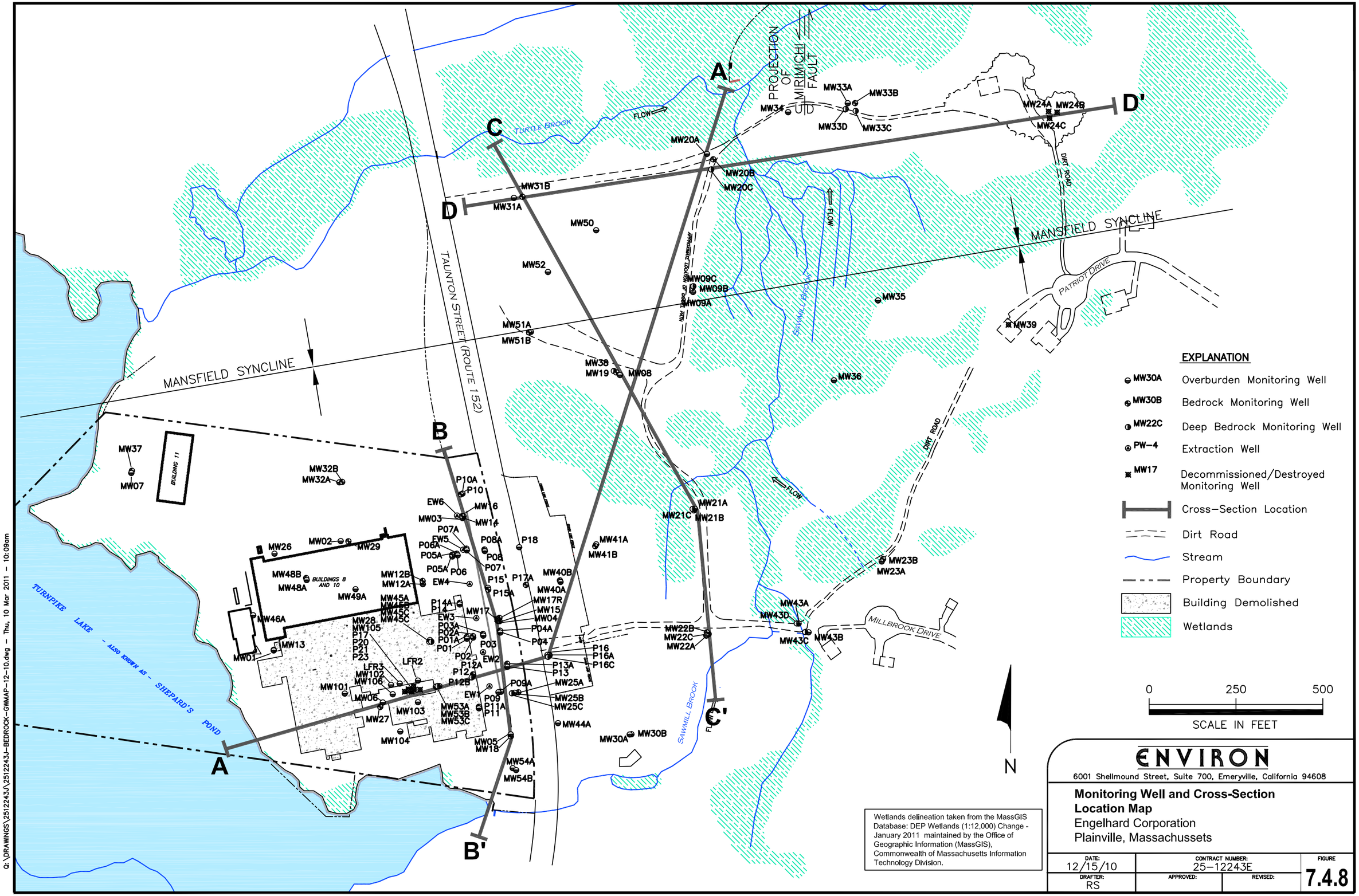
A
A'
B
B'
C
C'
D
D'
PROJECTION OF MIRIMICHI FAULT
TURTLE BROOK
FLOW
TAUNTON STREET (ROUTE 152)
MANSFIELD SYNCLINE
PATRIOT DRIVE
DIRT ROAD
MILLBROOK DRIVE
SAWMILL BROOK
TURNPIKE LAKE - ALSO KNOWN AS - SHEPARD'S POND
BUILDING 11
BUILDINGS 8 AND 10
MW37
MW07
MW32B
MW32A
MW26
MW02
MW29
MW48B
MW48A
MW49A
MW46A
MW13
MW01
MW101
MW06
MW27
MW104
MW103
MW45A
MW45B
MW45C
MW12B
MW12A
MW28
MW105
MW102
MW106
LFR3
LFR2
P17
P20
P21
P23
P10A
P10
EW6
MW03
MW16
MW14
P07A
EW5
P06A
P05A
P08A
P08
P07
P05A
P06
EW4
P15
P15A
P17A
P18
P14A
P14
EW3
P03A
P02A
P01A
P01
MW17
P03
P02
P12A
P12
P12B
EW2
EW1
P09
P11A
P11
MW53A
MW53B
MW53C
MW05
MW18
MW54A
MW54B
MW40B
MW40A
MW17R
MW15
MW04
P04A
P04
P16
P16A
P16C
P13A
P13
MW25A
MW25B
MW25C
P09A
MW44A
MW30A
MW30B
MW41A
MW41B
MW21A
MW21C
MW21B
MW22B
MW22C
MW22A
MW43A
MW43D
MW43C
MW43B
MW23B
MW23A
MW36
MW35
MW39
MW20A
MW20B
MW20C
MW31B
MW31A
MW50
MW52
MW09C
MW09B
MW09A
MW51A
MW51B
MW38
MW19
MW08
MW33A
MW33B
MW34
MW33D
MW33C
MW24A
MW24B
MW24C
EXPLANATION
MW30A Overburden Monitoring Well
MW30B Bedrock Monitoring Well
MW22C Deep Bedrock Monitoring Well
PW-4 Extraction Well
MW17 Decommissioned/Destroyed Monitoring Well
Cross-Section Location
Dirt Road
Stream
Property Boundary
Building Demolished
Wetlands
0 250 500
SCALE IN FEET
N
Wetlands delineation taken from the MassGIS Database: DEP Wetlands (1:12,000) Change - January 2011 maintained by the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division.
ENVIRON
6001 Shellmound Street, Suite 700, Emeryville, California 94608
Monitoring Well and Cross-Section Location Map
Engelhard Corporation
Plainville, Massachussets
DATE: 12/15/10
CONTRACT NUMBER: 25-12243E
FIGURE 7.4.8
DRAFTER: RS
APPROVED:
REVISED:
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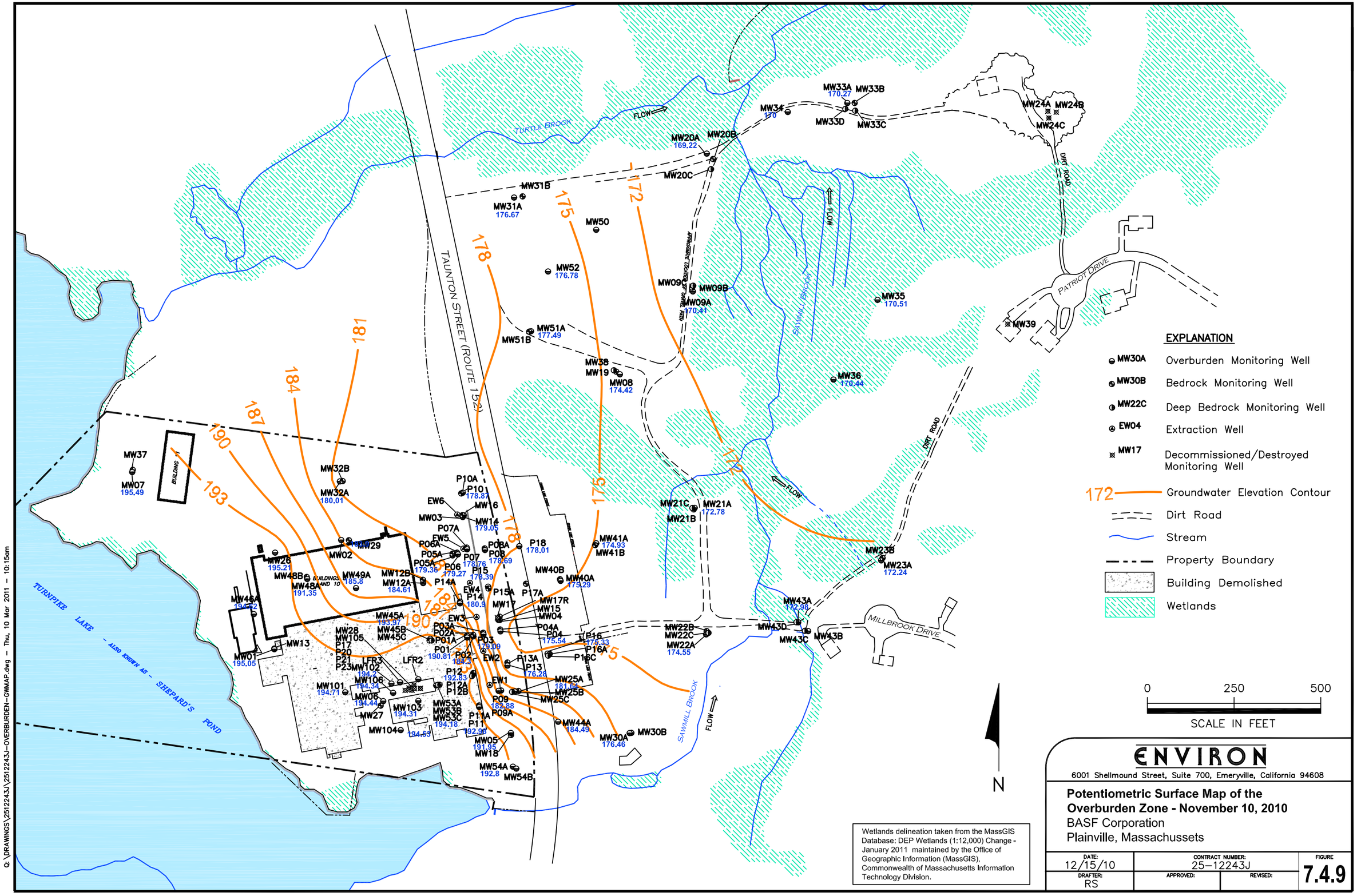
TAUNTON STREET (ROUTE 152)
TURTLE BROOK
FLOW
SAWMILL BROOK
PATRIOT DRIVE
DIRT ROAD
MILLBROOK DRIVE
TURNPIKE LAKE - ALSO KNOWN AS - SHEPARD'S POND
BUILDING 1
BUILDINGS 10 AND 10
MW33A 170.27
MW33B
MW33C
MW33D
MW34 170
MW24A
MW24B
MW24C
MW20A 169.22
MW20B
MW20C
MW31B
MW31A 176.67
MW50
MW52 176.78
MW09C
MW09B
MW09A 170.41
MW35 170.51
MW39
MW51A 177.49
MW51B
MW38
MW19
MW08 174.42
MW36 170.44
MW37
MW07 195.49
MW32B
MW32A 180.01
MW29
MW02
MW26 195.21
MW48B
MW48A 191.35
MW49A 185.8
MW12B
MW12A 184.61
MW46A 194.42
MW13
MW01 195.05
MW45A 193.97
MW45B
MW45C
MW28
MW105
P17
P20
P21
P23
MW102 194.2
LFR3
LFR2
MW101 194.71
MW106 194.34
MW06 194.44
MW27
MW103 194.31
MW104 194.53
MW53A
MW53B
MW53C 194.18
P10A
P10 178.87
MW16
EW6
MW03
MW14 179.05
P07A
EW5
P06A
P05A 179.36
P06 179.27
P07 178.76
P08A
P08 178.69
P15 178.39
P18 178.01
MW41A 174.93
MW41B
MW40B
MW40A 175.29
P14A
EW4
P14 180.9
P15A
P17A
MW17R
MW17
MW15
MW04
EW3
P03A
P02A
P01A
P03 179.09
P01 190.81
P02 184.3
EW2
P13A
P13 176.28
P16 175.33
P16A
P16C
P04A
P04 175.54
P12 192.83
P12A
P12B
EW1
P09 183.88
P09A
MW25A 181.64
MW25B
MW25C
P11A
P11 192.98
MW44A 184.49
MW30A 176.46
MW30B
MW05 191.95
MW18
MW54A 192.8
MW54B
MW21C
MW21B
MW21A 172.78
MW23B
MW23A 172.24
MW22B
MW22C
MW22A 174.55
MW43A 172.98
MW43D
MW43C
MW43B
193
190
187
184
181
178
175
172
EXPLANATION
MW30A Overburden Monitoring Well
MW30B Bedrock Monitoring Well
MW22C Deep Bedrock Monitoring Well
EW04 Extraction Well
MW17 Decommissioned/Destroyed Monitoring Well
172 Groundwater Elevation Contour
Dirt Road
Stream
Property Boundary
Building Demolished
Wetlands
0 250 500
SCALE IN FEET
N
Wetlands delineation taken from the MassGIS Database: DEP Wetlands (1:12,000) Change - January 2011 maintained by the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division.
ENVIRON
6001 Shellmound Street, Suite 700, Emeryville, California 94608
Potentiometric Surface Map of the Overburden Zone - November 10, 2010
BASF Corporation
Plainville, Massachussets
DATE: 12/15/10
CONTRACT NUMBER: 25-12243J
FIGURE 7.4.9
DRAFTER: RS
APPROVED:
REVISED:
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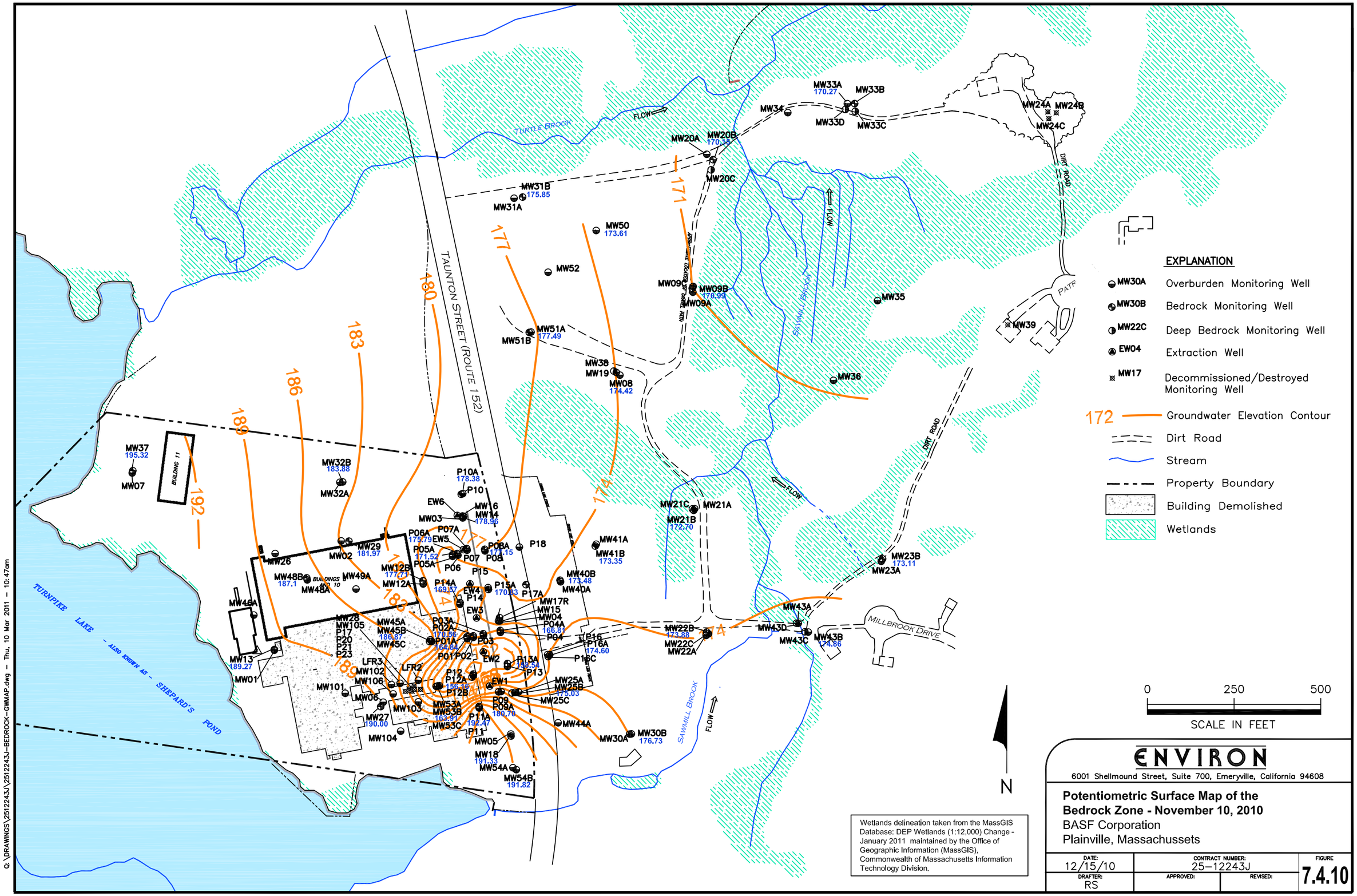
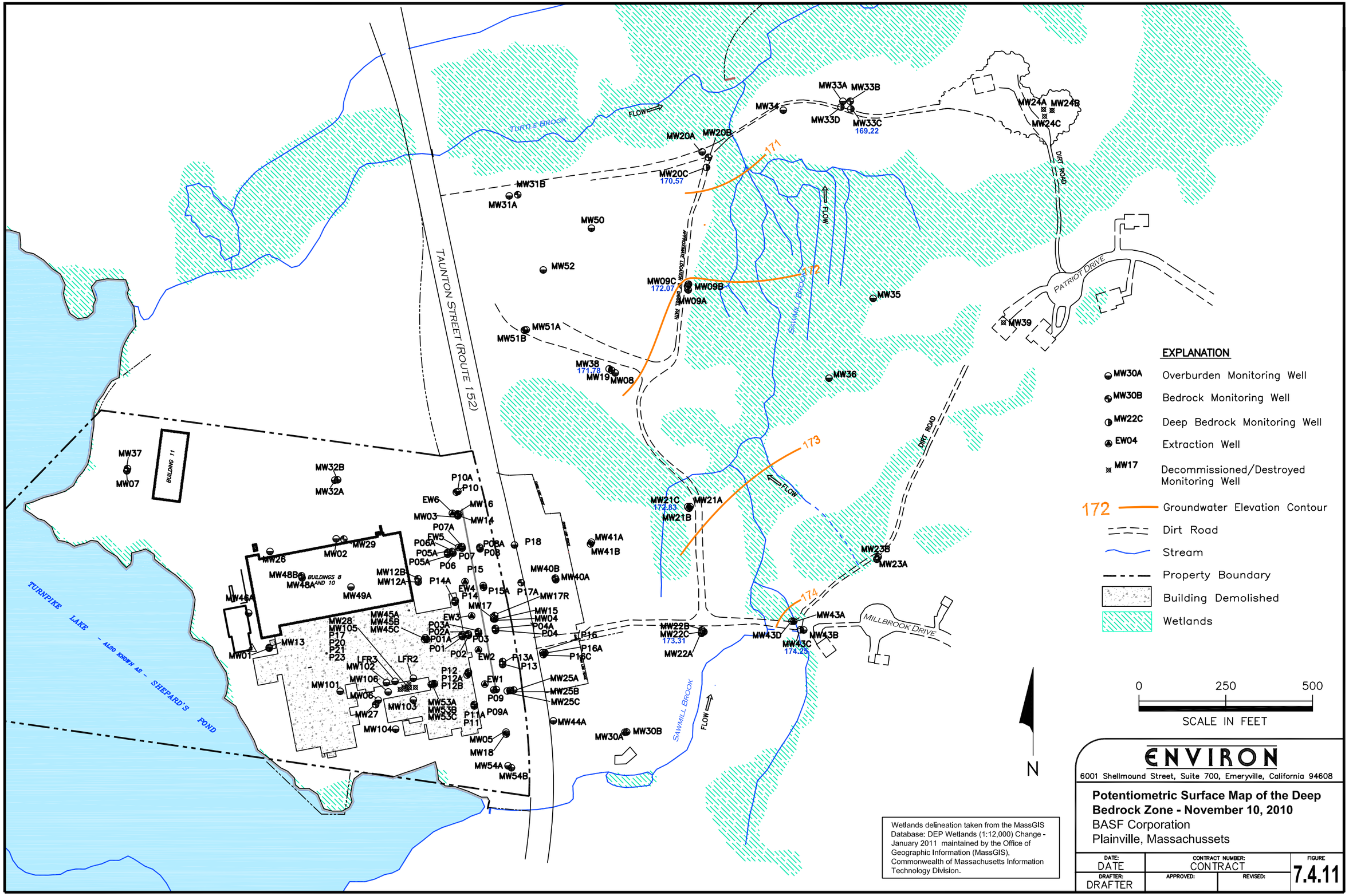
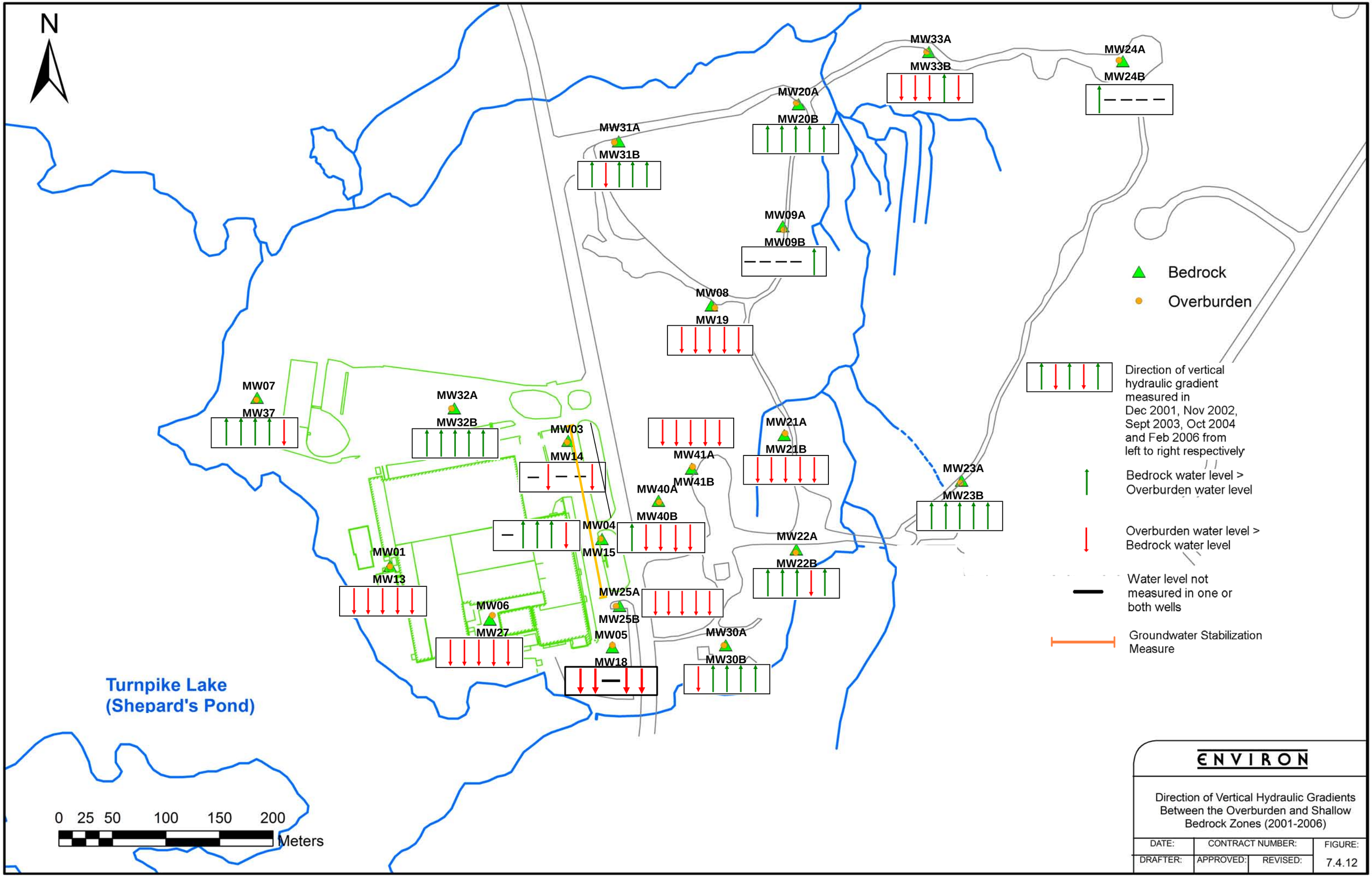
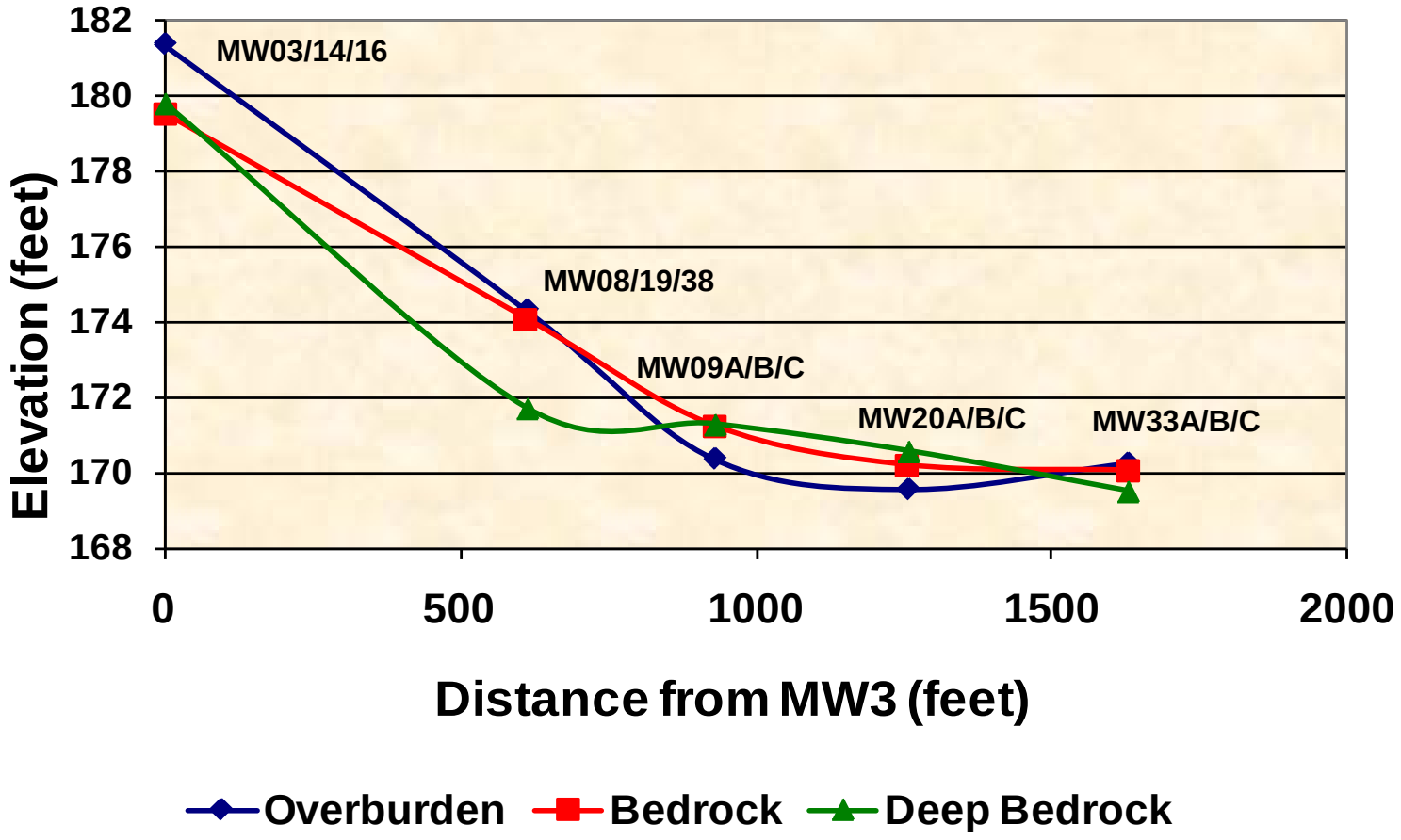

EXPLANATION
MW30A Overburden Monitoring Well
MW30B Bedrock Monitoring Well
MW22C Deep Bedrock Monitoring Well
EW04 Extraction Well
MW17 Decommissioned/Destroyed Monitoring Well
172 Groundwater Elevation Contour
Dirt Road
Stream
Property Boundary
Building Demolished
Wetlands
0 250 500
SCALE IN FEET
N
TAUNTON STREET (ROUTE 152)
TURTLE BROOK
SAWMILL BROOK
TURNPIKE LAKE - ALSO KNOWN AS - SHEPARD'S POND
MILLBROOK DRIVE
DIRT ROAD
BUILDING 11
BUILDINGS 9 AND 10
FLOW
MW37 195.32
MW07
MW32B 183.88
MW32A
MW31B 175.85
MW31A
MW50 173.61
MW52
MW09C
MW09B 170.99
MW09A
MW51A 177.49
MW51B
MW38
MW19
MW08 174.42
MW20A
MW20B 170.18
MW20C
MW33A 170.27
MW33B
MW34
MW33D
MW33C
MW24A
MW24B
MW24C
MW35
MW39
MW36
MW21C
MW21A
MW21B 172.70
MW23B 173.11
MW23A
MW41A
MW41B 173.35
MW40B 173.48
MW40A
MW43A
MW43D
MW43C
MW43B 174.86
MW22B 173.88
MW22C
MW22A
MW30A
MW30B 176.73
MW44A
MW25A
MW25B
MW25C 175.03
P10A 178.38
P10
EW6
MW16
MW14 178.96
MW03
P07A
P06A 175.79
EW5
P05A 171.52
P05A
P07
P08A 171.15
P08
P18
P06
P15
MW29 181.97
MW02
MW26
MW48B 187.1
MW48A
MW49A
MW12B 177.71
MW12A
P14A 169.57
EW4
P14
P15A 170.93
P17A
EW3
MW17R
MW15
MW04
P04A 166.81
P04
P16
P16A 174.60
P16C
MW46A
MW13 189.27
MW01
MW28
MW105
P17
P20
P21
P23
MW45A
MW45B 180.87
MW45C
P03A
P02A 170.56
P01A 164.34
P03
P01/P02
EW2
P13A 179.54
P13
LFR3
LFR2
MW102
MW106
MW101
MW06
MW103
P12
P12A 156.16
P12B
EW1
MW53A
MW53B 162.91
MW53C
P09
P09A 180.70
P11A 192.47
P11
MW27 190.00
MW104
MW05
MW18 191.33
MW54A
MW54B 191.82
MW41A
MW41B 173.35
MW40B 173.48
MW40A
MW43A
MW43D
MW43C
MW43B 174.86
MW22B 173.88
MW22C
MW22A
MW30A
MW30B 176.73
MW44A
MW25A
MW25B
MW25C 175.03
MW21C
MW21A
MW21B 172.70
MW23B 173.11
MW23A
192
189
186
183
180
177
174
171
Wetlands delineation taken from the MassGIS Database: DEP Wetlands (1:12,000) Change - January 2011 maintained by the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division.
ENVIRON
6001 Shellmound Street, Suite 700, Emeryville, California 94608
Potentiometric Surface Map of the Bedrock Zone - November 10, 2010
BASF Corporation
Plainville, Massachussets
DATE: 12/15/10
CONTRACT NUMBER: 25-12243J
FIGURE 7.4.10
DRAFTER: RS
APPROVED:
REVISED:
Q:\DRAWINGS\2512243J\2512243J-BEDROCK-GWMAP.dwg - Thu, 10 Mar 2011 - 10:47am


TAUNTON STREET (ROUTE 152)
TURTLE BROOK
FLOW
SAWMILL BROOK
PATRIOT DRIVE
DIRT ROAD
MILLBROOK DRIVE
TURNPIKE LAKE - ALSO KNOWN AS - SHEPARD'S POND
BUILDING 11
BUILDINGS 8 AND 10
MW33A MW33B
MW34
MW33D
MW33C
169.22
MW24A MW24B
MW24C
MW20A MW20B
MW20C
170.57
MW31B
MW31A
MW50
MW52
MW09C
172.07
MW09B
MW09A
MW35
MW39
MW51A
MW51B
MW38
171.78
MW19
MW08
MW36
MW37
MW07
MW32B
MW32A
MW21C
173.83
MW21B
MW21A
MW41A
MW41B
MW23B
MW23A
MW26
MW02
MW29
MW48B
MW48A
MW49A
MW12B
MW12A
MW40B
MW40A
MW45A
MW13
MW01
MW22B
MW22C
173.31
MW22A
MW43A
MW43D
MW43B
MW43C
174.25
MW30A
MW30B
MW44A
MW54A
MW54B
MW18
MW05
MW104
MW27
MW103
MW106
MW101
MW102
MW28
MW105
MW45B
MW45C
MW25A
MW25B
MW25C
MW17R
MW15
MW04
MW17
171
172
173
174
N
EXPLANATION
MW30A Overburden Monitoring Well
MW30B Bedrock Monitoring Well
MW22C Deep Bedrock Monitoring Well
EW04 Extraction Well
MW17 Decommissioned/Destroyed Monitoring Well
172 Groundwater Elevation Contour
Dirt Road
Stream
Property Boundary
Building Demolished
Wetlands
0 250 500
SCALE IN FEET
Wetlands delineation taken from the MassGIS Database: DEP Wetlands (1:12,000) Change - January 2011 maintained by the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division.
ENVIRON
6001 Shellmound Street, Suite 700, Emeryville, California 94608
Potentiometric Surface Map of the Deep Bedrock Zone - November 10, 2010
BASF Corporation
Plainville, Massachussets
DATE: DATE
CONTRACT NUMBER: CONTRACT
FIGURE 7.4.11
DRAFTER: DRAFTER
APPROVED:
REVISED:
Q:\DRAWINGS\2512243J\2512243J-deepBEDROCK-GWMAP.dwg – Thu, 10 Mar 2011 – 10:49am


N
MW33A
MW33B
MW24A
MW24B
MW20A
MW20B
MW31A
MW31B
MW09A
MW09B
MW08
MW19
MW07
MW37
MW32A
MW32B
MW03
MW14
MW41A
MW41B
MW21A
MW21B
MW23A
MW23B
MW40A
MW40B
MW04
MW15
MW22A
MW22B
MW01
MW13
MW25A
MW25B
MW06
MW27
MW05
MW18
MW30A
MW30B
Bedrock
Overburden
Direction of vertical hydraulic gradient measured in Dec 2001, Nov 2002, Sept 2003, Oct 2004 and Feb 2006 from left to right respectively
Bedrock water level > Overburden water level
Overburden water level > Bedrock water level
Water level not measured in one or both wells
Groundwater Stabilization Measure
Turnpike Lake (Shepard's Pond)
0 25 50 100 150 200
Meters
ENVIRON
Direction of Vertical Hydraulic Gradients Between the Overburden and Shallow Bedrock Zones (2001-2006)
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
7.4.12



ENVIRON

Drafted by:

Date:

Water Level Elevations Measured in February 2006
Along the Cross Section from MW03/14/16 to MW33A/B/C

FIGURE
7.4.13

2512243J

EXPLANATION

43 — Private drinking water wells surveyed by State in March 1989. Refer to Table 7.4.4 for addresses. With the exception of the well marked UA, all well numbers are assigned by the State

MUNI-5 — Town of Plainville, MA municipal drinking water well. Refer to Table 7.4.5 for a description of well construction And pumping schedule.

Mirimichi Wellfield — Approximate location of new town of Plainville wellfield at Lake Mirimichi.

Note: Locations noted are approximate.

Source: Private well locations provided by State of Massachusetts Department of Environmental Protection. Municipal well locations provided by the Town of Plainville, MA Department of Water and Sewer. Locations superimposed on USGS 7.5 minute series (Topographic) Wrentham Quadrangle, Massachusetts, Photorevised 1979.

N

0 1200 2400

SCALE IN FEET

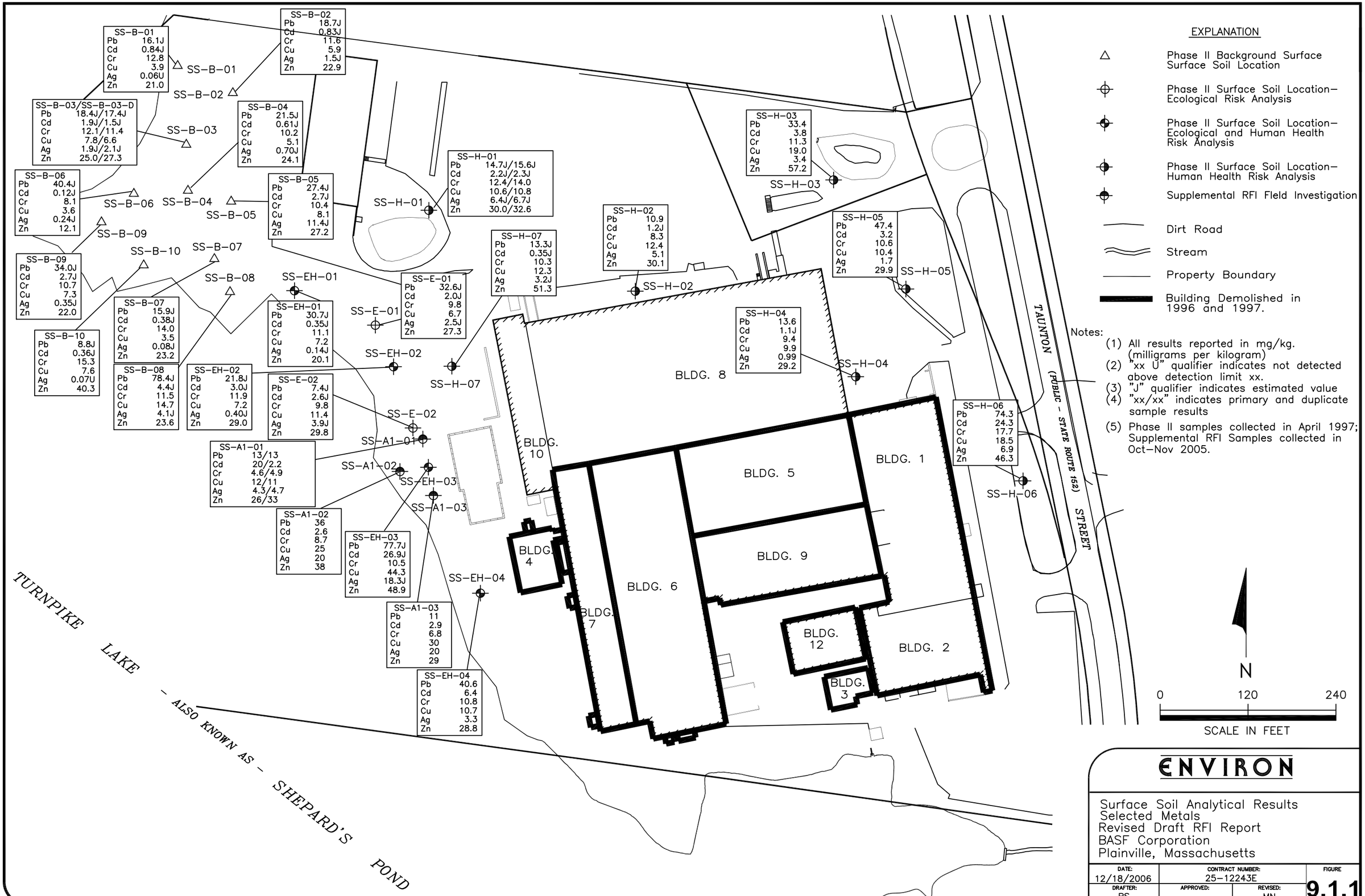
Z:\BASF\AUTOCAD FIGURES\FIGURE 7.4.14

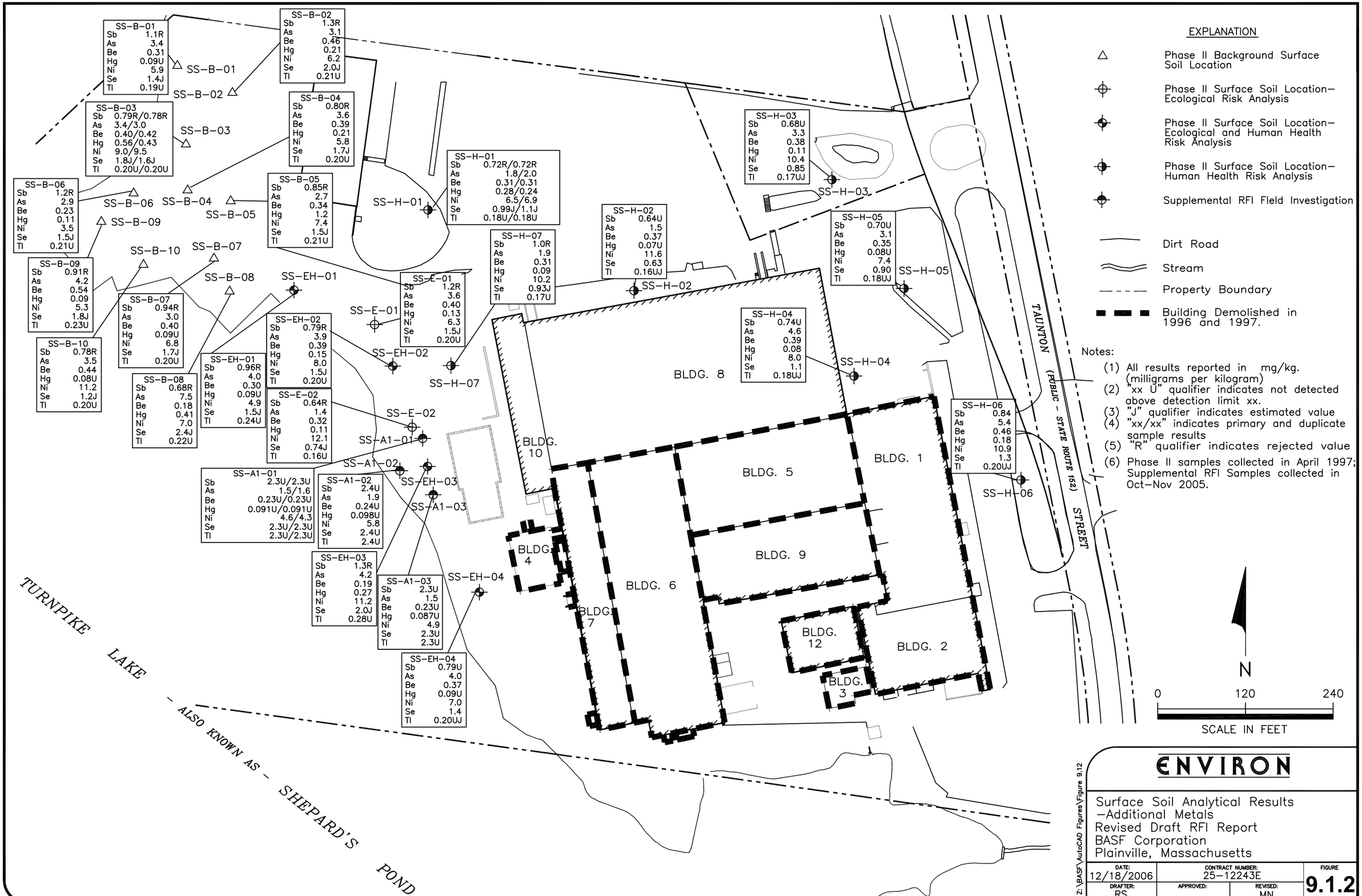
ENVIRON

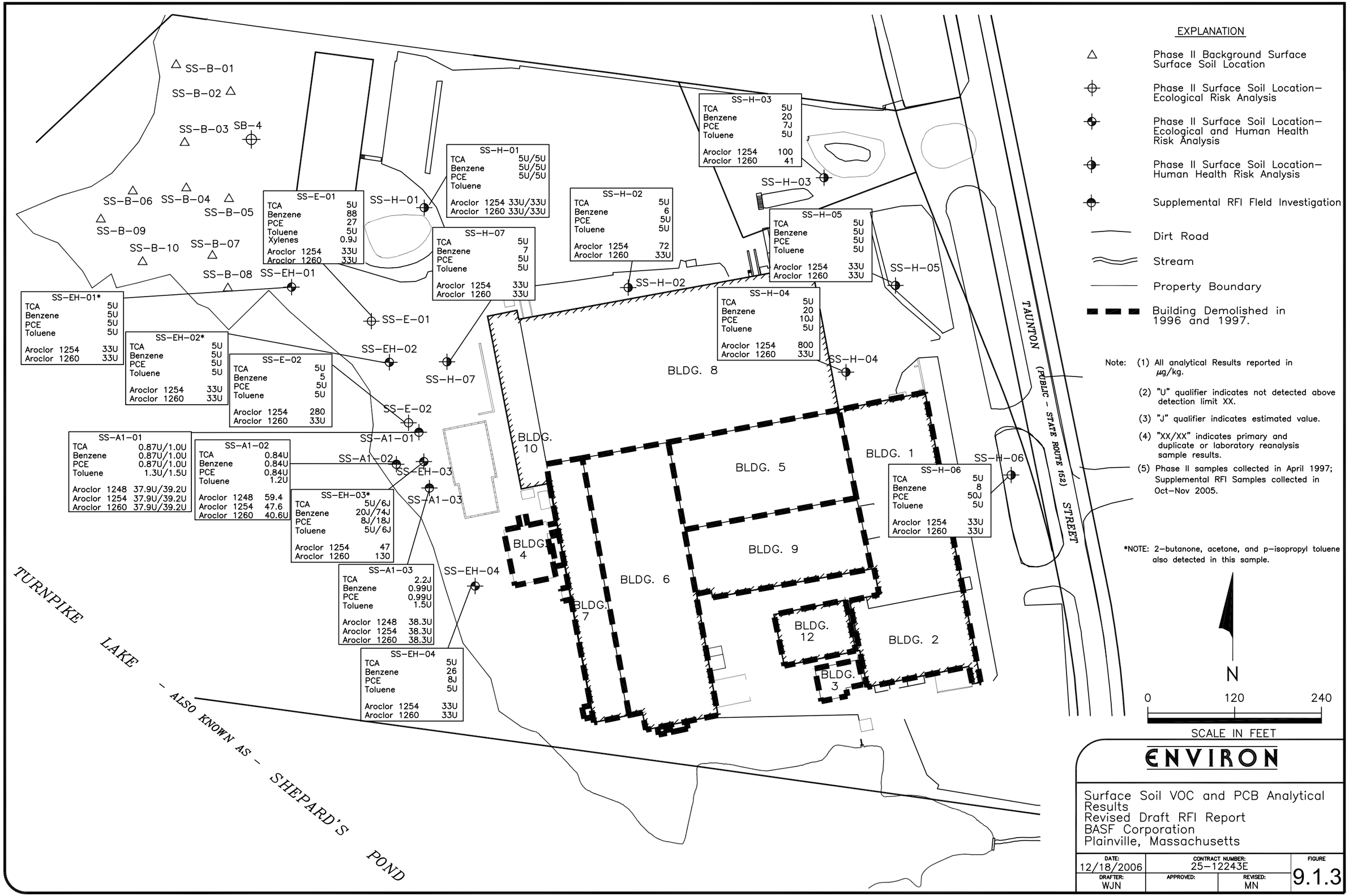
Location of Private and Municipal Wells Within a One-Mile Radius
Revised Draft RFI Report
BASF Corporation, Plainville Massachusetts

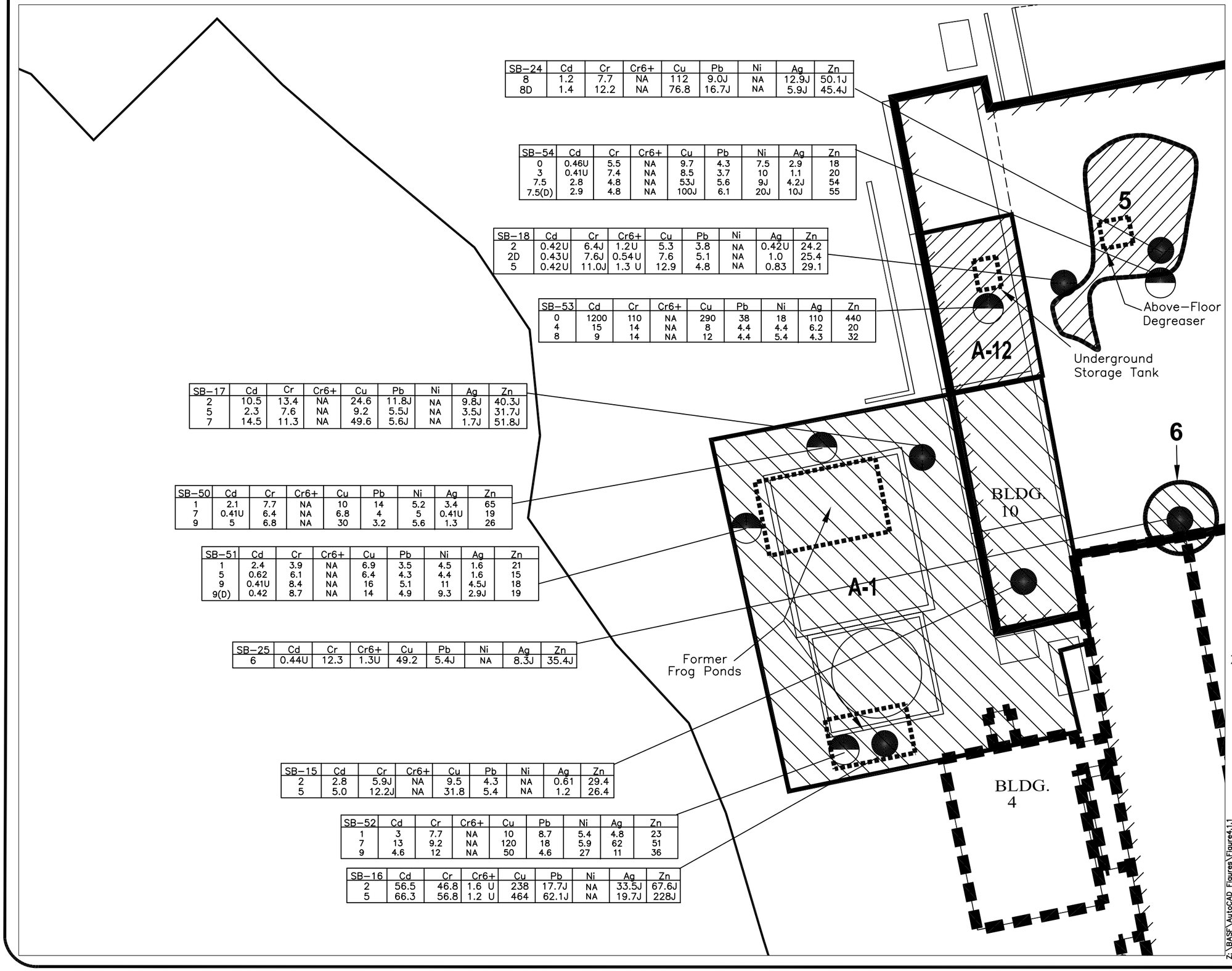
Figure **7.4.14**

Drafter: RS | Date: 12/13/2006 | Contract Number: 25-12243E | Approved: | Revised: MN


SS-B-01
Pb 16.1J
Cd 0.84J
Cr 12.8
Cu 3.9
Ag 0.06U
Zn 21.0
SS-B-02
Pb 18.7J
Cd 0.83J
Cr 11.6
Cu 5.9
Ag 1.5J
Zn 22.9
SS-B-03/SS-B-03-D
Pb 18.4J/17.4J
Cd 1.9J/1.5J
Cr 12.1/11.4
Cu 7.8/6.6
Ag 1.9J/2.1J
Zn 25.0/27.3
SS-B-04
Pb 21.5J
Cd 0.61J
Cr 10.2
Cu 5.1
Ag 0.70J
Zn 24.1
SS-B-05
Pb 27.4J
Cd 2.7J
Cr 10.4
Cu 8.1
Ag 11.4J
Zn 27.2
SS-B-06
Pb 40.4J
Cd 0.12J
Cr 8.1
Cu 3.6
Ag 0.24J
Zn 12.1
SS-B-09
Pb 34.0J
Cd 2.7J
Cr 10.7
Cu 7.3
Ag 0.35J
Zn 22.0
SS-B-10
Pb 8.8J
Cd 0.36J
Cr 15.3
Cu 7.6
Ag 0.07U
Zn 40.3
SS-B-07
Pb 15.9J
Cd 0.38J
Cr 14.0
Cu 3.5
Ag 0.08J
Zn 23.2
SS-B-08
Pb 78.4J
Cd 4.4J
Cr 11.5
Cu 14.7
Ag 4.1J
Zn 23.6
SS-EH-01
Pb 30.7J
Cd 0.35J
Cr 11.1
Cu 7.2
Ag 0.14J
Zn 20.1
SS-EH-02
Pb 21.8J
Cd 3.0J
Cr 11.9
Cu 7.2
Ag 0.40J
Zn 29.0
SS-E-01
Pb 32.6J
Cd 2.0J
Cr 9.8
Cu 6.7
Ag 2.5J
Zn 27.3
SS-E-02
Pb 7.4J
Cd 2.6J
Cr 9.8
Cu 11.4
Ag 3.9J
Zn 29.8
SS-A1-01
Pb 13/13
Cd 20/2.2
Cr 4.6/4.9
Cu 12/11
Ag 4.3/4.7
Zn 26/33
SS-A1-02
Pb 36
Cd 2.6
Cr 8.7
Cu 25
Ag 20
Zn 38
SS-EH-03
Pb 77.7J
Cd 26.9J
Cr 10.5
Cu 44.3
Ag 18.3J
Zn 48.9
SS-A1-03
Pb 11
Cd 2.9
Cr 6.8
Cu 30
Ag 20
Zn 29
SS-EH-04
Pb 40.6
Cd 6.4
Cr 10.8
Cu 10.7
Ag 3.3
Zn 28.8
SS-H-01
Pb 14.7J/15.6J
Cd 2.2J/2.3J
Cr 12.4/14.0
Cu 10.6/10.8
Ag 6.4J/6.7J
Zn 30.0/32.6
SS-H-02
Pb 10.9
Cd 1.2J
Cr 8.3
Cu 12.4
Ag 5.1
Zn 30.1
SS-H-03
Pb 33.4
Cd 3.8
Cr 11.3
Cu 19.0
Ag 3.4
Zn 57.2
SS-H-04
Pb 13.6
Cd 1.1J
Cr 9.4
Cu 9.9
Ag 0.99
Zn 29.2
SS-H-05
Pb 47.4
Cd 3.2
Cr 10.6
Cu 10.4
Ag 1.7
Zn 29.9
SS-H-06
Pb 74.3
Cd 24.3
Cr 17.7
Cu 18.5
Ag 6.9
Zn 46.3
SS-H-07
Pb 13.3J
Cd 0.35J
Cr 10.3
Cu 12.3
Ag 3.2J
Zn 51.3
BLDG. 8
BLDG. 10
BLDG. 5
BLDG. 1
BLDG. 9
BLDG. 4
BLDG. 6
BLDG. 7
BLDG. 12
BLDG. 2
BLDG. 3
TAUNTON (PUBLIC - STATE ROUTE 152) STREET
TURNPIKE LAKE - ALSO KNOWN AS - SHEPARD'S POND
EXPLANATION
Phase II Background Surface Surface Soil Location
Phase II Surface Soil Location– Ecological Risk Analysis
Phase II Surface Soil Location– Ecological and Human Health Risk Analysis
Phase II Surface Soil Location– Human Health Risk Analysis
Supplemental RFI Field Investigation
Dirt Road
Stream
Property Boundary
Building Demolished in 1996 and 1997.
Notes:
(1) All results reported in mg/kg. (milligrams per kilogram)
(2) "xx U" qualifier indicates not detected above detection limit xx.
(3) "J" qualifier indicates estimated value
(4) "xx/xx" indicates primary and duplicate sample results
(5) Phase II samples collected in April 1997; Supplemental RFI Samples collected in Oct–Nov 2005.
N
0 120 240
SCALE IN FEET
ENVIRON
Surface Soil Analytical Results
Selected Metals
Revised Draft RFI Report
BASF Corporation
Plainville, Massachusetts
DATE: 12/18/2006
CONTRACT NUMBER: 25–12243E
FIGURE 9.1.1
DRAFTER: RS
APPROVED:
REVISED: MN


SS-B-01
Sb 1.1R
As 3.4
Be 0.31
Hg 0.09U
Ni 5.9
Se 1.4J
Tl 0.19U
SS-B-02
Sb 1.3R
As 3.1
Be 0.46
Hg 0.21
Ni 6.2
Se 2.0J
Tl 0.21U
SS-B-03
Sb 0.79R/0.78R
As 3.4/3.0
Be 0.40/0.42
Hg 0.56/0.43
Ni 9.0/9.5
Se 1.8J/1.6J
Tl 0.20U/0.20U
SS-B-04
Sb 0.80R
As 3.6
Be 0.39
Hg 0.21
Ni 5.8
Se 1.7J
Tl 0.20U
SS-B-05
Sb 0.85R
As 2.7
Be 0.34
Hg 1.2
Ni 7.4
Se 1.5J
Tl 0.21U
SS-B-06
Sb 1.2R
As 2.9
Be 0.23
Hg 0.11
Ni 3.5
Se 1.5J
Tl 0.21U
SS-B-09
Sb 0.91R
As 4.2
Be 0.54
Hg 0.09
Ni 5.3
Se 1.8J
Tl 0.23U
SS-B-10
Sb 0.78R
As 3.5
Be 0.44
Hg 0.08U
Ni 11.2
Se 1.2J
Tl 0.20U
SS-B-07
Sb 0.94R
As 3.0
Be 0.40
Hg 0.09U
Ni 6.8
Se 1.7J
Tl 0.20U
SS-B-08
Sb 0.68R
As 7.5
Be 0.18
Hg 0.41
Ni 7.0
Se 2.4J
Tl 0.22U
SS-H-01
Sb 0.72R/0.72R
As 1.8/2.0
Be 0.31/0.31
Hg 0.28/0.24
Ni 6.5/6.9
Se 0.99J/1.1J
Tl 0.18U/0.18U
SS-H-02
Sb 0.64U
As 1.5
Be 0.37
Hg 0.07U
Ni 11.6
Se 0.63
Tl 0.16UJ
SS-H-03
Sb 0.68U
As 3.3
Be 0.38
Hg 0.11
Ni 10.4
Se 0.85
Tl 0.17UJ
SS-H-04
Sb 0.74U
As 4.6
Be 0.39
Hg 0.08
Ni 8.0
Se 1.1
Tl 0.18UJ
SS-H-05
Sb 0.70U
As 3.1
Be 0.35
Hg 0.08U
Ni 7.4
Se 0.90
Tl 0.18UJ
SS-H-06
Sb 0.84
As 5.4
Be 0.46
Hg 0.18
Ni 10.9
Se 1.3
Tl 0.20UJ
SS-H-07
Sb 1.0R
As 1.9
Be 0.31
Hg 0.09
Ni 10.2
Se 0.93J
Tl 0.17U
SS-E-01
Sb 1.2R
As 3.6
Be 0.40
Hg 0.13
Ni 6.3
Se 1.5J
Tl 0.20U
SS-EH-01
Sb 0.96R
As 4.0
Be 0.30
Hg 0.09U
Ni 4.9
Se 1.5J
Tl 0.24U
SS-EH-02
Sb 0.79R
As 3.9
Be 0.39
Hg 0.15
Ni 8.0
Se 1.5J
Tl 0.20U
SS-E-02
Sb 0.64R
As 1.4
Be 0.32
Hg 0.11
Ni 12.1
Se 0.74J
Tl 0.16U
SS-A1-01
Sb 2.3U/2.3U
As 1.5/1.6
Be 0.23U/0.23U
Hg 0.091U/0.091U
Ni 4.6/4.3
Se 2.3U/2.3U
Tl 2.3U/2.3U
SS-A1-02
Sb 2.4U
As 1.9
Be 0.24U
Hg 0.098U
Ni 5.8
Se 2.4U
Tl 2.4U
SS-A1-03
Sb 2.3U
As 1.5
Be 0.23U
Hg 0.087U
Ni 4.9
Se 2.3U
Tl 2.3U
SS-EH-03
Sb 1.3R
As 4.2
Be 0.19
Hg 0.27
Ni 11.2
Se 2.0J
Tl 0.28U
SS-EH-04
Sb 0.79U
As 4.0
Be 0.37
Hg 0.09U
Ni 7.0
Se 1.4
Tl 0.20UJ
SS-B-01
SS-B-02
SS-B-03
SS-B-04
SS-B-05
SS-B-06
SS-B-09
SS-B-10
SS-B-07
SS-B-08
SS-EH-01
SS-E-01
SS-EH-02
SS-H-07
SS-E-02
SS-A1-01
SS-A1-02
SS-EH-03
SS-A1-03
SS-EH-04
SS-H-01
SS-H-02
SS-H-03
SS-H-05
SS-H-04
SS-H-06
BLDG. 8
BLDG. 10
BLDG. 5
BLDG. 1
BLDG. 4
BLDG. 9
BLDG. 6
BLDG. 7
BLDG. 12
BLDG. 2
BLDG. 3
TAUNTON (PUBLIC - STATE ROUTE 152) STREET
TURNPIKE LAKE - ALSO KNOWN AS - SHEPARD'S POND
EXPLANATION
Phase II Background Surface Soil Location
Phase II Surface Soil Location–Ecological Risk Analysis
Phase II Surface Soil Location–Ecological and Human Health Risk Analysis
Phase II Surface Soil Location–Human Health Risk Analysis
Supplemental RFI Field Investigation
Dirt Road
Stream
Property Boundary
Building Demolished in 1996 and 1997.
Notes:
(1) All results reported in mg/kg. (milligrams per kilogram)
(2) "xx U" qualifier indicates not detected above detection limit xx.
(3) "J" qualifier indicates estimated value
(4) "xx/xx" indicates primary and duplicate sample results
(5) "R" qualifier indicates rejected value
(6) Phase II samples collected in April 1997; Supplemental RFI Samples collected in Oct–Nov 2005.
N
0 120 240
SCALE IN FEET
ENVIRON
Surface Soil Analytical Results –Additional Metals
Revised Draft RFI Report
BASF Corporation
Plainville, Massachusetts
DATE: 12/18/2006
CONTRACT NUMBER: 25-12243E
FIGURE 9.1.2
DRAFTER: RS
APPROVED:
REVISED: MN
Z:\BASF\AutoCAD Figures\Figure 9.12


SS-B-01
SS-B-02
SS-B-03
SB-4
SS-B-06
SS-B-04
SS-B-05
SS-B-09
SS-B-10
SS-B-07
SS-B-08
SS-EH-01
SS-E-01
SS-EH-02
SS-H-07
SS-E-02
SS-A1-01
SS-A1-02
SS-EH-03
SS-A1-03
SS-EH-04
SS-H-01
SS-H-02
SS-H-03
SS-H-04
SS-H-05
SS-H-06
BLDG. 8
BLDG. 10
BLDG. 1
BLDG. 5
BLDG. 9
BLDG. 4
BLDG. 6
BLDG. 7
BLDG. 12
BLDG. 2
BLDG. 3
TAUNTON (PUBLIC - STATE ROUTE 152) STREET
TURNPIKE LAKE - ALSO KNOWN AS - SHEPARD'S POND
SS-EH-01*
TCA 5U
Benzene 5U
PCE 5U
Toluene 5U
Aroclor 1254 33U
Aroclor 1260 33U
SS-EH-02*
TCA 5U
Benzene 5U
PCE 5U
Toluene 5U
Aroclor 1254 33U
Aroclor 1260 33U
SS-E-01
TCA 5U
Benzene 88
PCE 27
Toluene 5U
Xylenes 0.9J
Aroclor 1254 33U
Aroclor 1260 33U
SS-E-02
TCA 5U
Benzene 5
PCE 5U
Toluene 5U
Aroclor 1254 280
Aroclor 1260 33U
SS-A1-01
TCA 0.87U/1.0U
Benzene 0.87U/1.0U
PCE 0.87U/1.0U
Toluene 1.3U/1.5U
Aroclor 1248 37.9U/39.2U
Aroclor 1254 37.9U/39.2U
Aroclor 1260 37.9U/39.2U
SS-A1-02
TCA 0.84U
Benzene 0.84U
PCE 0.84U
Toluene 1.2U
Aroclor 1248 59.4
Aroclor 1254 47.6
Aroclor 1260 40.6U
SS-EH-03*
TCA 5U/6J
Benzene 20J/74J
PCE 8J/18J
Toluene 5U/6J
Aroclor 1254 47
Aroclor 1260 130
SS-A1-03
TCA 2.2J
Benzene 0.99U
PCE 0.99U
Toluene 1.5U
Aroclor 1248 38.3U
Aroclor 1254 38.3U
Aroclor 1260 38.3U
SS-EH-04
TCA 5U
Benzene 26
PCE 8J
Toluene 5U
Aroclor 1254 33U
Aroclor 1260 33U
SS-H-01
TCA 5U/5U
Benzene 5U/5U
PCE 5U/5U
Toluene
Aroclor 1254 33U/33U
Aroclor 1260 33U/33U
SS-H-02
TCA 5U
Benzene 6
PCE 5U
Toluene 5U
Aroclor 1254 72
Aroclor 1260 33U
SS-H-03
TCA 5U
Benzene 20
PCE 7J
Toluene 5U
Aroclor 1254 100
Aroclor 1260 41
SS-H-04
TCA 5U
Benzene 20
PCE 10J
Toluene 5U
Aroclor 1254 800
Aroclor 1260 33U
SS-H-05
TCA 5U
Benzene 5U
PCE 5U
Toluene 5U
Aroclor 1254 33U
Aroclor 1260 33U
SS-H-06
TCA 5U
Benzene 8
PCE 50J
Toluene 5U
Aroclor 1254 33U
Aroclor 1260 33U
EXPLANATION
Phase II Background Surface Surface Soil Location
Phase II Surface Soil Location– Ecological Risk Analysis
Phase II Surface Soil Location– Ecological and Human Health Risk Analysis
Phase II Surface Soil Location– Human Health Risk Analysis
Supplemental RFI Field Investigation
Dirt Road
Stream
Property Boundary
Building Demolished in 1996 and 1997.
Note: (1) All analytical Results reported in µg/kg.
(2) "U" qualifier indicates not detected above detection limit XX.
(3) "J" qualifier indicates estimated value.
(4) "XX/XX" indicates primary and duplicate or laboratory reanalysis sample results.
(5) Phase II samples collected in April 1997; Supplemental RFI Samples collected in Oct–Nov 2005.
*NOTE: 2–butanone, acetone, and p–isopropyl toluene also detected in this sample.
N
0 120 240
SCALE IN FEET
ENVIRON
Surface Soil VOC and PCB Analytical Results
Revised Draft RFI Report
BASF Corporation
Plainville, Massachusetts
DATE: 12/18/2006
CONTRACT NUMBER: 25–12243E
FIGURE 9.1.3
DRAFTER: WJN
APPROVED:
REVISED: MN



SB-24	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
8	1.2	7.7	NA	112	9.0J	NA	12.9J	50.1J
8D	1.4	12.2	NA	76.8	16.7J	NA	5.9J	45.4J

SB-54	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
0	0.46U	5.5	NA	9.7	4.3	7.5	2.9	18
3	0.41U	7.4	NA	8.5	3.7	10	1.1	20
7.5	2.8	4.8	NA	53J	5.6	9J	4.2J	54
7.5(D)	2.9	4.8	NA	100J	6.1	20J	10J	55

SB-18	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
2	0.42U	6.4J	1.2U	5.3	3.8	NA	0.42U	24.2
2D	0.43U	7.6J	0.54U	7.6	5.1	NA	1.0	25.4
5	0.42U	11.0J	1.3 U	12.9	4.8	NA	0.83	29.1

SB-53	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
0	1200	110	NA	290	38	18	110	440
4	15	14	NA	8	4.4	4.4	6.2	20
8	9	14	NA	12	4.4	5.4	4.3	32

SB-17	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
2	10.5	13.4	NA	24.6	11.8J	NA	9.8J	40.3J
5	2.3	7.6	NA	9.2	5.5J	NA	3.5J	31.7J
7	14.5	11.3	NA	49.6	5.6J	NA	1.7J	51.8J

SB-50	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
1	2.1	7.7	NA	10	14	5.2	3.4	65
7	0.41U	6.4	NA	6.8	4	5	0.41U	19
9	5	6.8	NA	30	3.2	5.6	1.3	26

SB-51	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
1	2.4	3.9	NA	6.9	3.5	4.5	1.6	21
5	0.62	6.1	NA	6.4	4.3	4.4	1.6	15
9	0.41U	8.4	NA	16	5.1	11	4.5J	18
9(D)	0.42	8.7	NA	14	4.9	9.3	2.9J	19

SB-25	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
6	0.44U	12.3	1.3U	49.2	5.4J	NA	8.3J	35.4J

SB-15	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
2	2.8	5.9J	NA	9.5	4.3	NA	0.61	29.4
5	5.0	12.2J	NA	31.8	5.4	NA	1.2	26.4

SB-52	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
1	3	7.7	NA	10	8.7	5.4	4.8	23
7	13	9.2	NA	120	18	5.9	62	51
9	4.6	12	NA	50	4.6	27	11	36

SB-16	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
2	56.5	46.8	1.6 U	238	17.7J	NA	33.5J	67.6J
5	66.3	56.8	1.2 U	464	62.1J	NA	19.7J	228J

EXPLANATION

- SB-45 — Soil Boring – Phase I, 1995
- SB-RD33 — Soil Boring for Radionuclide Investigation – Phase I, 1995
- SB-36CR — Soil Boring – Phase II, 1997
- SB-50 — Soil Boring – Supplemental Field Investigation 2005
- Current Building
- 6 — Approximate Locations of Area of Concern (AOC)
- A-12 — Approximate Location of Sub-AOC
- Building Demolished in 1996 and 1997.

NOTE: Laboratory sample location IDs for soil borings SB-50 thru SB-54 are as follows:

SB-50	AOCA1	SB1
SB-51	AOCA1	SB2
SB-52	AOCA1	SB3
SB-53	SB-4	
SB-54	SB-3	

*NA= Not Analyzed

Soil Boring ID

SB-17	Cd	Cr	Cr6+	Cu	Pb	Ni	Ag	Zn
2	10.5	13.4	NA	24.6	11.8J	NA	9.8J	40.3J
5	2.3	7.6	NA	9.2	5.5J	NA	3.5J	31.7J
7	14.5	11.3	NA	49.6	5.6J	NA	1.7J	51.8J

Depth (ft)

"U" qualifier indicates not detected.
"J" qualifier indicates estimated value.
Cd–Cadmium
Cd–Chromium
Cu–Copper
Pb–Lead
Ni–Nickel
Ag–Silver
Zn–Zinc

N

0 120 240

SCALE IN FEET

ENVIRON

RFI Soil Boring Locations-
AOCs A-1, A-12 and 5
BASF Corporation
Plainville, Massachusetts

DATE:	CONTRACT NUMBER:		FIGURE
12/20/2006	25-12243E		9.1.4
DRAFTER: RS	APPROVED:	REVISED: MN	

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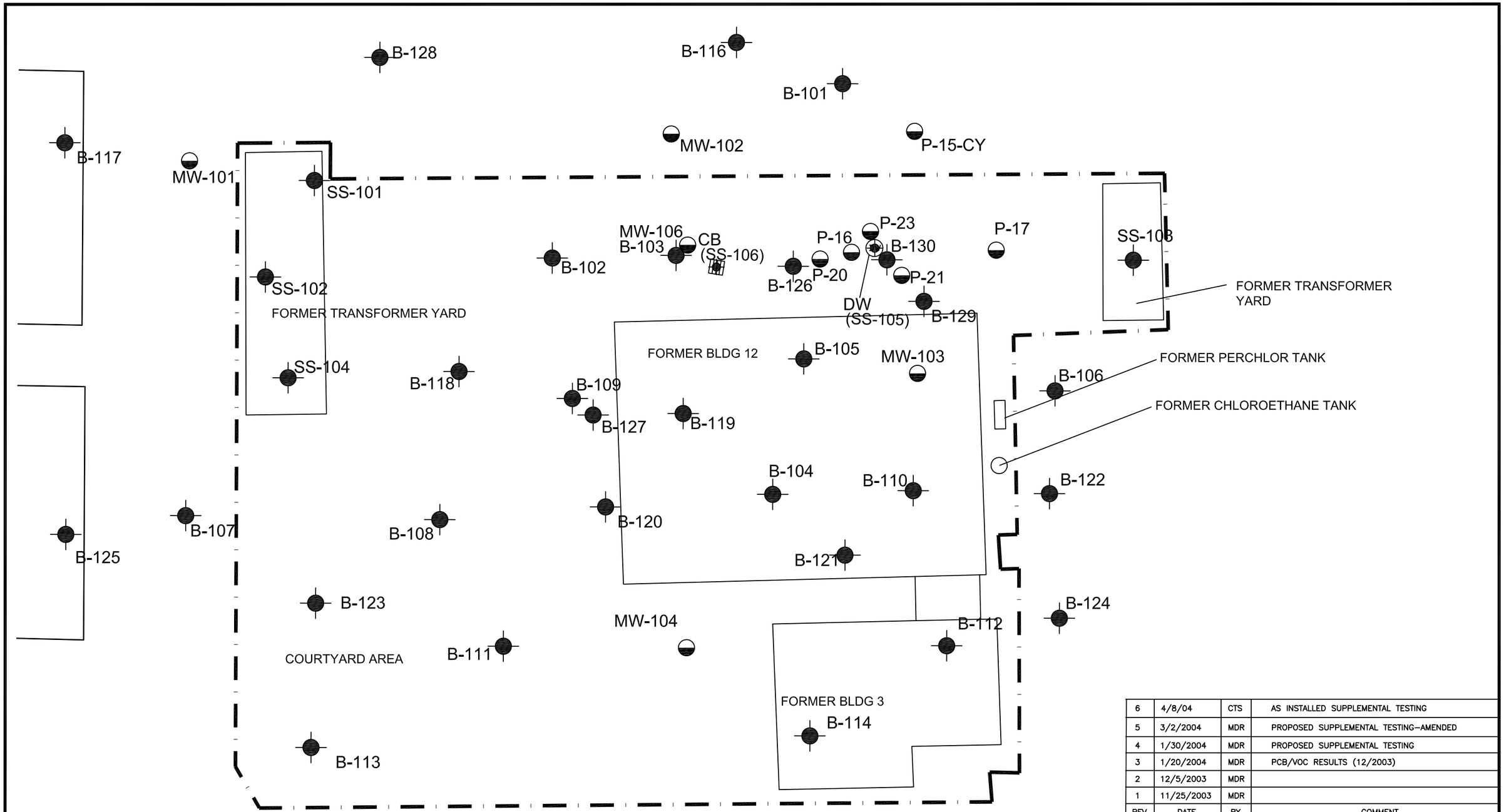


REV.	DATE	BY	COMMENT
6	4/8/04	CTS	AS INSTALLED SUPPLEMENTAL TESTING
5	3/2/2004	MDR	PROPOSED SUPPLEMENTAL TESTING–AMENDED
4	1/30/2004	MDR	PROPOSED SUPPLEMENTAL TESTING
3	1/20/2004	MDR	PCB/VOC RESULTS (12/2003)
2	12/5/2003	MDR	
1	11/25/2003	MDR	

LEGEND:

- OVERBURDEN MONITORING WELL/ PIEZOMETER
- SOIL BORINGS, DECEMBER 2003/MARCH 2004
- SB-23 SOIL BORING, PHASE I, 1995
- DW: DRY WELL
- CB: CATCH BASIN

0 25' 50'

SCALE IN FEET

GRID LAYOUT/SPACING IS 10m X 10m

FIGURE 9.1.5
SOIL BORING LOCATION MAP
AOC 7/Courtyard Area

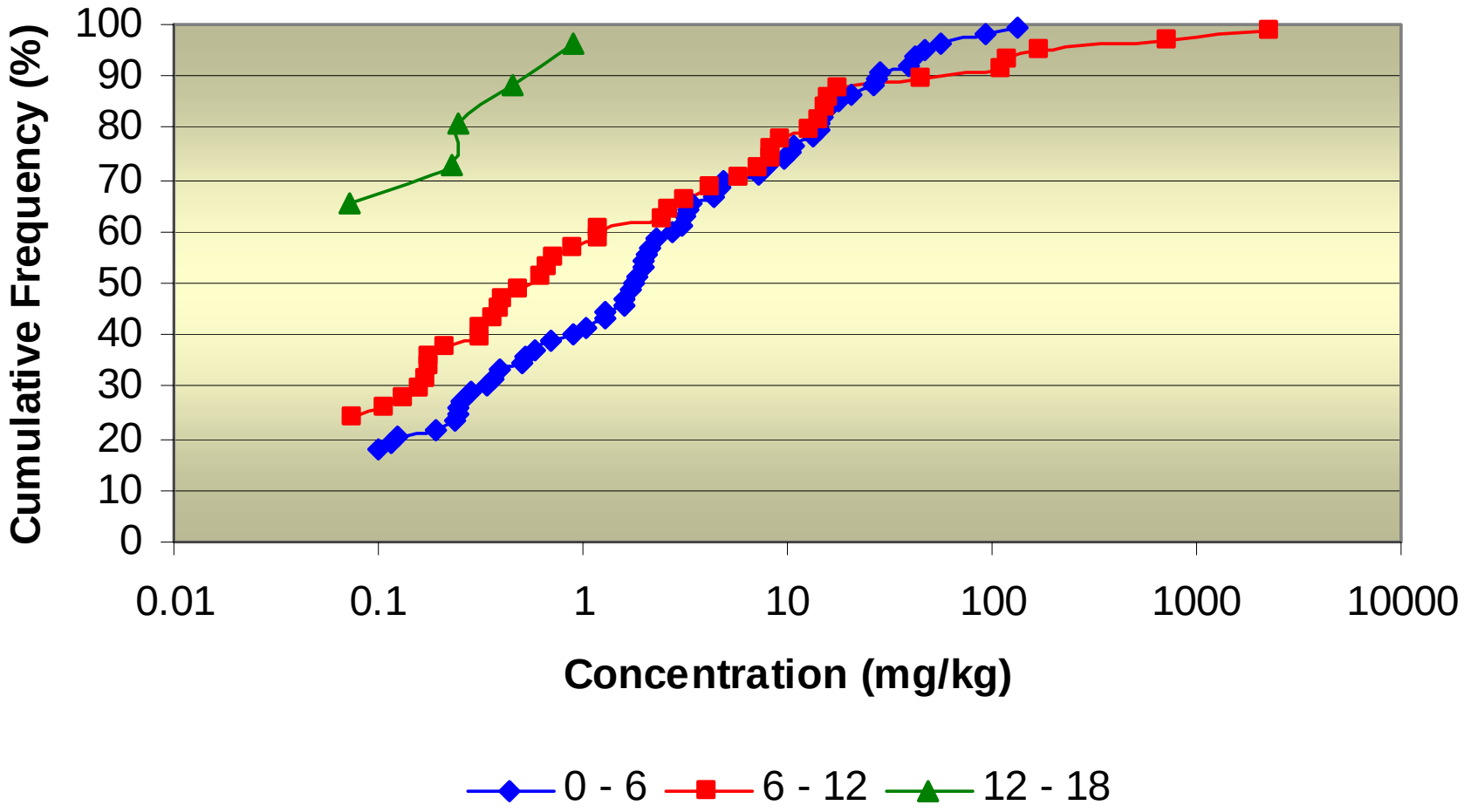
BASF Corporation

PLAINVILLE, MASSACHUSETTS

Project No. 25-12243E Date: January 10, 2007 Revised By: MN

Source of Original Drawing: Supplemental Design Investigation Courtyard Area (AOC-7), ECS, 2004

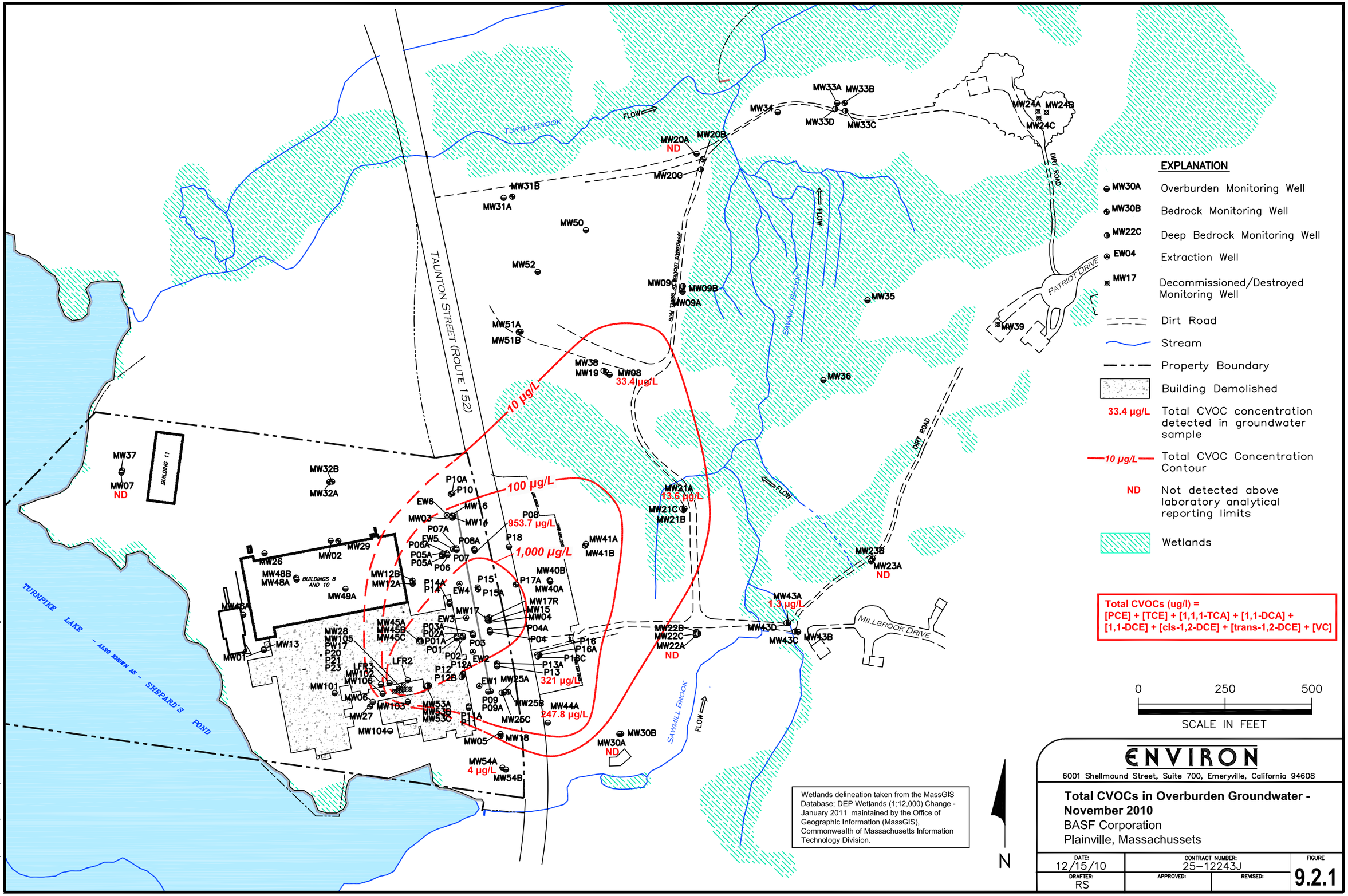
Z:\BASF\AutoCAD Figures\Figure 9.1.5

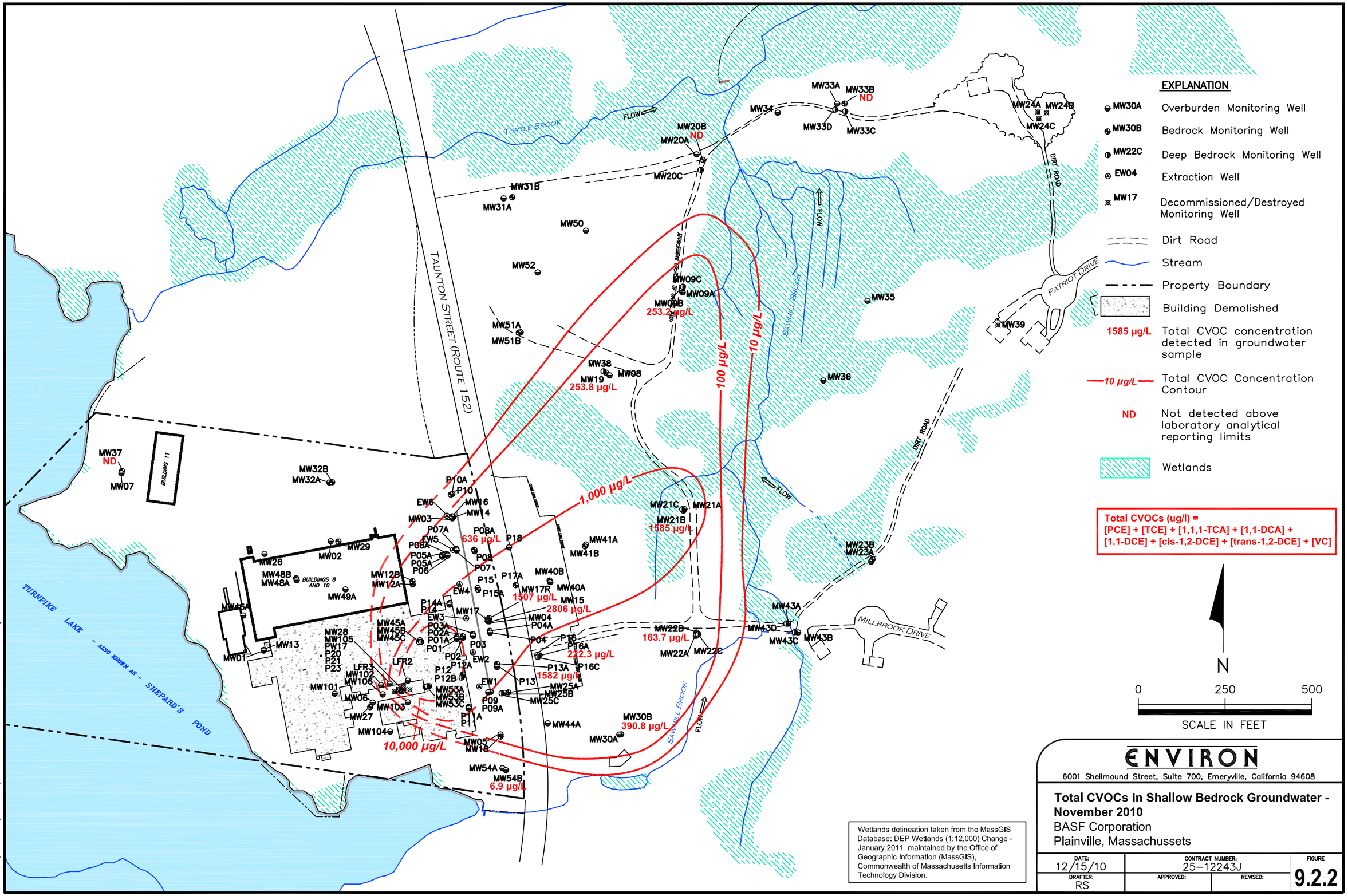


ENVIRON

Distribution of PCB Concentrations Detected in Courtyard Area Soils as a Function of Depth (feet).

Figure 9.1.6


EXPLANATION
MW30A Overburden Monitoring Well
MW30B Bedrock Monitoring Well
MW22C Deep Bedrock Monitoring Well
EW04 Extraction Well
MW17 Decommissioned/Destroyed Monitoring Well
Dirt Road
Stream
Property Boundary
Building Demolished
33.4 µg/L Total CVOC concentration detected in groundwater sample
10 µg/L Total CVOC Concentration Contour
ND Not detected above laboratory analytical reporting limits
Wetlands
Total CVOCs (ug/l) =
[PCE] + [TCE] + [1,1,1-TCA] + [1,1-DCA] + [1,1-DCE] + [cis-1,2-DCE] + [trans-1,2-DCE] + [VC]
0 250 500
SCALE IN FEET
N
TAUNTON STREET (ROUTE 152)
TURTLE BROOK
FLOW
SAWMILL BROOK
PATRIOT DRIVE
DIRT ROAD
MILLBROOK DRIVE
TURNPIKE LAKE - ALSO KNOWN AS - SHEPARD'S POND
BUILDING 11
BUILDINGS 8 AND 10
10 µg/L
100 µg/L
1,000 µg/L
953.7 µg/L
321 µg/L
247.8 µg/L
33.4 µg/L
13.6 µg/L
1.3 µg/L
4 µg/L
ND
Wetlands delineation taken from the MassGIS Database: DEP Wetlands (1:12,000) Change - January 2011 maintained by the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division.
ENVIRON
6001 Shellmound Street, Suite 700, Emeryville, California 94608
Total CVOCs in Overburden Groundwater - November 2010
BASF Corporation
Plainville, Massachussets
DATE: 12/15/10
CONTRACT NUMBER: 25-12243J
FIGURE 9.2.1
DRAFTER: RS
APPROVED:
REVISED:
Q:\DRAWINGS\2512243J\2512243J-BASF Sitewide OB TCVOCs 11-10.dwg - Thu, 10 Mar 2011 - 10:54am



Wetlands delineation taken from the MassGIS Database: DEP Wetlands (1:12,000) Change - January 2011 maintained by the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division.

ENVIRON

6001 Shellmound Street, Suite 700, Emeryville, California 94608

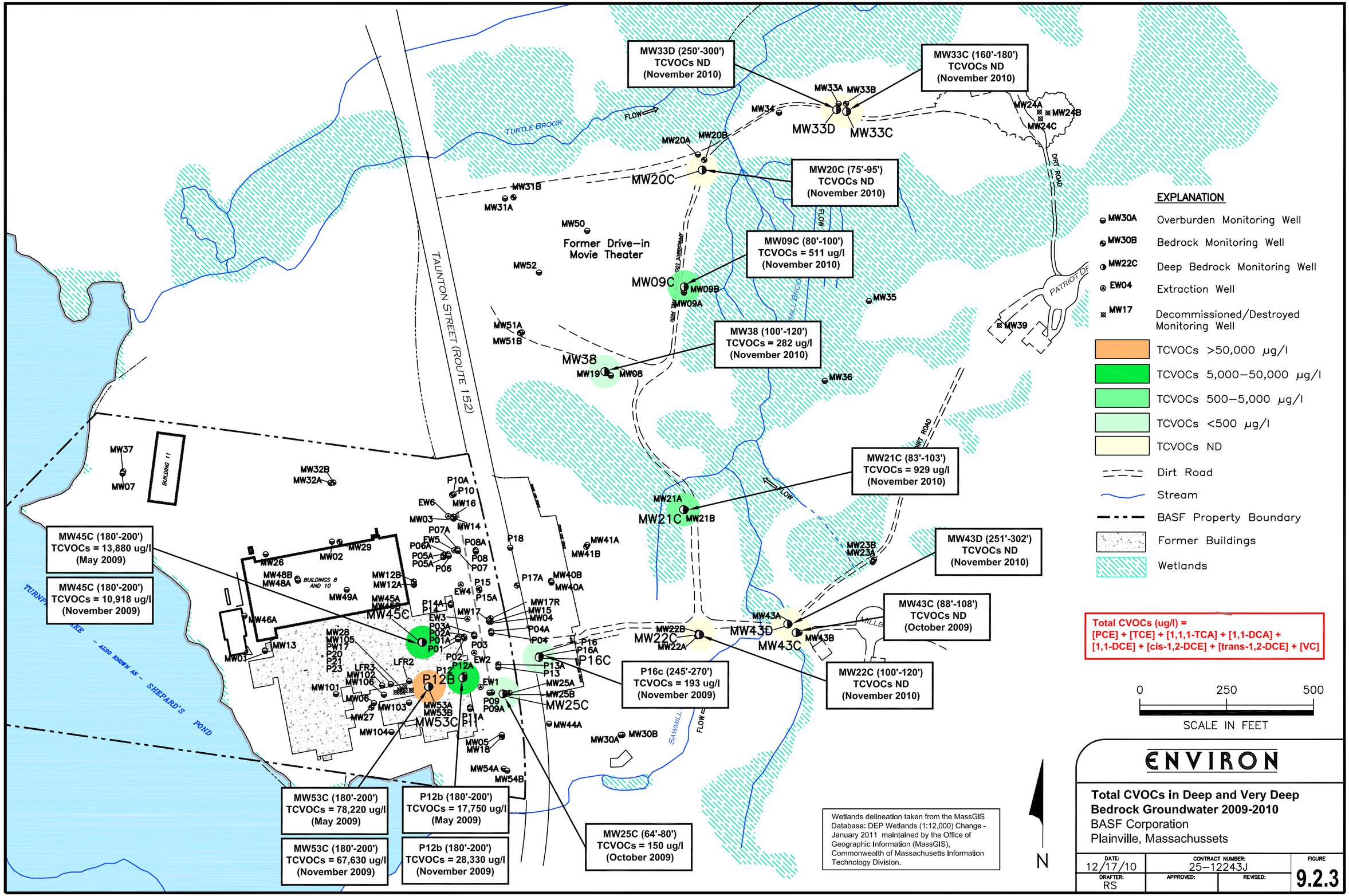
Total CVOCs in Shallow Bedrock Groundwater - November 2010

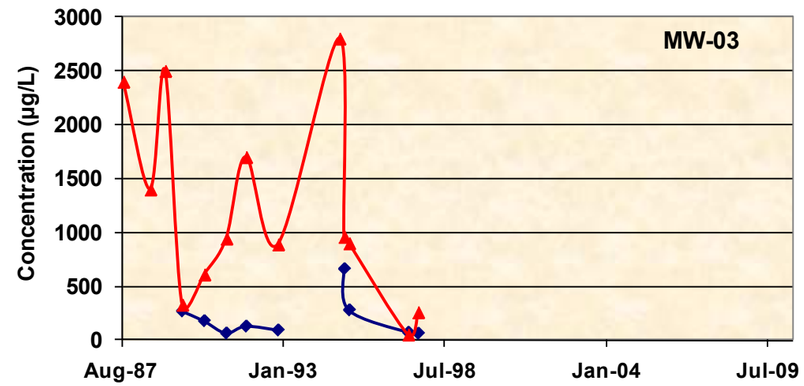
BASF Corporation

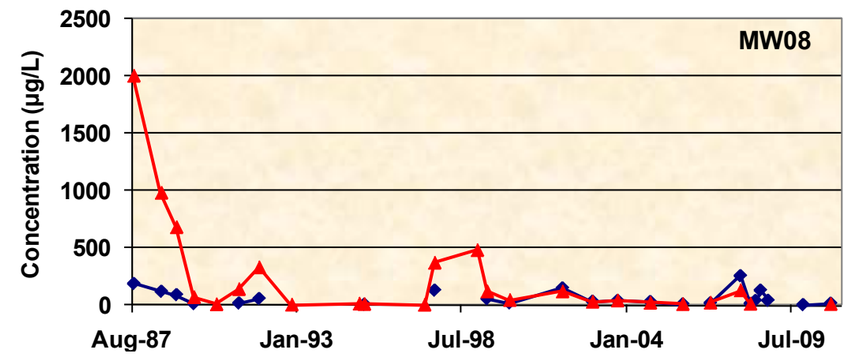
Plainville, Massachussets

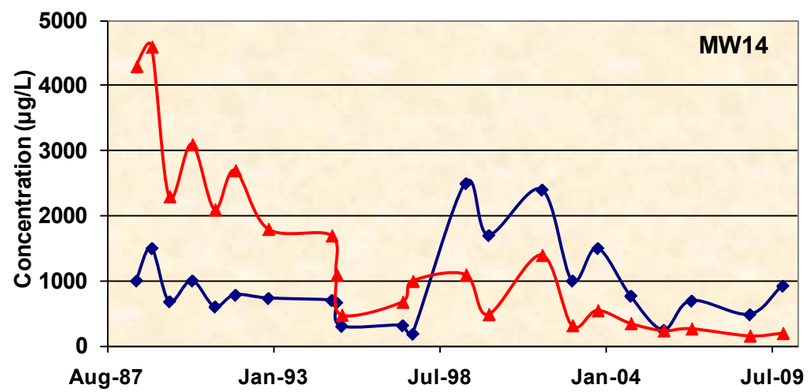
DATE:	CONTRACT NUMBER:		FIGURE
12/15/10	25-12243J		9.2.2
DRAFTER: RS	APPROVED:	REVISED:	

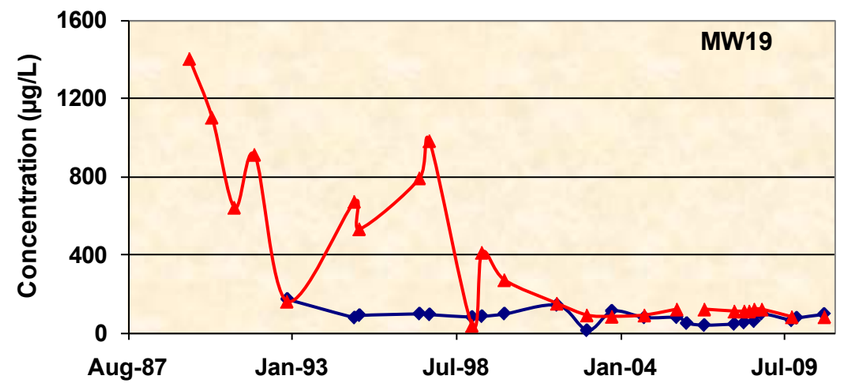
Q:\DRAWINGS\2512243J\2512243J-BASF Sitewide BR TCVOCs 11-10.dwg - Thu, 10 Mar 2011 - 10:56am

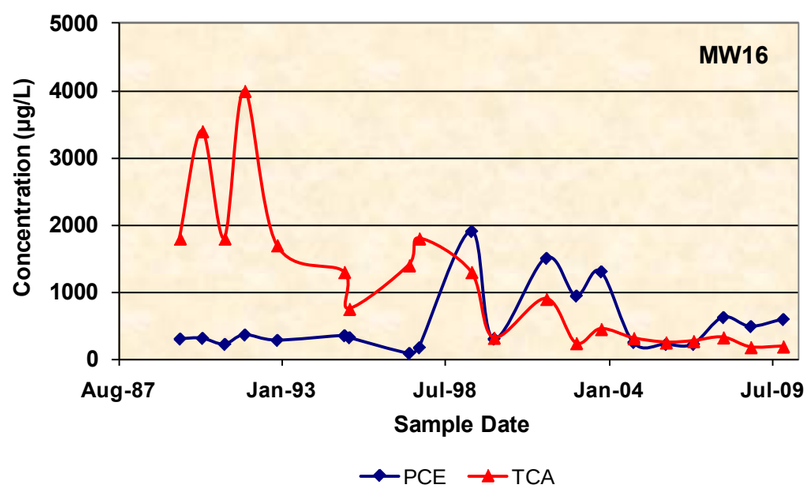

MW33D (250'-300')
TCVOCs ND
(November 2010)
MW33C (160'-180')
TCVOCs ND
(November 2010)
MW20C (75'-95')
TCVOCs ND
(November 2010)
MW09C (80'-100')
TCVOCs = 511 ug/l
(November 2010)
MW38 (100'-120')
TCVOCs = 282 ug/l
(November 2010)
MW21C (83'-103')
TCVOCs = 929 ug/l
(November 2010)
MW43D (251'-302')
TCVOCs ND
(November 2010)
MW43C (88'-108')
TCVOCs ND
(October 2009)
MW22C (100'-120')
TCVOCs ND
(November 2010)
P16c (245'-270')
TCVOCs = 193 ug/l
(November 2009)
MW25C (64'-80')
TCVOCs = 150 ug/l
(October 2009)
MW45C (180'-200')
TCVOCs = 13,880 ug/l
(May 2009)
MW45C (180'-200')
TCVOCs = 10,918 ug/l
(November 2009)
MW53C (180'-200')
TCVOCs = 78,220 ug/l
(May 2009)
MW53C (180'-200')
TCVOCs = 67,630 ug/l
(November 2009)
P12b (180'-200')
TCVOCs = 17,750 ug/l
(May 2009)
P12b (180'-200')
TCVOCs = 28,330 ug/l
(November 2009)
Former Drive-in
Movie Theater
TAUNTON STREET (ROUTE 152)
TURTLE BROOK
SAWMILL BROOK
PATRIOT DRIVE
DIRT ROAD
BUILDING 11
BUILDINGS 8 AND 10
TURNPIKE - ALSO KNOWN AS - SHEPARD'S POND
FLOW
MW33A
MW33B
MW33D
MW33C
MW34
MW24A
MW24B
MW24C
MW20A
MW20B
MW20C
MW31B
MW31A
MW50
MW52
MW09C
MW09B
MW09A
MW51A
MW51B
MW38
MW19
MW08
MW35
MW36
MW39
MW37
MW07
MW32B
MW32A
MW21A
MW21B
MW21C
MW23B
MW23A
MW43A
MW43B
MW43C
MW22B
MW22A
MW22C
MW45C
MW53C
P12B
P12A
P16C
MW25C
MW30A
MW30B
MW54A
MW54B
EXPLANATION
MW30A Overburden Monitoring Well
MW30B Bedrock Monitoring Well
MW22C Deep Bedrock Monitoring Well
EW04 Extraction Well
MW17 Decommissioned/Destroyed Monitoring Well
TCVOCs >50,000 µg/l
TCVOCs 5,000–50,000 µg/l
TCVOCs 500–5,000 µg/l
TCVOCs <500 µg/l
TCVOCs ND
Dirt Road
Stream
BASF Property Boundary
Former Buildings
Wetlands
Total CVOCs (ug/l) =
[PCE] + [TCE] + [1,1,1-TCA] + [1,1-DCA] +
[1,1-DCE] + [cis-1,2-DCE] + [trans-1,2-DCE] + [VC]
0 250 500
SCALE IN FEET
N
Wetlands delineation taken from the MassGIS Database: DEP Wetlands (1:12,000) Change - January 2011 maintained by the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division.
ENVIRON
Total CVOCs in Deep and Very Deep Bedrock Groundwater 2009-2010
BASF Corporation
Plainville, Massachussets
DATE: 12/17/10
CONTRACT NUMBER: 25-12243J
FIGURE 9.2.3
DRAFTER: RS
APPROVED:
REVISED:
Q:\DRAWINGS\2512243J\2512243J-BASF Sitewide DBZ TCVOCs 11-10.dwg - Fri, 18 Mar 2011 - 11:33am

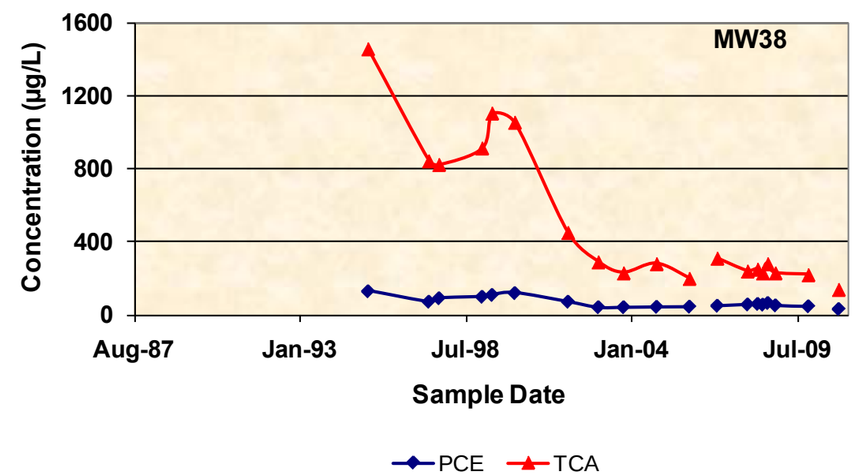








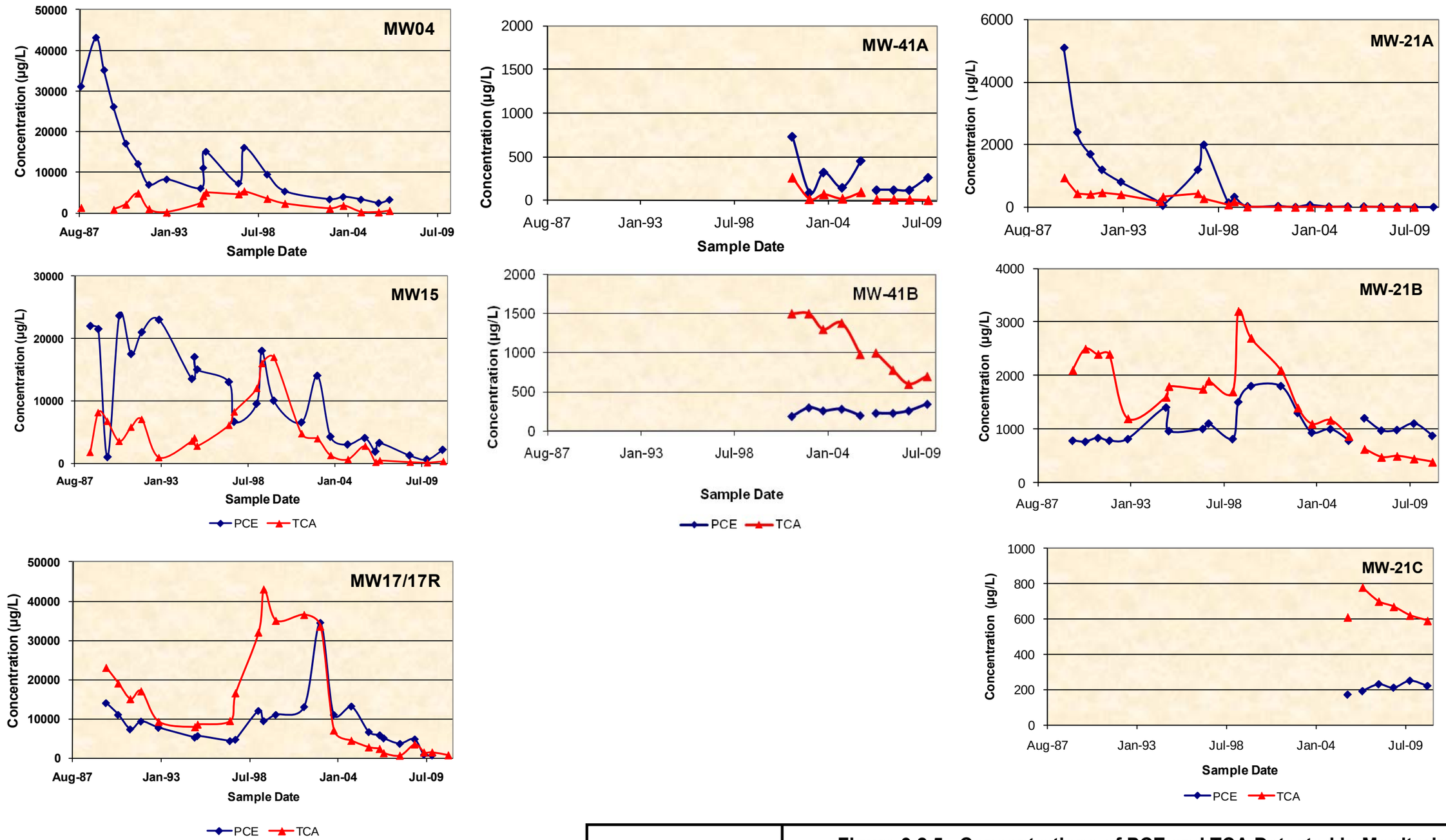




ENVIRON

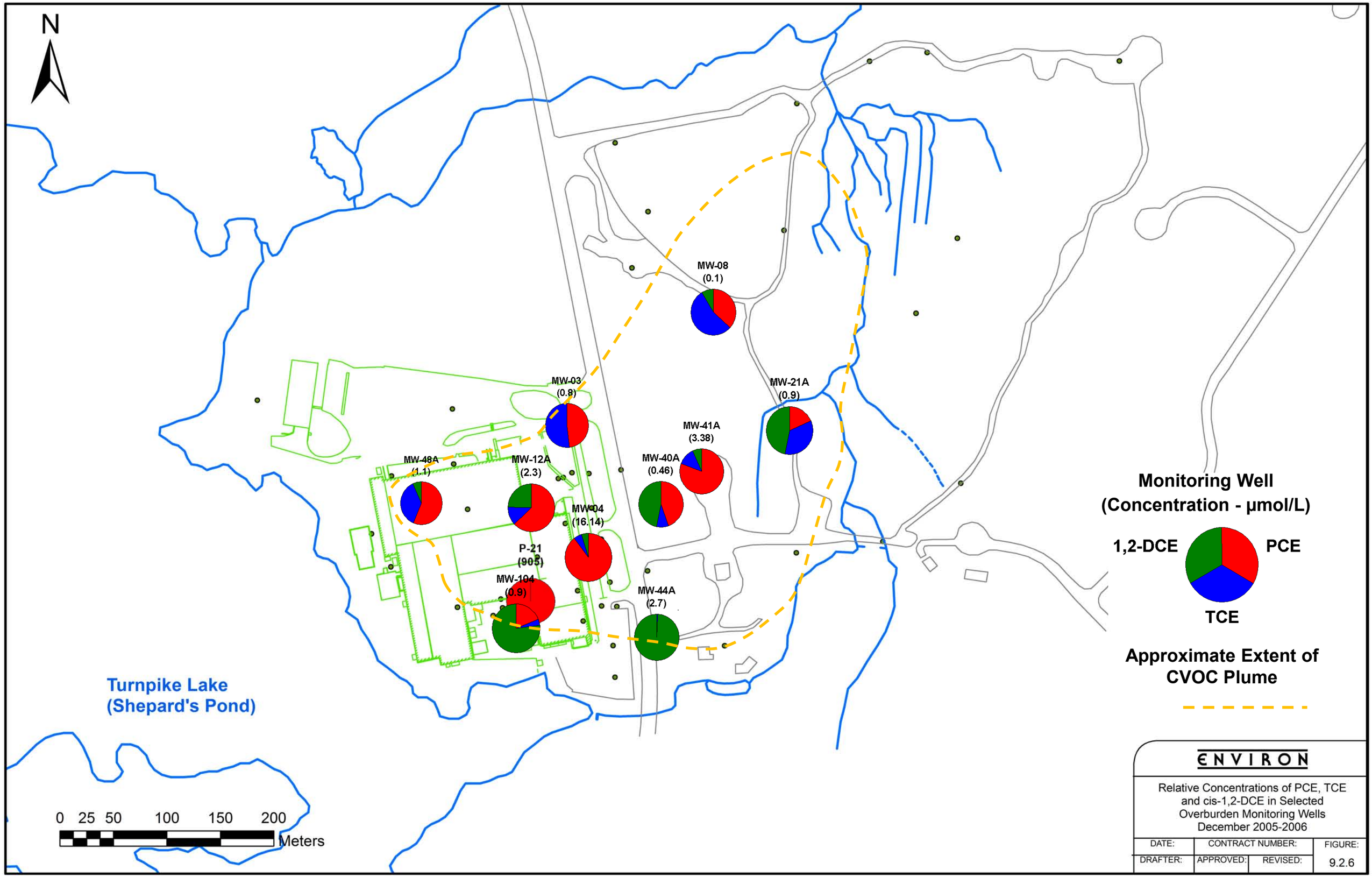
Figure 9.2.4

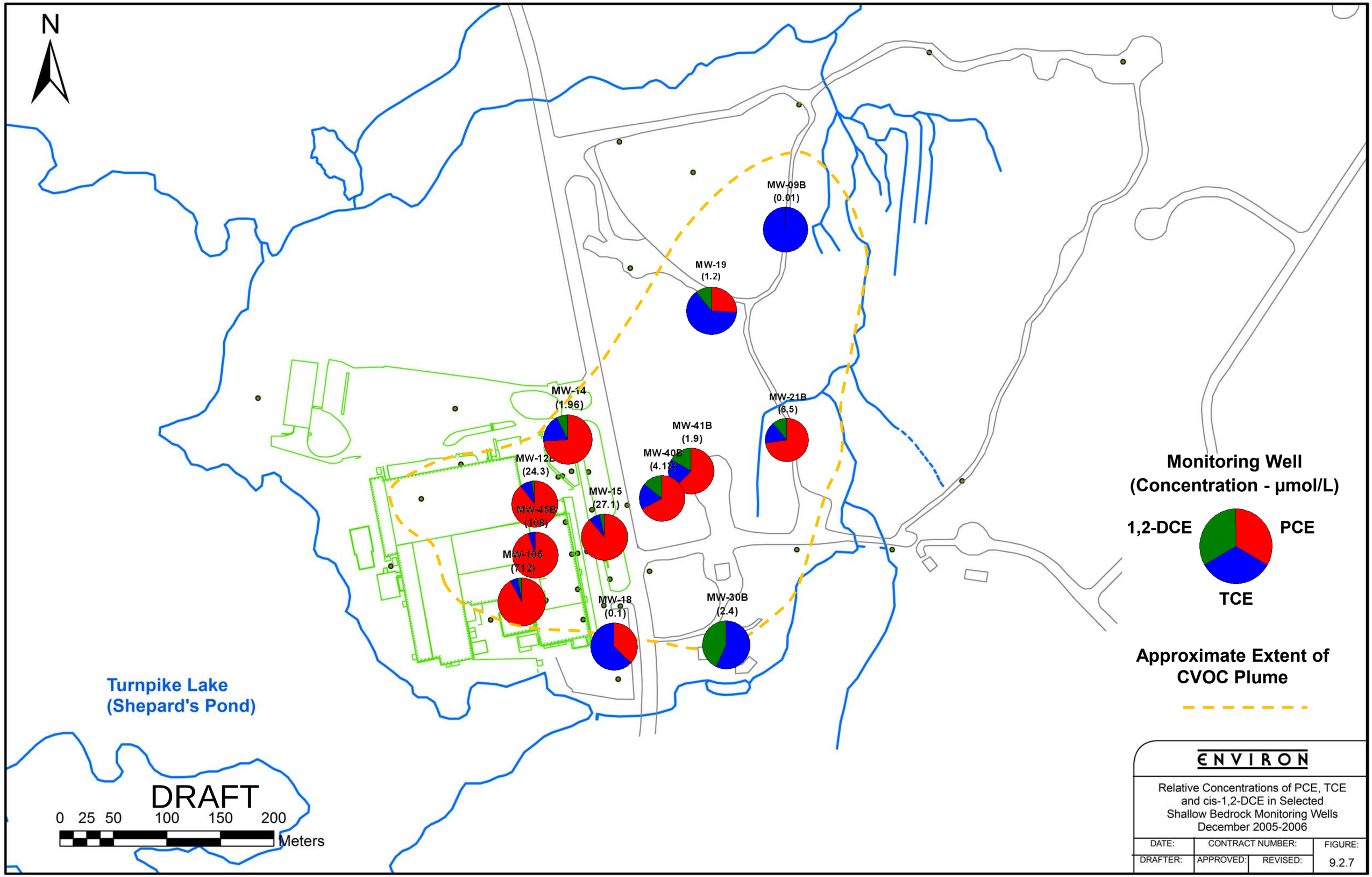
Concentrations of PCE and TCA Detected in Monitoring Wells Located Northeast of the Facility

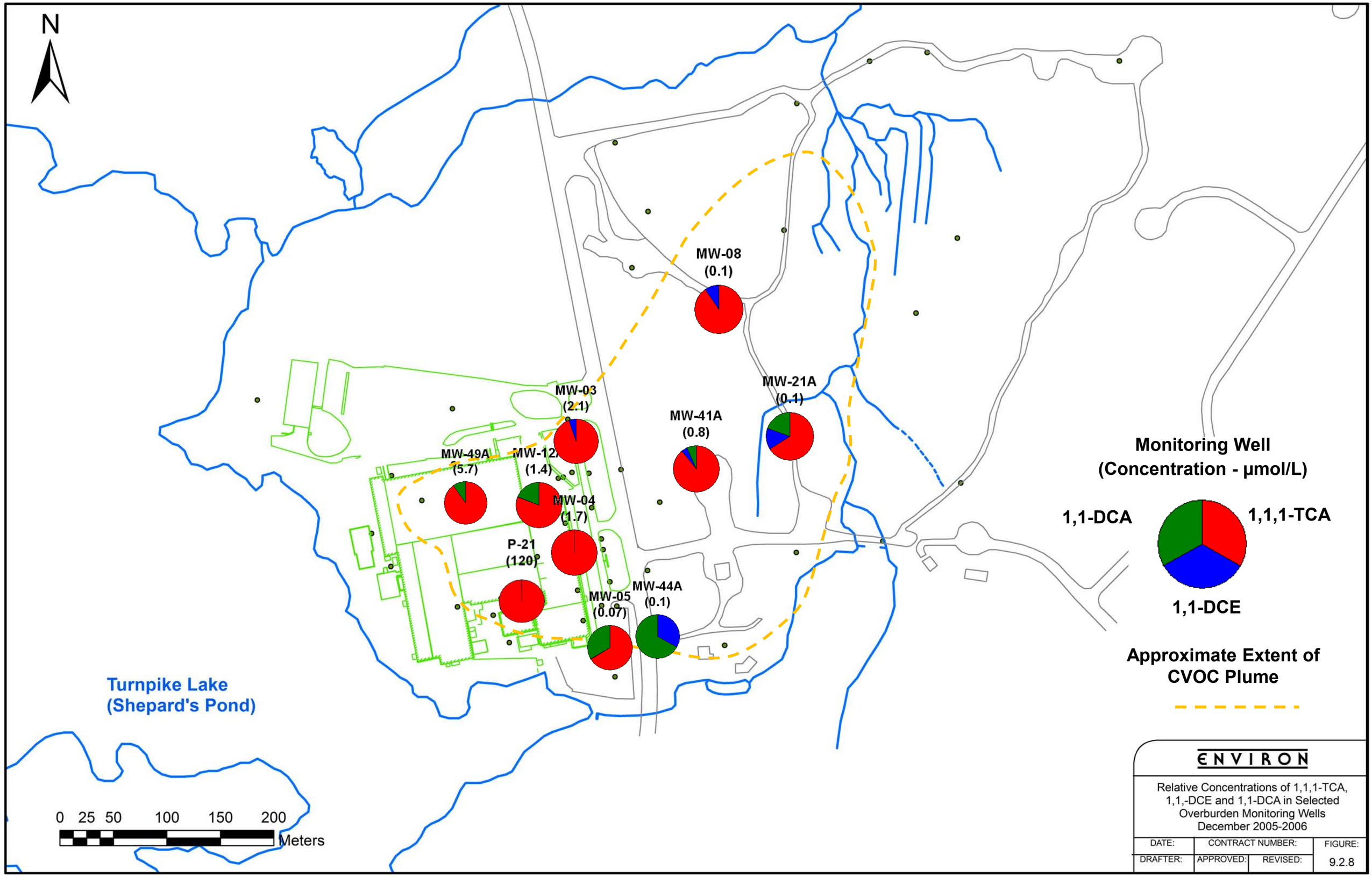


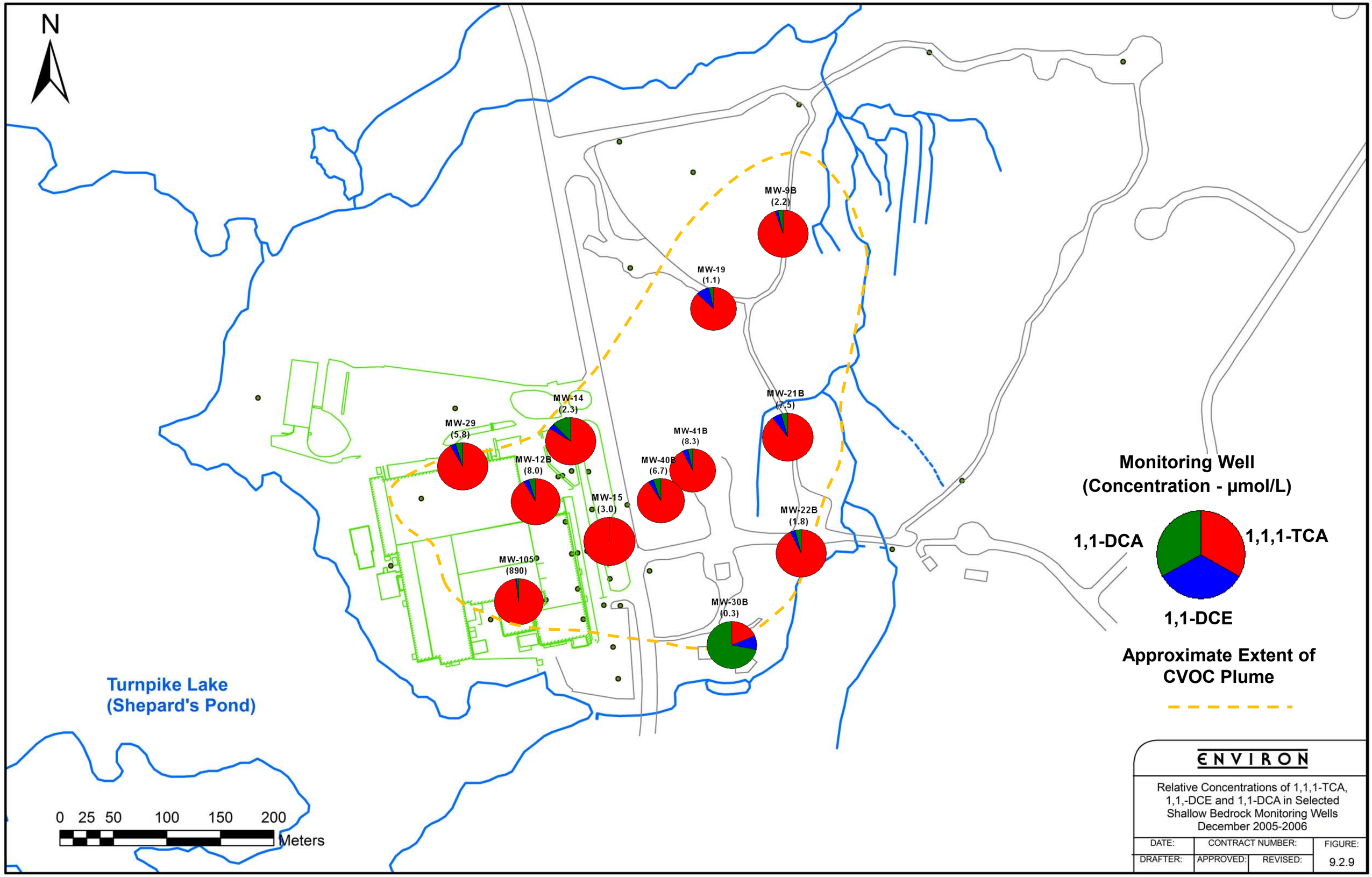
ENVIRON

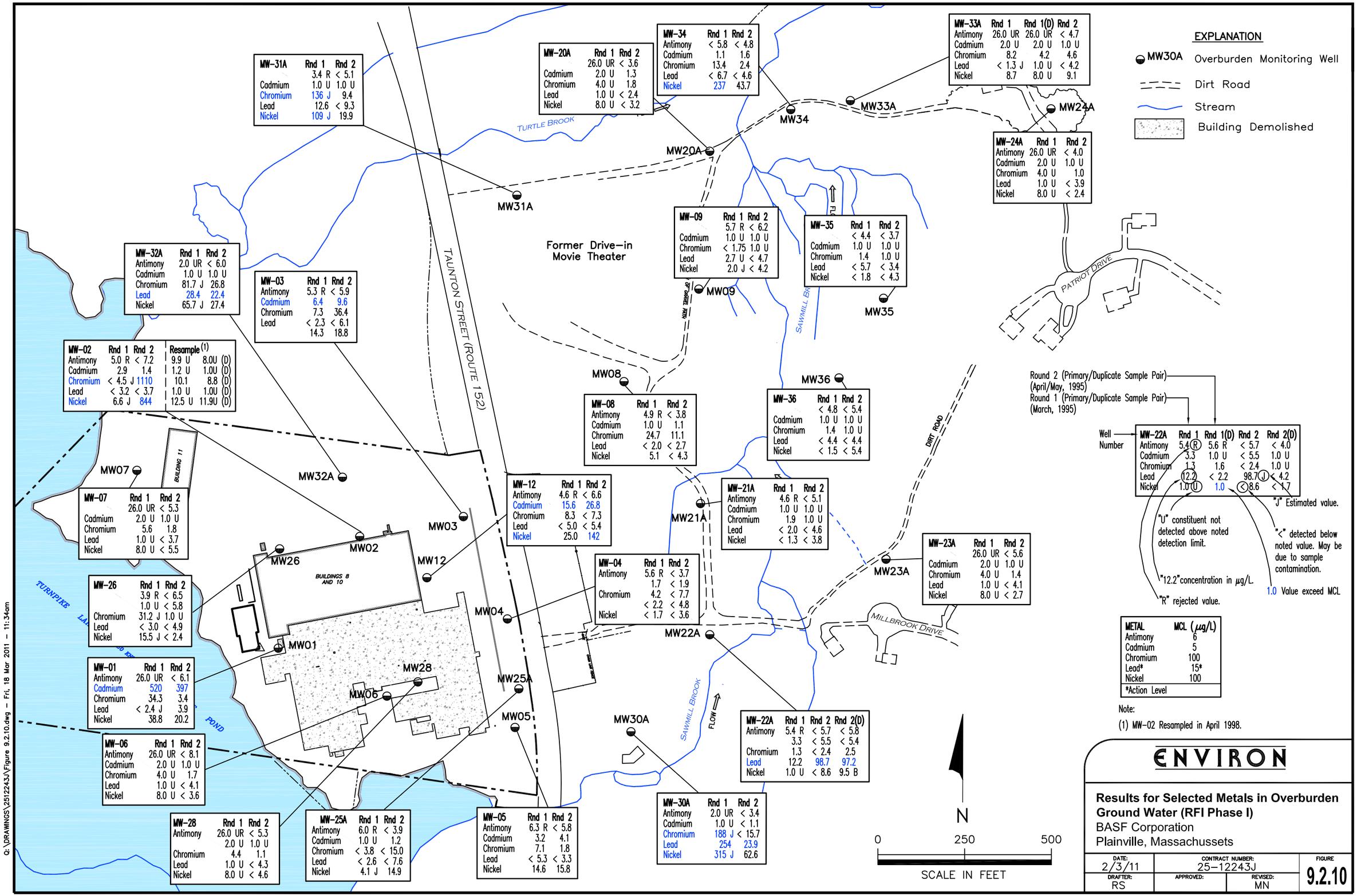
Figure 9.2.5. Concentrations of PCE and TCA Detected in Monitoring Wells Located along the Plume Centerline


N
MW-08
(0.1)
MW-03
(0.8)
MW-21A
(0.9)
MW-41A
(3.38)
MW-40A
(0.46)
MW-48A
(1.1)
MW-12A
(2.3)
MW-04
(16.14)
P-21
(905)
MW-104
(0.9)
MW-44A
(2.7)
Turnpike Lake
(Shepard's Pond)
0 25 50 100 150 200
Meters
Monitoring Well
(Concentration - µmol/L)
1,2-DCE
PCE
TCE
Approximate Extent of
CVOC Plume
ENVIRON
Relative Concentrations of PCE, TCE
and cis-1,2-DCE in Selected
Overburden Monitoring Wells
December 2005-2006
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
9.2.6


N
MW-09B
(0.01)
MW-19
(1.2)
MW-14
(1.96)
MW-21B
(6.5)
MW-41B
(1.9)
MW-40B
(4.13)
MW-12B
(24.3)
MW-15
(27.1)
MW-45B
(108)
MW-105
(712)
MW-18
(0.1)
MW-30B
(2.4)
Monitoring Well
(Concentration - µmol/L)
1,2-DCE
PCE
TCE
Approximate Extent of
CVOC Plume
Turnpike Lake
(Shepard's Pond)
DRAFT
0 25 50 100 150 200
Meters
ENVIRON
Relative Concentrations of PCE, TCE
and cis-1,2-DCE in Selected
Shallow Bedrock Monitoring Wells
December 2005-2006
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
9.2.7


N
MW-08
(0.1)
MW-03
(2.1)
MW-21A
(0.1)
MW-41A
(0.8)
MW-49A
(5.7)
MW-12
(1.4)
MW-04
(1.7)
P-21
(120)
MW-05
(0.07)
MW-44A
(0.1)
Monitoring Well
(Concentration - µmol/L)
1,1-DCA
1,1,1-TCA
1,1-DCE
Approximate Extent of
CVOC Plume
Turnpike Lake
(Shepard's Pond)
0 25 50 100 150 200
Meters
ENVIRON
Relative Concentrations of 1,1,1-TCA,
1,1,-DCE and 1,1-DCA in Selected
Overburden Monitoring Wells
December 2005-2006
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
9.2.8


N
MW-9B
(2.2)
MW-19
(1.1)
MW-21B
(7.5)
MW-14
(2.3)
MW-29
(5.8)
MW-41B
(8.3)
MW-12B
(8.0)
MW-40B
(6.7)
MW-15
(3.0)
MW-22B
(1.8)
MW-105
(890)
MW-30B
(0.3)
Monitoring Well
(Concentration - µmol/L)
1,1-DCA
1,1,1-TCA
1,1-DCE
Approximate Extent of
CVOC Plume
Turnpike Lake
(Shepard's Pond)
0 25 50 100 150 200
Meters
ENVIRON
Relative Concentrations of 1,1,1-TCA,
1,1,-DCE and 1,1-DCA in Selected
Shallow Bedrock Monitoring Wells
December 2005-2006
DATE:
CONTRACT NUMBER:
FIGURE:
DRAFTER:
APPROVED:
REVISED:
9.2.9



MW-31A	Rnd 1	Rnd 2
	3.4 R	< 5.1
Cadmium	1.0 U	1.0 U
Chromium	136 J	9.4
Lead	12.6	< 9.3
Nickel	109 J	19.9

MW-20A	Rnd 1	Rnd 2
	26.0 UR	< 3.6
Cadmium	2.0 U	1.3
Chromium	4.0 U	1.8
Lead	1.0 U	< 2.4
Nickel	8.0 U	< 3.2

MW-34	Rnd 1	Rnd 2
Antimony	< 5.8	< 4.8
Cadmium	1.1	1.6
Chromium	13.4	2.4
Lead	< 6.7	< 4.6
Nickel	237	43.7

MW-33A	Rnd 1	Rnd 1(D)	Rnd 2
Antimony	26.0 UR	26.0 UR	< 4.7
Cadmium	2.0 U	2.0 U	1.0 U
Chromium	8.2	4.2	4.6
Lead	< 1.3 J	1.0 U	< 4.2
Nickel	8.7	8.0 U	9.1

MW-24A	Rnd 1	Rnd 2
Antimony	26.0 UR	< 4.0
Cadmium	2.0 U	1.0 U
Chromium	4.0 U	1.0
Lead	1.0 U	< 3.9
Nickel	8.0 U	< 2.4

MW-32A	Rnd 1	Rnd 2
Antimony	2.0 UR	< 6.0
Cadmium	1.0 U	1.0 U
Chromium	81.7 J	26.8
Lead	28.4	22.4
Nickel	65.7 J	27.4

MW-03	Rnd 1	Rnd 2
Antimony	5.3 R	< 5.9
Cadmium	6.4	9.6
Chromium	7.3	36.4
Lead	< 2.3	< 6.1
	14.3	18.8

MW-09	Rnd 1	Rnd 2
	5.7 R	< 6.2
Cadmium	1.0 U	1.0 U
Chromium	< 1.75	1.0 U
Lead	2.7 U	< 4.7
Nickel	2.0 J	< 4.2

MW-35	Rnd 1	Rnd 2
	< 4.4	< 3.7
Cadmium	1.0 U	1.0 U
Chromium	1.4	1.0 U
Lead	< 5.7	< 3.4
Nickel	< 1.8	< 4.3

MW-02	Rnd 1	Rnd 2	Resample (1)	
Antimony	5.0 R	< 7.2	9.9 U	8.0U (D)
Cadmium	2.9	1.4	1.2 U	1.0U (D)
Chromium	< 4.5 J	1110	10.1	8.8 (D)
Lead	< 3.2	< 3.7	1.0 U	1.0U (D)
Nickel	6.6 J	844	12.5 U	11.9U (D)

MW-08	Rnd 1	Rnd 2
Antimony	4.9 R	< 3.8
Cadmium	1.0 U	1.1
Chromium	24.7	11.1
Lead	< 2.0	< 2.7
Nickel	5.1	< 4.3

MW-36	Rnd 1	Rnd 2
	< 4.8	< 5.4
Cadmium	1.0 U	1.0 U
Chromium	1.4	1.0 U
Lead	< 4.4	< 4.4
Nickel	< 1.5	< 5.4

MW-07	Rnd 1	Rnd 2
	26.0 UR	< 5.3
Cadmium	2.0 U	1.0 U
Chromium	5.6	1.8
Lead	1.0 U	< 3.7
Nickel	8.0 U	< 5.5

MW-12	Rnd 1	Rnd 2
Antimony	4.6 R	< 6.6
Cadmium	15.6	26.8
Chromium	8.3	< 7.3
Lead	< 5.0	< 5.4
Nickel	25.0	142

MW-21A	Rnd 1	Rnd 2
Antimony	4.6 R	< 5.1
Cadmium	1.0 U	1.0 U
Chromium	1.9	1.0 U
Lead	< 2.0	< 4.6
Nickel	< 1.3	< 3.8

MW-23A	Rnd 1	Rnd 2
	26.0 UR	< 5.6
Cadmium	2.0 U	1.0 U
Chromium	4.0 U	1.4
Lead	1.0 U	< 4.1
Nickel	8.0 U	< 2.7

MW-26	Rnd 1	Rnd 2
	3.9 R	< 6.5
	1.0 U	< 5.8
Chromium	31.2 J	1.0 U
Lead	< 3.0	< 4.9
Nickel	15.5 J	< 2.4

MW-04	Rnd 1	Rnd 2
Antimony	5.6 R	< 3.7
	1.7	< 1.9
Chromium	4.2	< 7.7
	< 2.2	< 4.8
Nickel	< 1.7	< 3.6

MW-01	Rnd 1	Rnd 2
Antimony	26.0 UR	< 6.1
Cadmium	520	397
Chromium	34.3	3.4
Lead	< 2.4 J	3.9
Nickel	38.8	20.2

MW-22A	Rnd 1	Rnd 2	Rnd 2(D)
Antimony	5.4 R	< 5.7	< 5.8
	3.3	< 5.5	< 5.4
Chromium	1.3	< 2.4	2.5
Lead	12.2	98.7	97.2
Nickel	1.0 U	< 8.6	9.5 B

MW-06	Rnd 1	Rnd 2
Antimony	26.0 UR	< 8.1
Cadmium	2.0 U	1.0 U
Chromium	4.0 U	1.7
Lead	1.0 U	< 4.1
Nickel	8.0 U	< 3.6

MW-28	Rnd 1	Rnd 2
Antimony	26.0 UR	< 5.3
	2.0 U	1.0 U
Chromium	4.4	1.1
Lead	1.0 U	< 4.3
Nickel	8.0 U	< 4.6

MW-25A	Rnd 1	Rnd 2
Antimony	6.0 R	< 3.9
Cadmium	1.0 U	1.2
Chromium	< 3.8	< 15.0
Lead	< 2.6	< 7.6
Nickel	4.1 J	14.9

MW-05	Rnd 1	Rnd 2
Antimony	6.3 R	< 5.8
Cadmium	3.2	4.1
Chromium	7.1	1.8
Lead	< 5.3	< 3.3
Nickel	14.6	15.8

MW-30A	Rnd 1	Rnd 2
Antimony	2.0 UR	< 3.4
Cadmium	1.0 U	< 1.1
Chromium	188 J	< 15.7
Lead	254	23.9
Nickel	315 J	62.6

Round 2 (Primary/Duplicate Sample Pair) (April/May, 1995)
Round 1 (Primary/Duplicate Sample Pair) (March, 1995)

Well Number

MW-22A	Rnd 1	Rnd 1(D)	Rnd 2	Rnd 2(D)
Antimony	5.4 (R)	5.6 R	< 5.7	< 4.0
Cadmium	3.3	1.0 U	< 5.5	1.0 U
Chromium	1.3	1.6	< 2.4	1.0 U
Lead	(12.2)	< 2.2	98.7 (J)	< 4.2
Nickel	1.0 (U)	1.0	(<) 8.6	< 1.7

"J" Estimated value.
"U" constituent not detected above noted detection limit.
"<" detected below noted value. May be due to sample contamination.
"12.2" concentration in µg/L.
1.0 Value exceed MCL
"R" rejected value.

METAL	MCL (µg/L)
Antimony	6
Cadmium	5
Chromium	100
Lead*	15*
Nickel	100
*Action Level	

Note:
(1) MW-02 Resampled in April 1998.

ENVIRON

Results for Selected Metals in Overburden Ground Water (RFI Phase I)
BASF Corporation
Plainville, Massachussets

DATE: 2/3/11	CONTRACT NUMBER: 25-12243J		FIGURE 9.2.10
DRAFTER: RS	APPROVED:	REVISED: MN	

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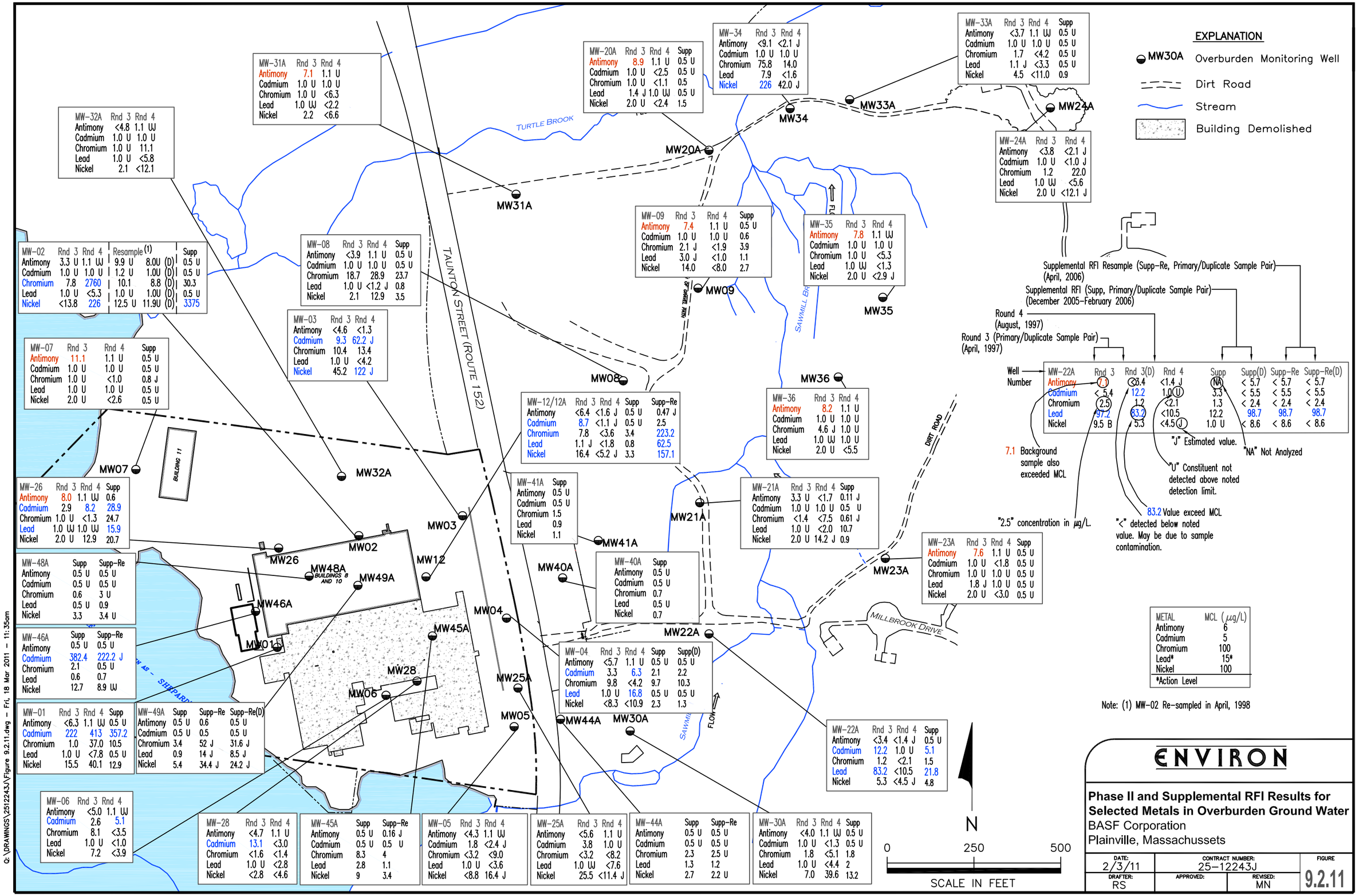

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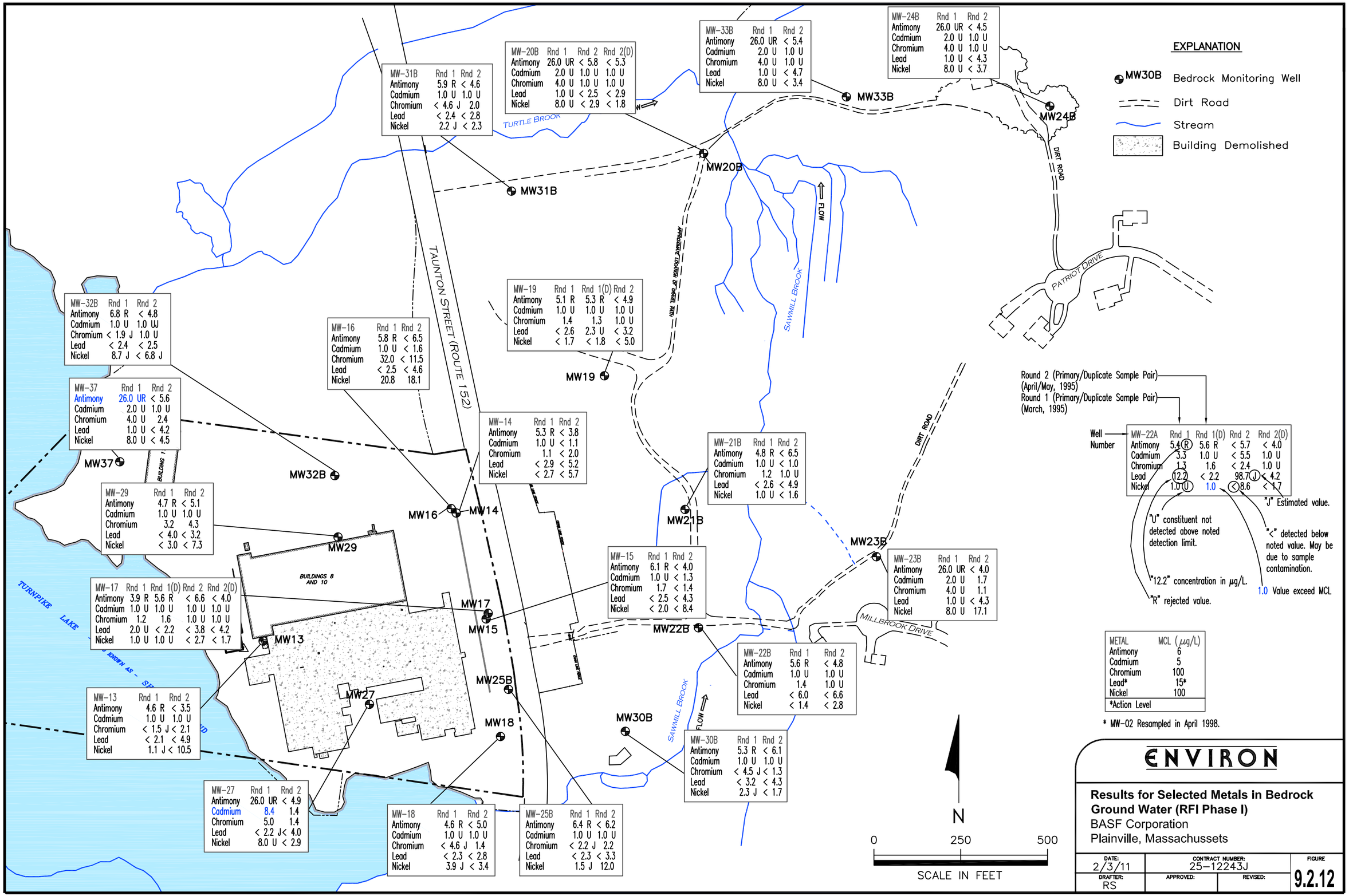
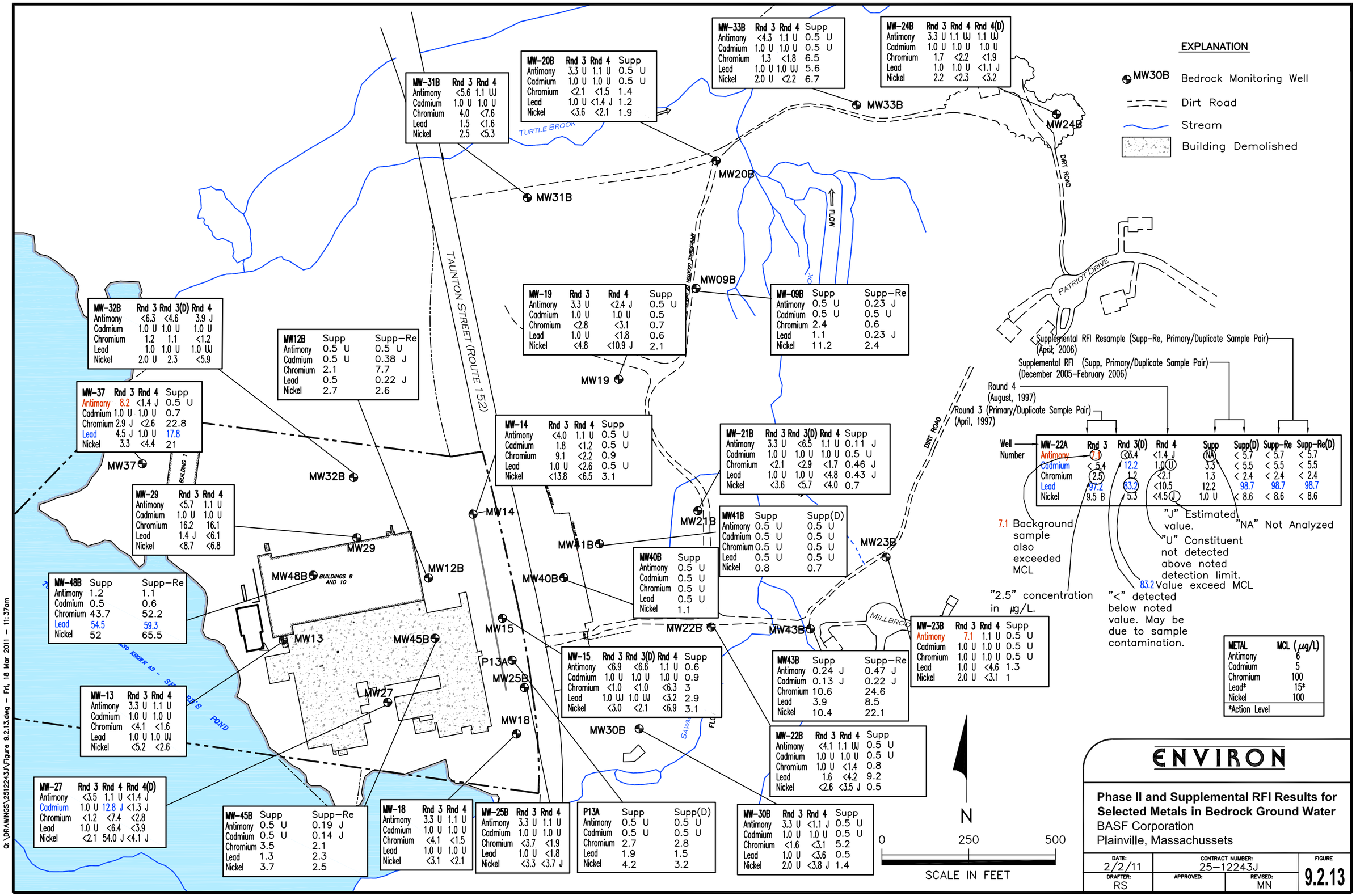
ENVIRON

Phase II and Supplemental RFI Results for Selected Metals in Overburden Ground Water

BASF Corporation
Plainville, Massachussets

DATE:	CONTRACT NUMBER:		FIGURE
2/3/11	25-12243J		9.2.11
DRAFTER: RS	APPROVED:	REVISED: MN	


EXPLANATION
MW30B Bedrock Monitoring Well
Dirt Road
Stream
Building Demolished
MW-31B Rnd 1 Rnd 2
Antimony 5.9 R < 4.6
Cadmium 1.0 U 1.0 U
Chromium < 4.6 J 2.0
Lead < 2.4 < 2.8
Nickel 2.2 J < 2.3
MW-20B Rnd 1 Rnd 2 Rnd 2(D)
Antimony 26.0 UR < 5.8 < 5.3
Cadmium 2.0 U 1.0 U 1.0 U
Chromium 4.0 U 1.0 U 1.0 U
Lead 1.0 U < 2.5 < 2.9
Nickel 8.0 U < 2.9 < 1.8
MW-33B Rnd 1 Rnd 2
Antimony 26.0 UR < 5.4
Cadmium 2.0 U 1.0 U
Chromium 4.0 U 1.0 U
Lead 1.0 U < 4.7
Nickel 8.0 U < 3.4
MW-24B Rnd 1 Rnd 2
Antimony 26.0 UR < 4.5
Cadmium 2.0 U 1.0 U
Chromium 4.0 U 1.0 U
Lead 1.0 U < 4.3
Nickel 8.0 U < 3.7
MW-32B Rnd 1 Rnd 2
Antimony 6.8 R < 4.8
Cadmium 1.0 U 1.0 UJ
Chromium < 1.9 J 1.0 U
Lead < 2.4 < 2.5
Nickel 8.7 J < 6.8 J
MW-37 Rnd 1 Rnd 2
Antimony 26.0 UR < 5.6
Cadmium 2.0 U 1.0 U
Chromium 4.0 U 2.4
Lead 1.0 U < 4.2
Nickel 8.0 U < 4.5
MW-16 Rnd 1 Rnd 2
Antimony 5.8 R < 6.5
Cadmium 1.0 U < 1.6
Chromium 32.0 < 11.5
Lead < 2.5 < 4.6
Nickel 20.8 18.1
MW-19 Rnd 1 Rnd 1(D) Rnd 2
Antimony 5.1 R 5.3 R < 4.9
Cadmium 1.0 U 1.0 U 1.0 U
Chromium 1.4 1.3 1.0 U
Lead < 2.6 2.3 U < 3.2
Nickel < 1.7 < 1.8 < 5.0
MW-14 Rnd 1 Rnd 2
Antimony 5.3 R < 3.8
Cadmium 1.0 U < 1.1
Chromium 1.1 < 2.0
Lead < 2.9 < 5.2
Nickel < 2.7 < 5.7
MW-21B Rnd 1 Rnd 2
Antimony 4.8 R < 6.5
Cadmium 1.0 U < 1.0
Chromium 1.2 1.0 U
Lead < 2.6 < 4.9
Nickel 1.0 U < 1.6
Round 2 (Primary/Duplicate Sample Pair) (April/May, 1995)
Round 1 (Primary/Duplicate Sample Pair) (March, 1995)
Well Number
MW-22A Rnd 1 Rnd 1(D) Rnd 2 Rnd 2(D)
Antimony 5.4 R 5.6 R < 5.7 < 4.0
Cadmium 3.3 1.0 U < 5.5 1.0 U
Chromium 1.3 1.6 < 2.4 1.0 U
Lead 12.2 < 2.2 98.7 J < 4.2
Nickel 1.0 U 1.0 < 8.6 < 1.7
"J" Estimated value.
"U" constituent not detected above noted detection limit.
"<" detected below noted value. May be due to sample contamination.
"12.2" concentration in µg/L.
1.0 Value exceed MCL
"R" rejected value.
MW-29 Rnd 1 Rnd 2
Antimony 4.7 R < 5.1
Cadmium 1.0 U 1.0 U
Chromium 3.2 4.3
Lead < 4.0 < 3.2
Nickel < 3.0 < 7.3
MW-17 Rnd 1 Rnd 1(D) Rnd 2 Rnd 2(D)
Antimony 3.9 R 5.6 R < 6.6 < 4.0
Cadmium 1.0 U 1.0 U 1.0 U 1.0 U
Chromium 1.2 1.6 1.0 U 1.0 U
Lead 2.0 U < 2.2 < 3.8 < 4.2
Nickel 1.0 U 1.0 U < 2.7 < 1.7
MW-15 Rnd 1 Rnd 2
Antimony 6.1 R < 4.0
Cadmium 1.0 U < 1.3
Chromium 1.7 < 1.4
Lead < 2.5 < 4.3
Nickel < 2.0 < 8.4
MW-23B Rnd 1 Rnd 2
Antimony 26.0 UR < 4.0
Cadmium 2.0 U 1.7
Chromium 4.0 U 1.1
Lead 1.0 U < 4.3
Nickel 8.0 U 17.1
MW-13 Rnd 1 Rnd 2
Antimony 4.6 R < 3.5
Cadmium 1.0 U 1.0 U
Chromium < 1.5 J < 2.1
Lead < 2.1 < 4.9
Nickel 1.1 J < 10.5
MW-22B Rnd 1 Rnd 2
Antimony 5.6 R < 4.8
Cadmium 1.0 U 1.0 U
Chromium 1.4 1.0 U
Lead < 6.0 < 6.6
Nickel < 1.4 < 2.8
MW-30B Rnd 1 Rnd 2
Antimony 5.3 R < 6.1
Cadmium 1.0 U 1.0 U
Chromium < 4.5 J < 1.3
Lead < 3.2 < 4.3
Nickel 2.3 J < 1.7
MW-27 Rnd 1 Rnd 2
Antimony 26.0 UR < 4.9
Cadmium 8.4 1.4
Chromium 5.0 1.4
Lead < 2.2 J < 4.0
Nickel 8.0 U < 2.9
MW-18 Rnd 1 Rnd 2
Antimony 4.6 R < 5.0
Cadmium 1.0 U 1.0 U
Chromium < 4.6 J 1.4
Lead < 2.3 < 2.8
Nickel 3.9 J < 3.4
MW-25B Rnd 1 Rnd 2
Antimony 6.4 R < 6.2
Cadmium 1.0 U 1.0 U
Chromium < 2.2 J 2.2
Lead < 2.3 < 3.3
Nickel 1.5 J 12.0
METAL MCL (µg/L)
Antimony 6
Cadmium 5
Chromium 100
Lead* 15*
Nickel 100
*Action Level
* MW-02 Resampled in April 1998.
TAUNTON STREET (ROUTE 152)
TURTLE BROOK
SAWMILL BROOK
FLOW
DIRT ROAD
PATRIOT DRIVE
MILLBROOK DRIVE
BUILDINGS 8 AND 10
BUILDING 1
TURNPIKE LAKE
MW31B
MW20B
MW33B
MW24B
MW19
MW32B
MW37
MW16
MW14
MW29
MW21B
MW23B
MW17
MW15
MW13
MW22B
MW25B
MW27
MW18
MW30B
N
0 250 500
SCALE IN FEET
ENVIRON
Results for Selected Metals in Bedrock Ground Water (RFI Phase I)
BASF Corporation
Plainville, Massachussets
DATE: 2/3/11
CONTRACT NUMBER: 25-12243J
FIGURE 9.2.12
DRAFTER: RS
APPROVED:
REVISED:
Q:\DRAWINGS\2512243J\Figure 9.2.12.dwg – Fri, 18 Mar 2011 – 11:36am


EXPLANATION
MW30B Bedrock Monitoring Well
Dirt Road
Stream
Building Demolished
TURTLE BROOK
TAUNTON STREET (ROUTE 152)
PATRIOT DRIVE
DIRT ROAD
FLOW
MILLBROOK
BUILDING 1
BUILDINGS 8 AND 10
POND
N
0 250 500
SCALE IN FEET
MW-33B Rnd 3 Rnd 4 Supp
Antimony <4.3 1.1 U 0.5 U
Cadmium 1.0 U 1.0 U 0.5 U
Chromium 1.3 <1.8 6.5
Lead 1.0 U 1.0 UJ 5.6
Nickel 2.0 U <2.2 6.7
MW-24B Rnd 3 Rnd 4 Rnd 4(D)
Antimony 3.3 U 1.1 UJ 1.1 UJ
Cadmium 1.0 U 1.0 U 1.0 U
Chromium 1.7 <2.2 <1.9
Lead 1.0 1.0 U <1.1 J
Nickel 2.2 <2.3 <3.2
MW-20B Rnd 3 Rnd 4 Supp
Antimony 3.3 U 1.1 U 0.5 U
Cadmium 1.0 U 1.0 U 0.5 U
Chromium <2.1 <1.5 1.4
Lead 1.0 U <1.4 J 1.2
Nickel <3.6 <2.1 1.9
MW-31B Rnd 3 Rnd 4
Antimony <5.6 1.1 UJ
Cadmium 1.0 U 1.0 U
Chromium 4.0 <7.6
Lead 1.5 <1.6
Nickel 2.5 <5.3
MW-32B Rnd 3 Rnd 3(D) Rnd 4
Antimony <6.3 <4.6 3.9 J
Cadmium 1.0 U 1.0 U 1.0 U
Chromium 1.2 1.1 <1.2
Lead 1.0 1.0 U 1.0 UJ
Nickel 2.0 U 2.3 <5.9
MW-19 Rnd 3 Rnd 4 Supp
Antimony 3.3 U <2.4 J 0.5 U
Cadmium 1.0 U 1.0 U 0.5
Chromium <2.8 <3.1 0.7
Lead 1.0 U <1.8 0.6
Nickel <4.8 <10.9 J 2.1
MW-09B Supp Supp-Re
Antimony 0.5 U 0.23 J
Cadmium 0.5 U 0.5 U
Chromium 2.4 0.6
Lead 1.1 0.23 J
Nickel 11.2 2.4
MW12B Supp Supp-Re
Antimony 0.5 U 0.5 U
Cadmium 0.5 U 0.38 J
Chromium 2.1 7.7
Lead 0.5 0.22 J
Nickel 2.7 2.6
MW-37 Rnd 3 Rnd 4 Supp
Antimony 8.2 <1.4 J 0.5 U
Cadmium 1.0 U 1.0 U 0.7
Chromium 2.9 J <2.6 22.8
Lead 4.5 J 1.0 U 17.8
Nickel 3.3 <4.4 21
MW-14 Rnd 3 Rnd 4 Supp
Antimony <4.0 1.1 U 0.5 U
Cadmium 1.8 <1.2 0.5 U
Chromium 9.1 <2.2 0.9
Lead 1.0 U <2.6 0.5 U
Nickel <13.8 <6.5 3.1
MW-21B Rnd 3 Rnd 3(D) Rnd 4 Supp
Antimony 3.3 U <6.5 1.1 U 0.11 J
Cadmium 1.0 U 1.0 U 1.0 U 0.5 U
Chromium <2.1 <2.9 <1.7 0.46 J
Lead 1.0 U 1.0 U <4.8 0.43 J
Nickel <3.6 <5.7 <4.0 0.7
MW-29 Rnd 3 Rnd 4
Antimony <5.7 1.1 U
Cadmium 1.0 U 1.0 U
Chromium 16.2 16.1
Lead 1.4 J <6.1
Nickel <8.7 <6.8
MW41B Supp Supp(D)
Antimony 0.5 U 0.5 U
Cadmium 0.5 U 0.5 U
Chromium 0.5 U 0.5 U
Lead 0.5 U 0.5 U
Nickel 0.8 0.7
MW40B Supp
Antimony 0.5 U
Cadmium 0.5 U
Chromium 0.5 U
Lead 0.5 U
Nickel 1.1
MW-48B Supp Supp-Re
Antimony 1.2 1.1
Cadmium 0.5 0.6
Chromium 43.7 52.2
Lead 54.5 59.3
Nickel 52 65.5
MW-13 Rnd 3 Rnd 4
Antimony 3.3 U 1.1 U
Cadmium 1.0 U 1.0 U
Chromium <4.1 <1.6
Lead 1.0 U 1.0 UJ
Nickel <5.2 <2.6
MW-15 Rnd 3 Rnd 3(D) Rnd 4 Supp
Antimony <6.9 <6.6 1.1 U 0.6
Cadmium 1.0 U 1.0 U 1.0 U 0.9
Chromium <1.0 <1.0 <6.3 3
Lead 1.0 UJ 1.0 UJ <3.2 2.9
Nickel <3.0 <2.1 <6.9 3.1
MW43B Supp Supp-Re
Antimony 0.24 J 0.47 J
Cadmium 0.13 J 0.22 J
Chromium 10.6 24.6
Lead 3.9 8.5
Nickel 10.4 22.1
MW-23B Rnd 3 Rnd 4 Supp
Antimony 7.1 1.1 U 0.5 U
Cadmium 1.0 U 1.0 U 0.5 U
Chromium 1.0 U 1.0 U 0.5 U
Lead 1.0 U <4.6 1.3
Nickel 2.0 U <3.1 1
MW-22B Rnd 3 Rnd 4 Supp
Antimony <4.1 1.1 UJ 0.5 U
Cadmium 1.0 U 1.0 U 0.5 U
Chromium 1.0 U <1.4 0.8
Lead 1.6 <4.2 9.2
Nickel <2.6 <3.5 J 0.5
MW-27 Rnd 3 Rnd 4 Rnd 4(D)
Antimony <3.5 1.1 U <1.4 J
Cadmium 1.0 U 12.8 J <1.3 J
Chromium <1.2 <7.4 <2.8
Lead 1.0 U <6.4 <3.9
Nickel <2.1 54.0 J <4.1 J
MW-45B Supp Supp-Re
Antimony 0.5 U 0.19 J
Cadmium 0.5 U 0.14 J
Chromium 3.5 2.1
Lead 1.3 2.3
Nickel 3.7 2.5
MW-18 Rnd 3 Rnd 4
Antimony 3.3 U 1.1 U
Cadmium 1.0 U 1.0 U
Chromium <4.1 <1.5
Lead 1.0 U 1.0 U
Nickel <3.1 <2.1
MW-25B Rnd 3 Rnd 4
Antimony 3.3 U 1.1 U
Cadmium 1.0 U 1.0 U
Chromium <3.7 <1.9
Lead 1.0 U <1.8
Nickel <3.3 <3.7 J
P13A Supp Supp(D)
Antimony 0.5 U 0.5 U
Cadmium 0.5 U 0.5 U
Chromium 2.7 2.8
Lead 1.9 1.5
Nickel 4.2 3.2
MW-30B Rnd 3 Rnd 4 Supp
Antimony 3.3 U <1.1 J 0.5 U
Cadmium 1.0 U 1.0 U 0.5 U
Chromium <1.6 <3.1 5.2
Lead 1.0 U <3.6 0.5
Nickel 2.0 U <3.8 J 1.4
Supplemental RFI Resample (Supp-Re, Primary/Duplicate Sample Pair) (April, 2006)
Supplemental RFI (Supp, Primary/Duplicate Sample Pair) (December 2005-February 2006)
Round 4 (August, 1997)
Round 3 (Primary/Duplicate Sample Pair) (April, 1997)
Well Number
MW-22A Rnd 3 Rnd 3(D) Rnd 4 Supp Supp(D) Supp-Re Supp-Re(D)
Antimony 7.1 <3.4 <1.4 J NA < 5.7 < 5.7 < 5.7
Cadmium < 5.4 12.2 1.0 U 3.3 < 5.5 < 5.5 < 5.5
Chromium 2.5 1.2 <2.1 1.3 < 2.4 < 2.4 < 2.4
Lead 97.2 83.2 <10.5 12.2 98.7 98.7 98.7
Nickel 9.5 B 5.3 <4.5 J 1.0 U < 8.6 < 8.6 < 8.6
7.1 Background sample also exceeded MCL
"2.5" concentration in µg/L.
"J" Estimated value.
"NA" Not Analyzed
"U" Constituent not detected above noted detection limit.
83.2 Value exceed MCL
"<" detected below noted value. May be due to sample contamination.
METAL MCL (µg/L)
Antimony 6
Cadmium 5
Chromium 100
Lead* 15*
Nickel 100
*Action Level
ENVIRON
Phase II and Supplemental RFI Results for Selected Metals in Bedrock Ground Water
BASF Corporation
Plainville, Massachussets
DATE: 2/2/11
CONTRACT NUMBER: 25-12243J
FIGURE 9.2.13
DRAFTER: RS
APPROVED:
REVISED: MN
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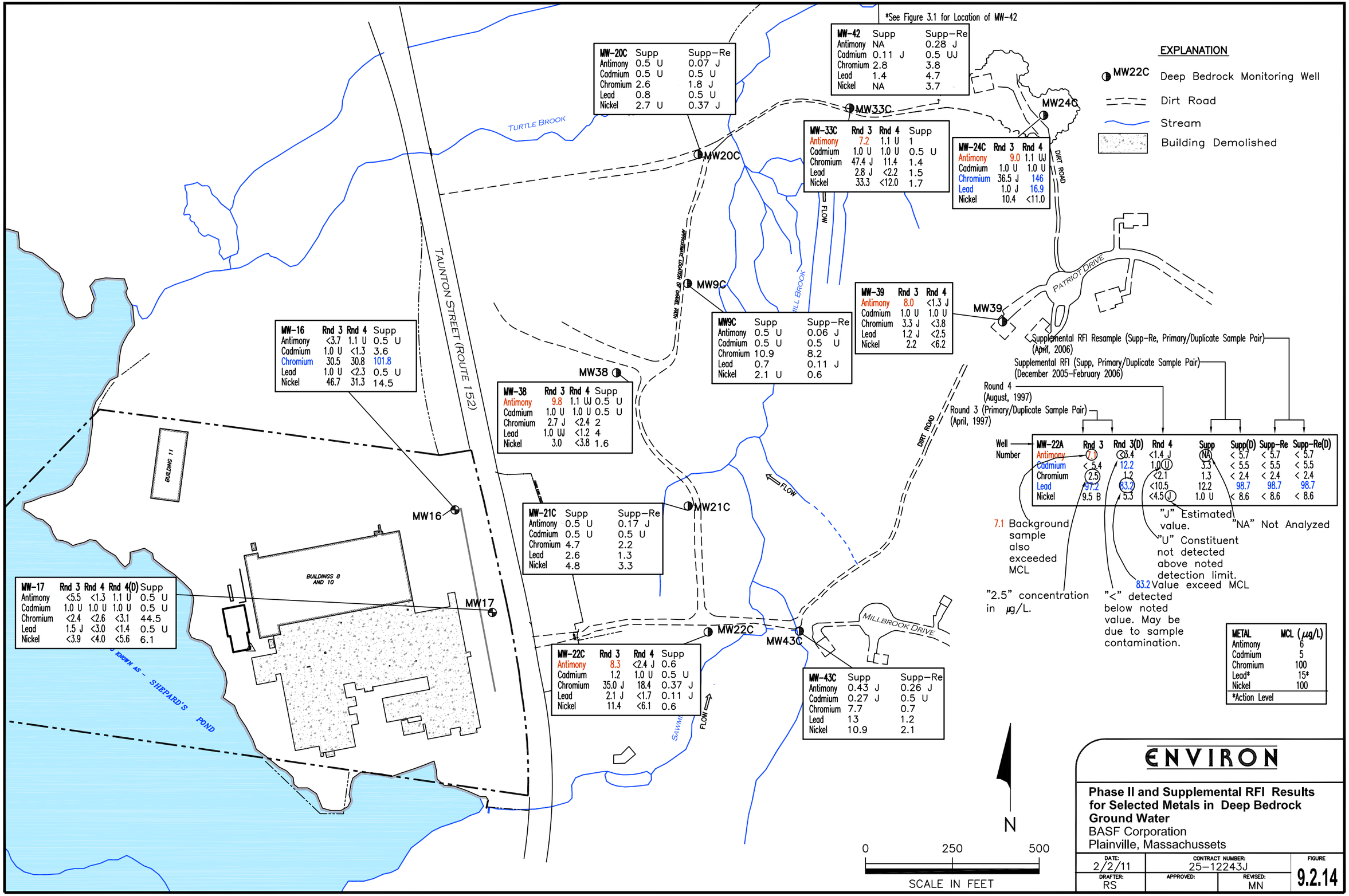
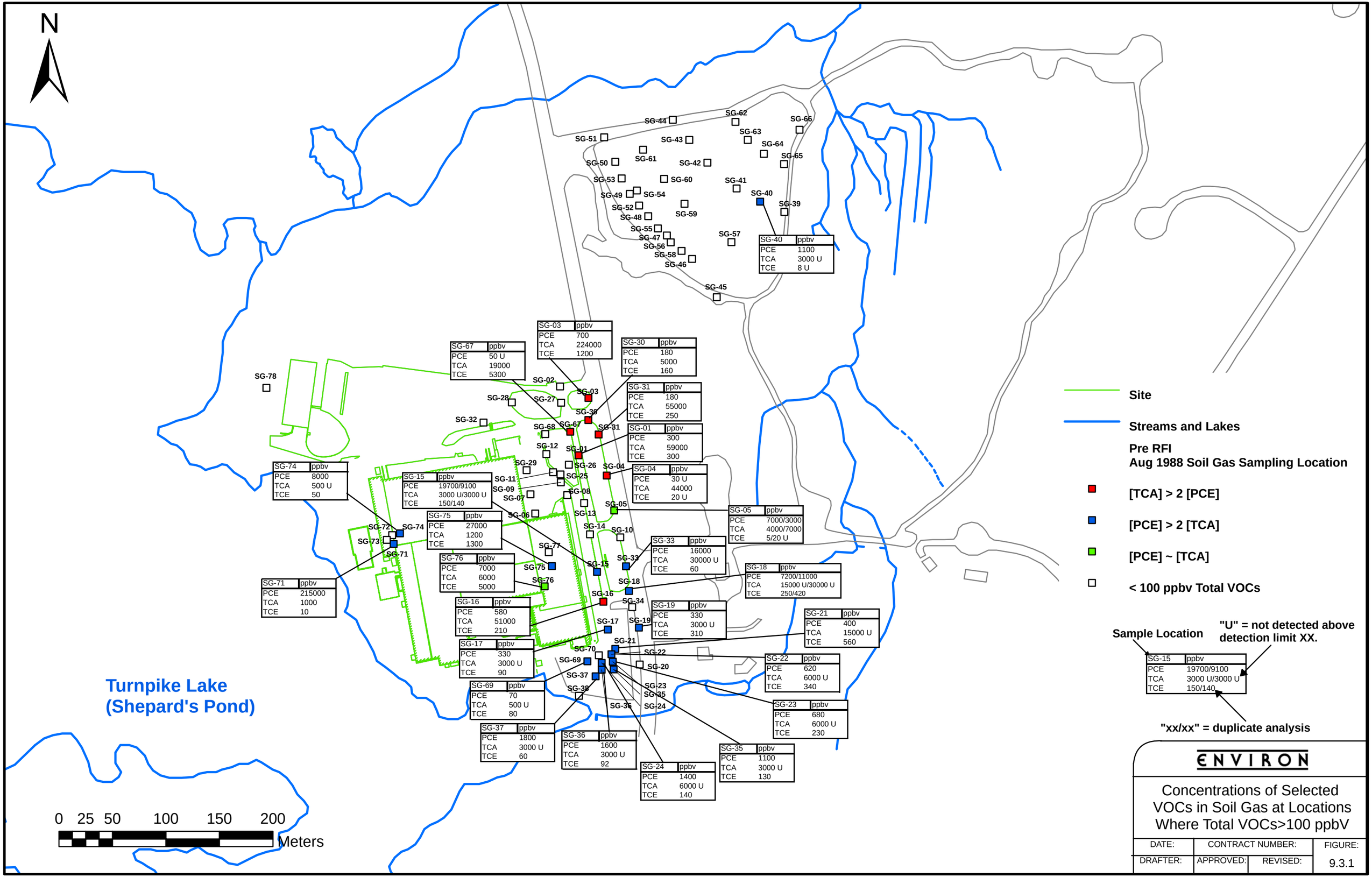
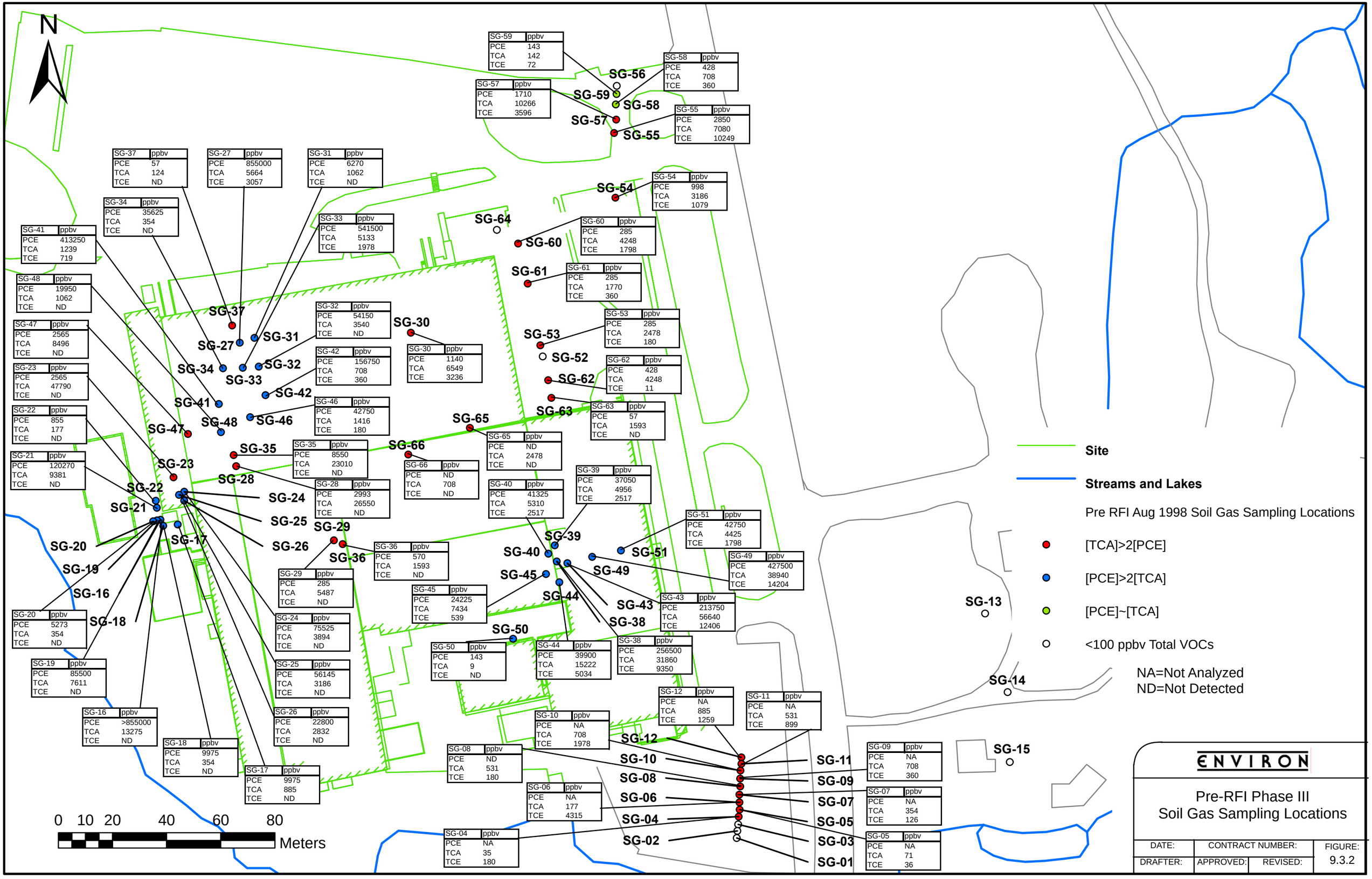

*See Figure 3.1 for Location of MW-42
EXPLANATION
MW22C Deep Bedrock Monitoring Well
Dirt Road
Stream
Building Demolished
TURTLE BROOK
TAUNTON STREET (ROUTE 152)
BUILDING 11
BUILDINGS 8 AND 10
SHEPARD'S POND
MILLBROOK DRIVE
PATRIOT DRIVE
DIRT ROAD
FLOW
MW20C
MW33C
MW24C
MW9C
MW39
MW38
MW16
MW21C
MW17
MW22C
MW43C
MW-42 Supp Supp-Re
Antimony NA 0.28 J
Cadmium 0.11 J 0.5 UJ
Chromium 2.8 3.8
Lead 1.4 4.7
Nickel NA 3.7
MW-20C Supp Supp-Re
Antimony 0.5 U 0.07 J
Cadmium 0.5 U 0.5 U
Chromium 2.6 1.8 J
Lead 0.8 0.5 U
Nickel 2.7 U 0.37 J
MW-33C Rnd 3 Rnd 4 Supp
Antimony 7.2 1.1 U 1
Cadmium 1.0 U 1.0 U 0.5 U
Chromium 47.4 J 11.4 1.4
Lead 2.8 J <2.2 1.5
Nickel 33.3 <12.0 1.7
MW-24C Rnd 3 Rnd 4
Antimony 9.0 1.1 UJ
Cadmium 1.0 U 1.0 U
Chromium 36.5 J 146
Lead 1.0 J 16.9
Nickel 10.4 <11.0
MW-39 Rnd 3 Rnd 4
Antimony 8.0 <1.3 J
Cadmium 1.0 U 1.0 U
Chromium 3.3 J <3.8
Lead 1.2 J <2.5
Nickel 2.2 <6.2
MW9C Supp Supp-Re
Antimony 0.5 U 0.06 J
Cadmium 0.5 U 0.5 U
Chromium 10.9 8.2
Lead 0.7 0.11 J
Nickel 2.1 U 0.6
MW-16 Rnd 3 Rnd 4 Supp
Antimony <3.7 1.1 U 0.5 U
Cadmium 1.0 U <1.3 3.6
Chromium 30.5 30.8 101.8
Lead 1.0 U <2.3 0.5 U
Nickel 46.7 31.3 14.5
MW-38 Rnd 3 Rnd 4 Supp
Antimony 9.8 1.1 UJ 0.5 U
Cadmium 1.0 U 1.0 U 0.5 U
Chromium 2.7 J <2.4 2
Lead 1.0 UJ <1.2 4
Nickel 3.0 <3.8 1.6
MW-21C Supp Supp-Re
Antimony 0.5 U 0.17 J
Cadmium 0.5 U 0.5 U
Chromium 4.7 2.2
Lead 2.6 1.3
Nickel 4.8 3.3
MW-17 Rnd 3 Rnd 4 Rnd 4(D) Supp
Antimony <5.5 <1.3 1.1 U 0.5 U
Cadmium 1.0 U 1.0 U 1.0 U 0.5 U
Chromium <2.4 <2.6 <3.1 44.5
Lead 1.5 J <3.0 <1.4 0.5 U
Nickel <3.9 <4.0 <5.6 6.1
MW-22C Rnd 3 Rnd 4 Supp
Antimony 8.3 <2.4 J 0.6
Cadmium 1.2 1.0 U 0.5 U
Chromium 35.0 J 18.4 0.37 J
Lead 2.1 J <1.7 0.11 J
Nickel 11.4 <6.1 0.6
MW-43C Supp Supp-Re
Antimony 0.43 J 0.26 J
Cadmium 0.27 J 0.5 U
Chromium 7.7 0.7
Lead 13 1.2
Nickel 10.9 2.1
Supplemental RFI Resample (Supp-Re, Primary/Duplicate Sample Pair) (April, 2006)
Supplemental RFI (Supp, Primary/Duplicate Sample Pair) (December 2005-February 2006)
Round 4 (August, 1997)
Round 3 (Primary/Duplicate Sample Pair) (April, 1997)
Well Number
MW-22A Rnd 3 Rnd 3(D) Rnd 4 Supp Supp(D) Supp-Re Supp-Re(D)
Antimony 7.1 <3.4 <1.4 J (NA) < 5.7 < 5.7 < 5.7
Cadmium < 5.4 12.2 1.0 U 3.3 < 5.5 < 5.5 < 5.5
Chromium 2.5 1.2 <2.1 1.3 < 2.4 < 2.4 < 2.4
Lead 97.2 83.2 <10.5 12.2 98.7 98.7 98.7
Nickel 9.5 B 5.3 <4.5 J 1.0 U < 8.6 < 8.6 < 8.6
7.1 Background sample also exceeded MCL
"2.5" concentration in µg/L.
"J" Estimated value.
"U" Constituent not detected above noted detection limit.
"NA" Not Analyzed
83.2 Value exceed MCL
"<" detected below noted value. May be due to sample contamination.
METAL MCL (µg/L)
Antimony 6
Cadmium 5
Chromium 100
Lead* 15*
Nickel 100
*Action Level
N
0 250 500
SCALE IN FEET
ENVIRON
Phase II and Supplemental RFI Results for Selected Metals in Deep Bedrock Ground Water
BASF Corporation
Plainville, Massachussets
DATE: 2/2/11
CONTRACT NUMBER: 25-12243J
FIGURE 9.2.14
DRAFTER: RS
APPROVED:
REVISED: MN

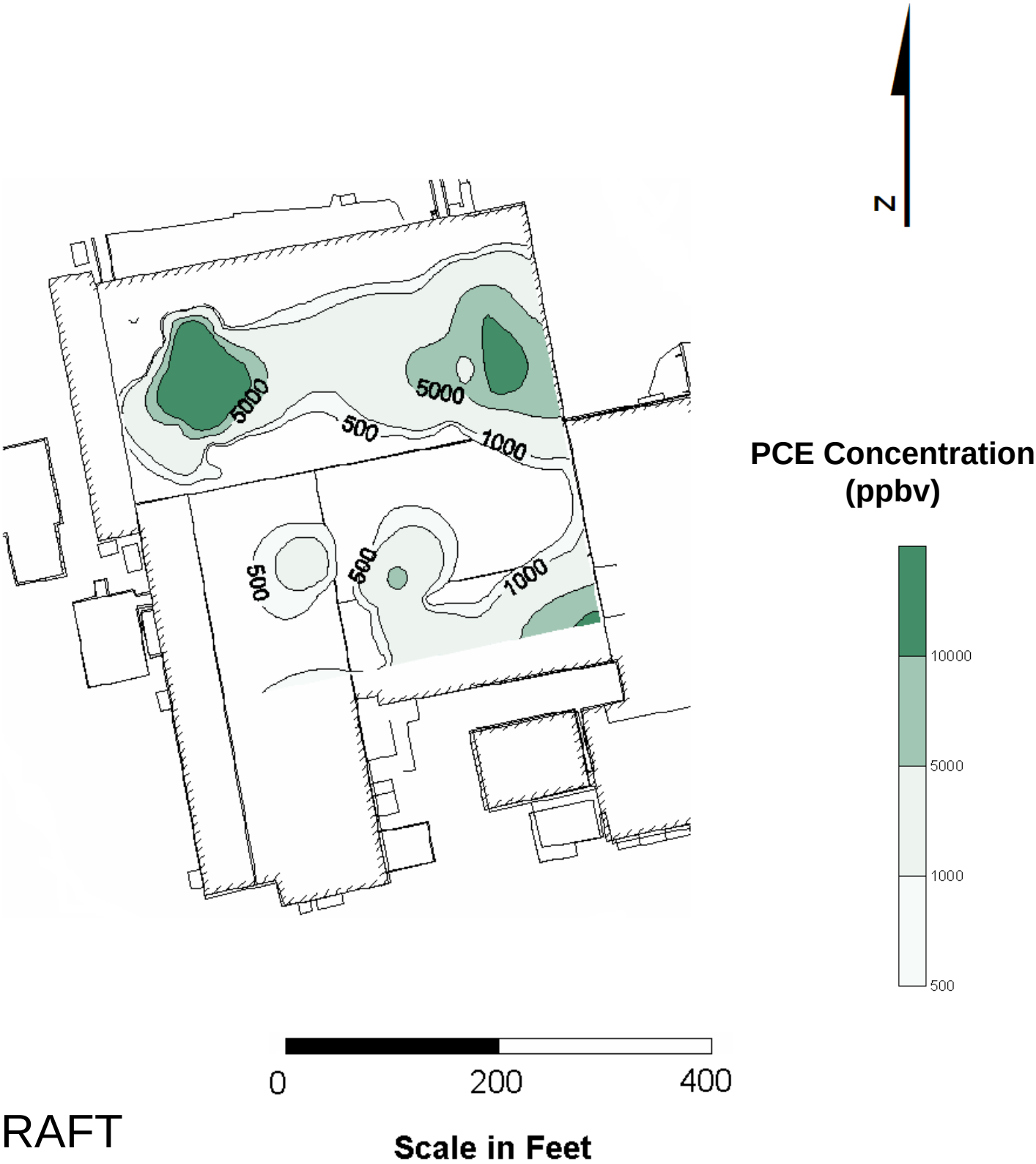


ENVIRON

Concentrations of Selected VOCs in Soil Gas at Locations Where Total VOCs>100 ppbV

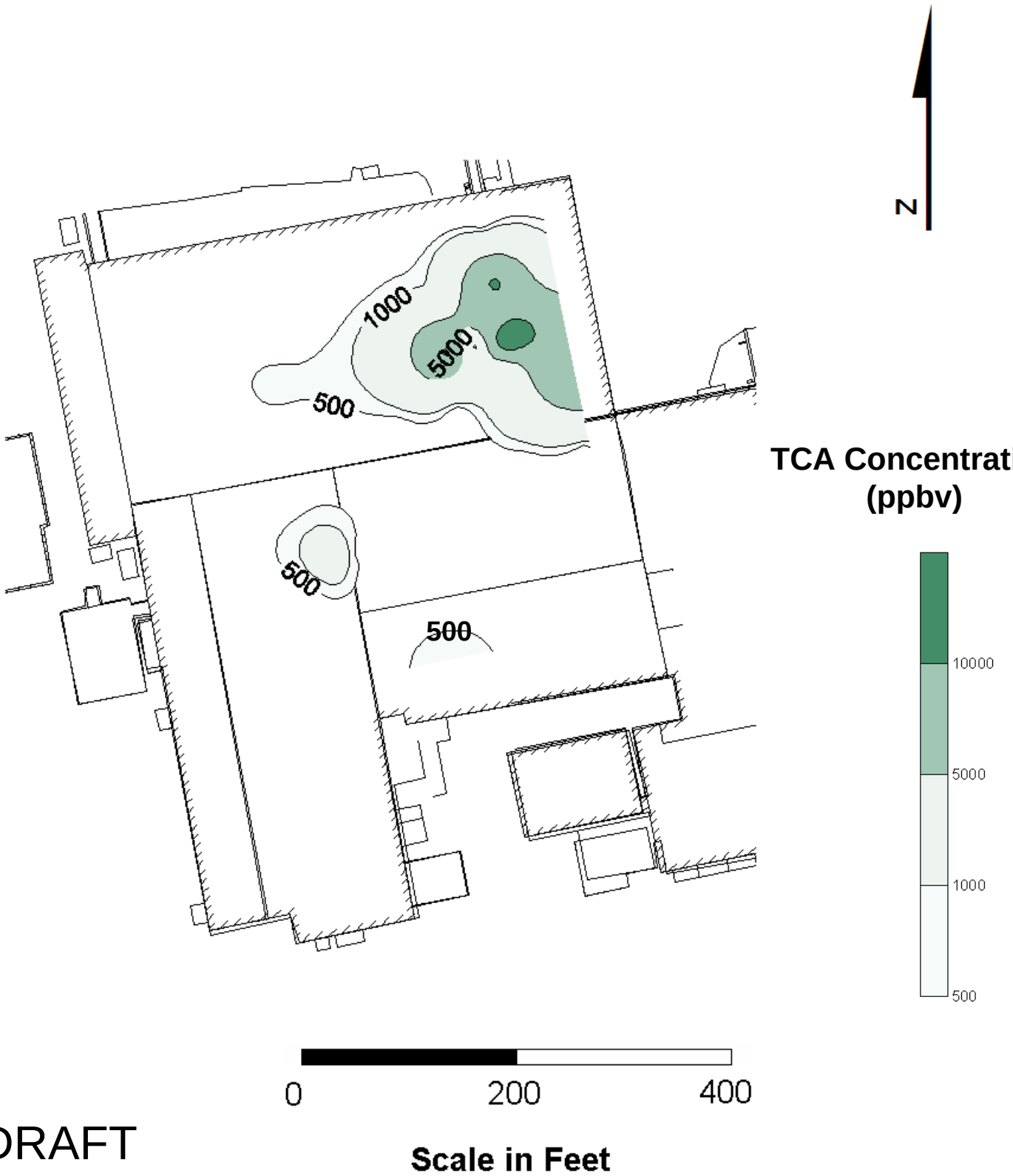
DATE:	CONTRACT NUMBER:		FIGURE:
DRAFTER:	APPROVED:	REVISED:	9.3.1


N
SG-59 ppbv PCE 143 TCA 142 TCE 72
SG-58 ppbv PCE 428 TCA 708 TCE 360
SG-57 ppbv PCE 1710 TCA 10266 TCE 3596
SG-55 ppbv PCE 2850 TCA 7080 TCE 10249
SG-56
SG-59
SG-58
SG-57
SG-55
SG-37 ppbv PCE 57 TCA 124 TCE ND
SG-27 ppbv PCE 855000 TCA 5664 TCE 3057
SG-31 ppbv PCE 6270 TCA 1062 TCE ND
SG-54 ppbv PCE 998 TCA 3186 TCE 1079
SG-54
SG-34 ppbv PCE 35625 TCA 354 TCE ND
SG-33 ppbv PCE 541500 TCA 5133 TCE 1978
SG-64
SG-60 ppbv PCE 285 TCA 4248 TCE 1798
SG-60
SG-41 ppbv PCE 413250 TCA 1239 TCE 719
SG-61 ppbv PCE 285 TCA 1770 TCE 360
SG-61
SG-48 ppbv PCE 19950 TCA 1062 TCE ND
SG-32 ppbv PCE 54150 TCA 3540 TCE ND
SG-30
SG-53 ppbv PCE 285 TCA 2478 TCE 180
SG-53
SG-52
SG-47 ppbv PCE 2565 TCA 8496 TCE ND
SG-37
SG-27
SG-31
SG-34
SG-33
SG-32
SG-42 ppbv PCE 156750 TCA 708 TCE 360
SG-30 ppbv PCE 1140 TCA 6549 TCE 3236
SG-62 ppbv PCE 428 TCA 4248 TCE 11
SG-62
SG-23 ppbv PCE 2565 TCA 47790 TCE ND
SG-42
SG-41
SG-48
SG-46
SG-46 ppbv PCE 42750 TCA 1416 TCE 180
SG-63
SG-63 ppbv PCE 57 TCA 1593 TCE ND
SG-22 ppbv PCE 855 TCA 177 TCE ND
SG-47
SG-65
SG-65 ppbv PCE ND TCA 2478 TCE ND
SG-35
SG-35 ppbv PCE 8550 TCA 23010 TCE ND
SG-66
SG-66 ppbv PCE ND TCA 708 TCE ND
SG-21 ppbv PCE 120270 TCA 9381 TCE ND
SG-23
SG-28
SG-28 ppbv PCE 2993 TCA 26550 TCE ND
SG-22
SG-21
SG-24
SG-25
SG-29
SG-39 ppbv PCE 37050 TCA 4956 TCE 2517
SG-40 ppbv PCE 41325 TCA 5310 TCE 2517
SG-51 ppbv PCE 42750 TCA 4425 TCE 1798
SG-20
SG-17
SG-26
SG-36
SG-36 ppbv PCE 570 TCA 1593 TCE ND
SG-39
SG-40
SG-51
SG-49
SG-49 ppbv PCE 427500 TCA 38940 TCE 14204
SG-19
SG-45
SG-29 ppbv PCE 285 TCA 5487 TCE ND
SG-16
SG-45 ppbv PCE 24225 TCA 7434 TCE 539
SG-44
SG-43
SG-43 ppbv PCE 213750 TCA 56640 TCE 12406
SG-13
SG-20 ppbv PCE 5273 TCA 354 TCE ND
SG-18
SG-38
SG-24 ppbv PCE 75525 TCA 3894 TCE ND
SG-50
SG-50 ppbv PCE 143 TCA 9 TCE ND
SG-44 ppbv PCE 39900 TCA 15222 TCE 5034
SG-38 ppbv PCE 256500 TCA 31860 TCE 9350
SG-19 ppbv PCE 85500 TCA 7611 TCE ND
SG-25 ppbv PCE 56145 TCA 3186 TCE ND
SG-14
SG-12 ppbv PCE NA TCA 885 TCE 1259
SG-11 ppbv PCE NA TCA 531 TCE 899
SG-16 ppbv PCE >855000 TCA 13275 TCE ND
SG-26 ppbv PCE 22800 TCA 2832 TCE ND
SG-10 ppbv PCE NA TCA 708 TCE 1978
SG-12
SG-15
SG-18 ppbv PCE 9975 TCA 354 TCE ND
SG-10
SG-11
SG-08 ppbv PCE ND TCA 531 TCE 180
SG-09 ppbv PCE NA TCA 708 TCE 360
SG-08
SG-09
SG-17 ppbv PCE 9975 TCA 885 TCE ND
SG-06 ppbv PCE NA TCA 177 TCE 4315
SG-07 ppbv PCE NA TCA 354 TCE 126
SG-06
SG-07
SG-04
SG-05
SG-04 ppbv PCE NA TCA 35 TCE 180
SG-02
SG-03
SG-05 ppbv PCE NA TCA 71 TCE 36
SG-01
0 10 20 40 60 80
Meters
Site
Streams and Lakes
Pre RFI Aug 1998 Soil Gas Sampling Locations
[TCA]>2[PCE]
[PCE]>2[TCA]
[PCE]~[TCA]
<100 ppbv Total VOCs
NA=Not Analyzed
ND=Not Detected
ENVIRON
Pre-RFI Phase III
Soil Gas Sampling Locations
DATE:
CONTRACT NUMBER:
FIGURE:
9.3.2
DRAFTER:
APPROVED:
REVISED:



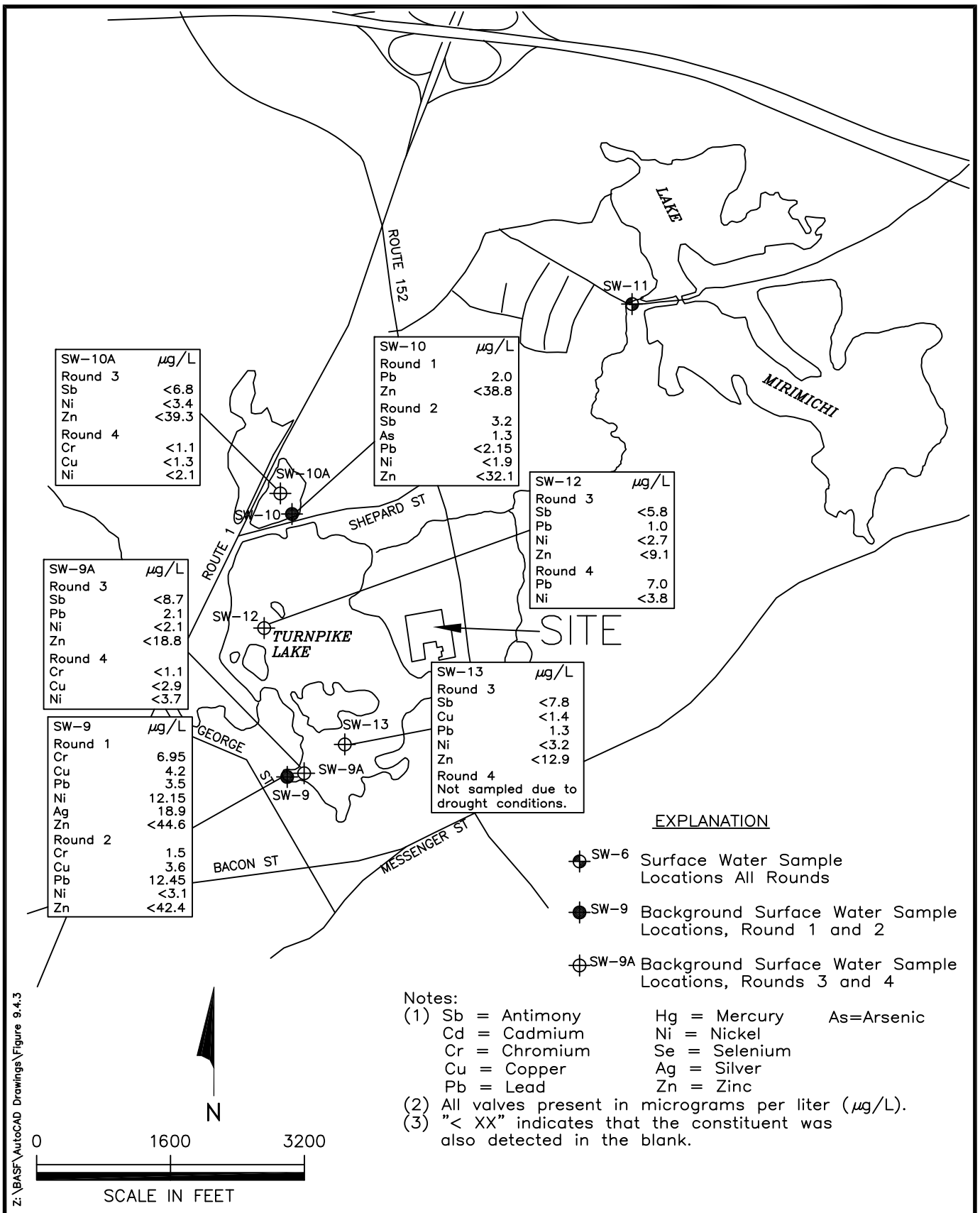
DRAFT

ENVIRON	**PCE Isoconcentration Contours in Soil Gas** **July/August 2005**	**Figure 9.3.3**



DRAFT

ENVIRON	**TCA Isoconcentration Contours in Soil Gas** **July/August 2005**	**Figure 9.3.4**

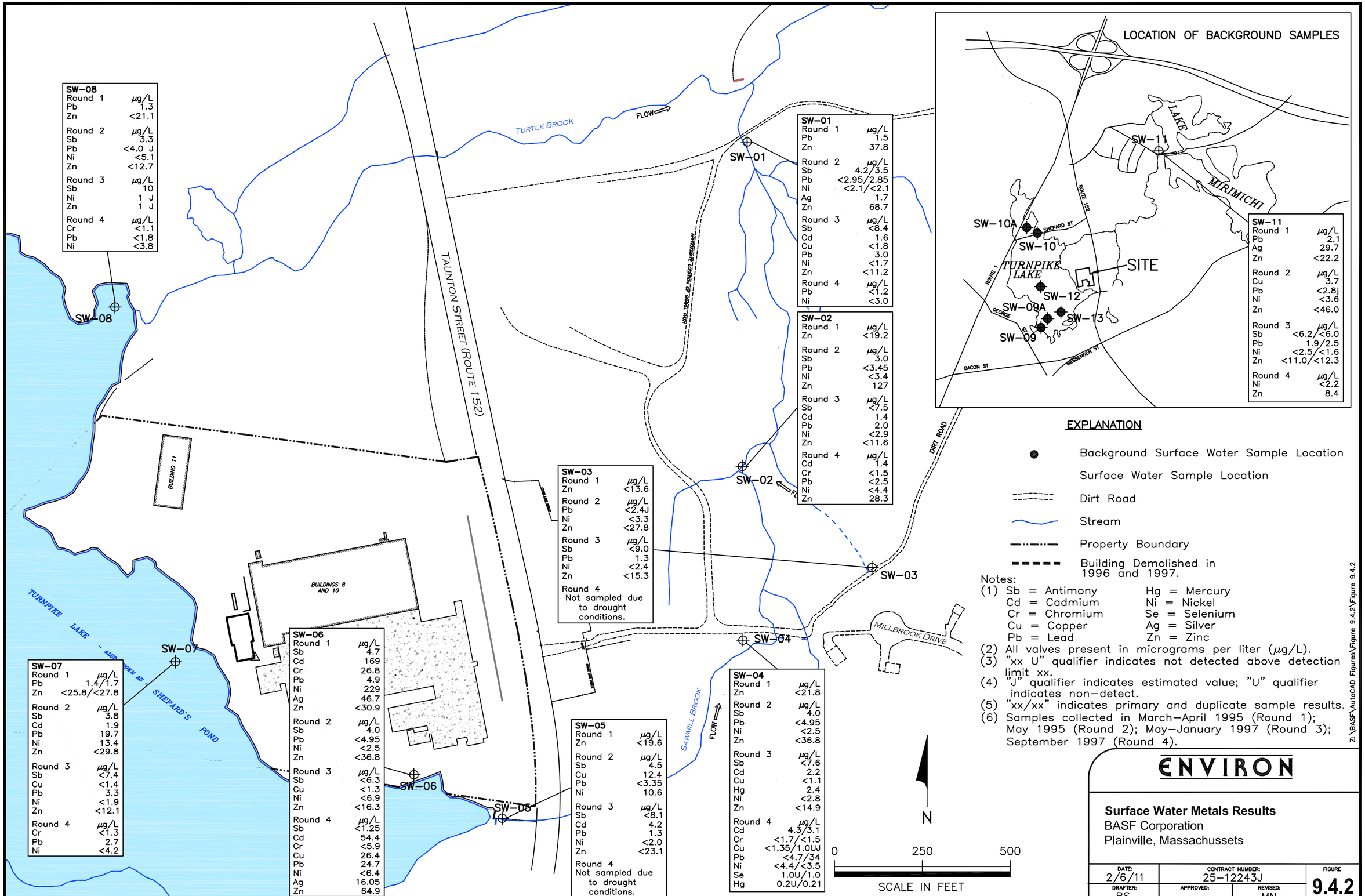


ENVIRON

Detected Metals in Background Surface Water Samples
Draft RCRA Facility Investigation Report
BASF Corporation
Plainville, Massachusetts

Figure 9.4.1

Drafter: RS Date: 12/28/2006 Contract Number: 25-12243E Approved: Revised: MN



Notes:

(1) Sb = Antimony; Cd = Cadmium; Cr = Chromium; Cu = Copper; Pb = Lead; Hg = Mercury; Ni = Nickel; Se = Selenium; Ag = Silver; Zn = Zinc

(2) All valves present in micrograms per liter (µg/L).

(3) "xx U" qualifier indicates not detected above detection limit xx.

(4) "J" qualifier indicates estimated value; "U" qualifier indicates non-detect.

(5) "xx/xx" indicates primary and duplicate sample results.

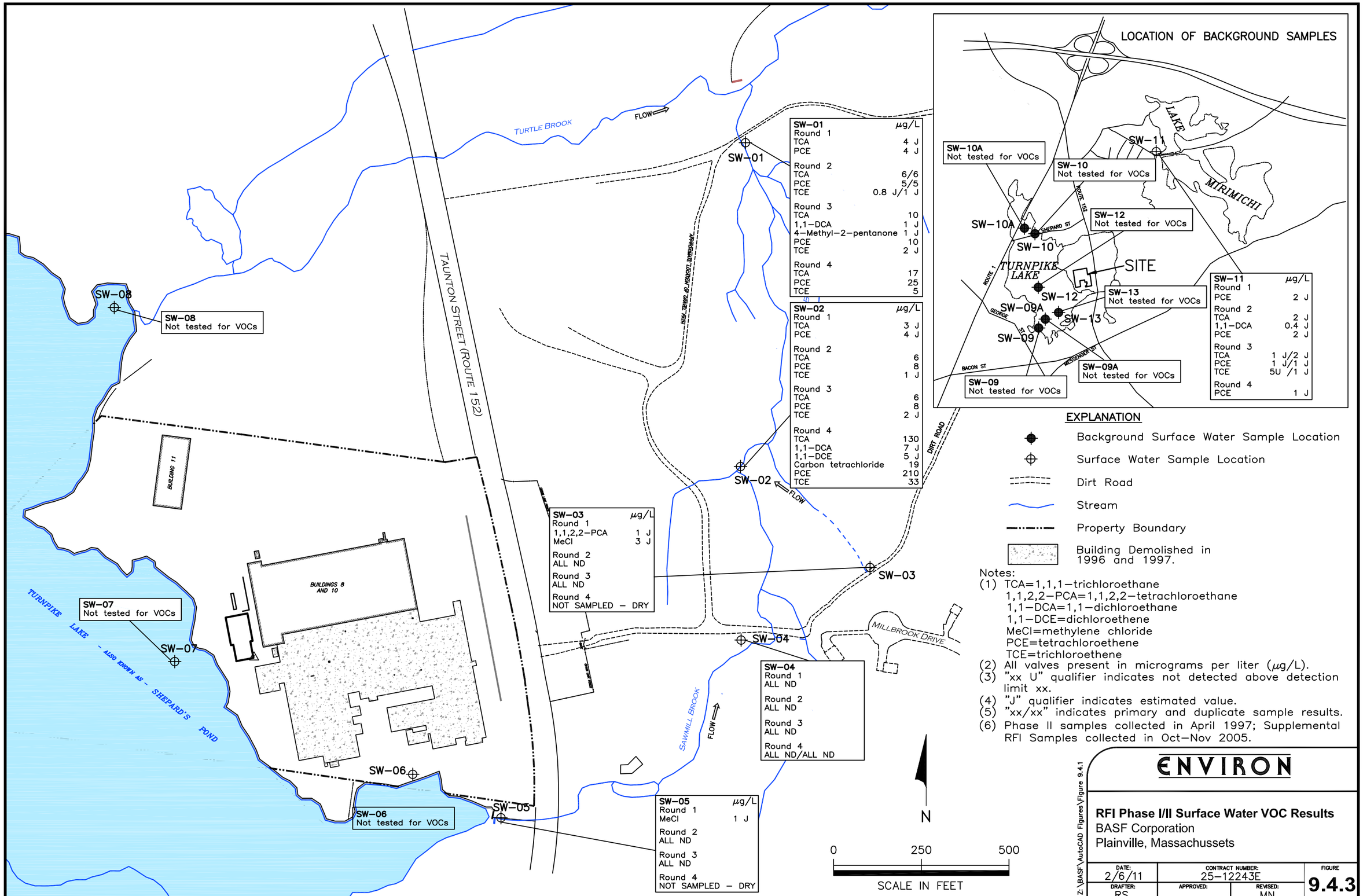
(6) Samples collected in March–April 1995 (Round 1); May 1995 (Round 2); May–January 1997 (Round 3); September 1997 (Round 4).

Z:\BASF\AutoCAD Figures\Figure 9.4.2\Figure 9.4.2

ENVIRON

Surface Water Metals Results
BASF Corporation
Plainville, Massachussets

DATE:	CONTRACT NUMBER:		FIGURE
2/6/11	25-12243J		9.4.2
DRAFTER: RS	APPROVED:	REVISED: MN	



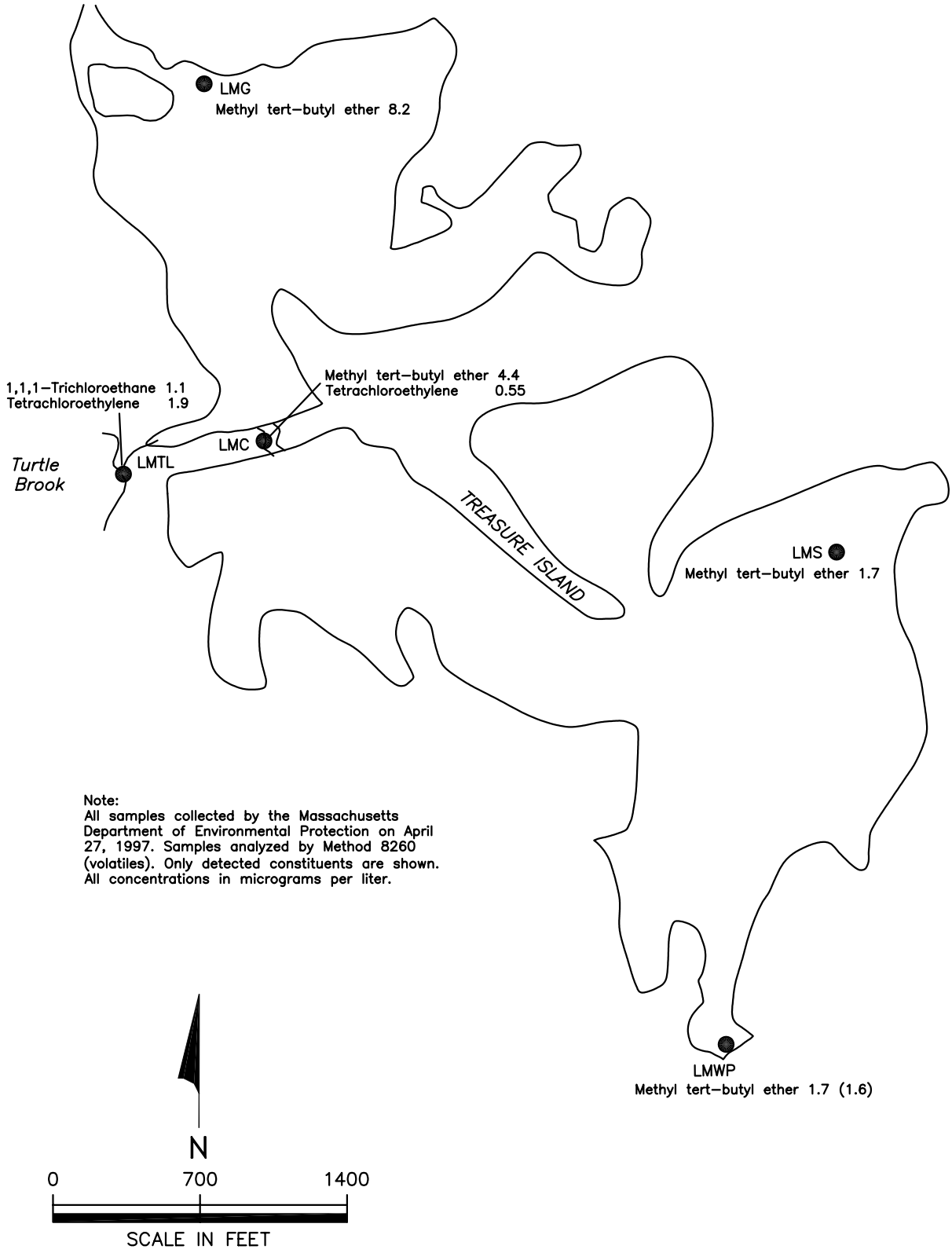
Notes:
(1) TCA=1,1,1-trichloroethane
1,1,2,2-PCA=1,1,2,2-tetrachloroethane
1,1-DCA=1,1-dichloroethane
1,1-DCE=dichloroethene
MeCl=methylene chloride
PCE=tetrachloroethene
TCE=trichloroethene
(2) All valves present in micrograms per liter (µg/L).
(3) "xx U" qualifier indicates not detected above detection limit xx.
(4) "J" qualifier indicates estimated value.
(5) "xx/xx" indicates primary and duplicate sample results.
(6) Phase II samples collected in April 1997; Supplemental RFI Samples collected in Oct-Nov 2005.

ENVIRON

RFI Phase I/II Surface Water VOC Results
BASF Corporation
Plainville, Massachussets

DATE:	CONTRACT NUMBER:		FIGURE
2/6/11	25-12243E		9.4.3
DRAFTER: RS	APPROVED:	REVISED: MN	

Z:\BASF\AutoCAD Figures\Figure 9.4.1



Note:
All samples collected by the Massachusetts Department of Environmental Protection on April 27, 1997. Samples analyzed by Method 8260 (volatiles). Only detected constituents are shown. All concentrations in micrograms per liter.

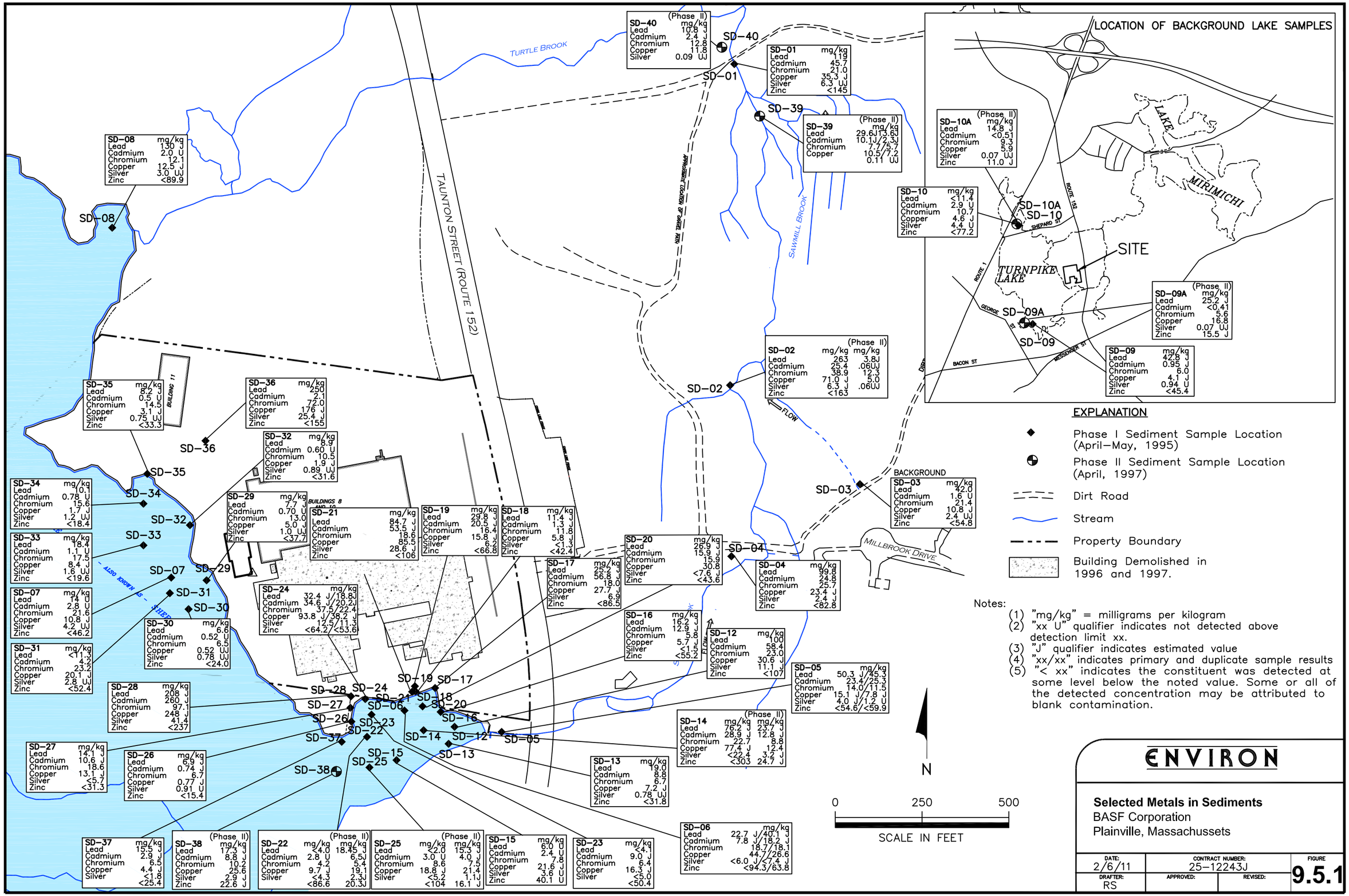
Z:\BASF\AutoCAD Figures\Figure 9.4.2

ENVIRON

Volatile Organics Detected in Surface Water from Lake Mirimichi
Plainville, Massachusetts

Figure
9.4.4

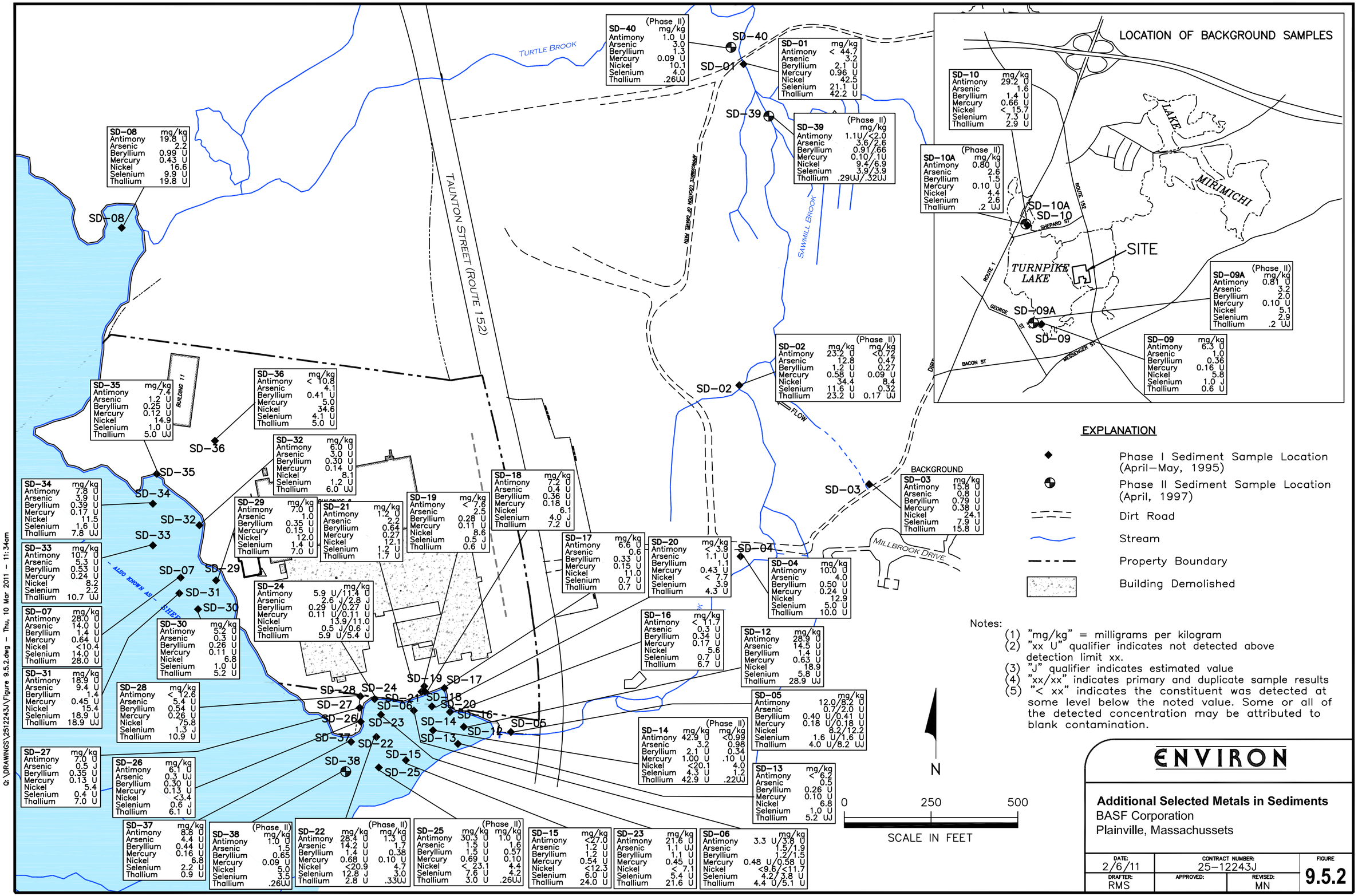
Drafter: RS | Date: 12/28/2006 | Contract Number: 25–12243E | Approved: | Revised:MN



ENVIRON

Selected Metals in Sediments
BASF Corporation
Plainville, Massachussets

DATE:	CONTRACT NUMBER:		FIGURE
2/6/11	25–12243J		9.5.1
DRAFTER: RS	APPROVED:	REVISED:	



SD-40	(Phase II) mg/kg
Antimony	1.0 U
Arsenic	3.0
Beryllium	1.3
Mercury	0.09 U
Nickel	10.1
Selenium	4.0
Thallium	.26UJ

SD-01	mg/kg
Antimony	< 44.7
Arsenic	3.2
Beryllium	2.1 U
Mercury	0.96 U
Nickel	42.5
Selenium	21.1 U
Thallium	42.2 U

SD-39	(Phase II) mg/kg
Antimony	1.1U/<2.0
Arsenic	3.6/2.6
Beryllium	0.91/.66
Mercury	0.10/.1U
Nickel	9.4/6.9
Selenium	3.9/3.9
Thallium	.29UJ/.32UJ

SD-10	mg/kg
Antimony	29.2 U
Arsenic	1.6
Beryllium	1.4 U
Mercury	0.66 U
Nickel	< 15.7
Selenium	7.3 U
Thallium	2.9 U

SD-10A	(Phase II) mg/kg
Antimony	0.80 U
Arsenic	2.6
Beryllium	1.5
Mercury	0.10 U
Nickel	4.4
Selenium	2.6
Thallium	.2 UJ

SD-09A	(Phase II) mg/kg
Antimony	0.81 U
Arsenic	3.2
Beryllium	2.0
Mercury	0.10 U
Nickel	5.1
Selenium	2.9
Thallium	.2 UJ

SD-09	mg/kg
Antimony	6.3 U
Arsenic	1.0
Beryllium	0.36
Mercury	0.16 U
Nickel	5.8
Selenium	1.0 J
Thallium	0.6 U

SD-08	mg/kg
Antimony	19.8 U
Arsenic	2.2
Beryllium	0.99 U
Mercury	0.43 U
Nickel	16.6
Selenium	9.9 U
Thallium	19.8 U

SD-02	mg/kg	(Phase II) mg/kg
Antimony	23.2 U	<0.72
Arsenic	12.8	0.47
Beryllium	1.2 U	0.27
Mercury	0.58 U	0.09 U
Nickel	34.4	8.4
Selenium	11.6 U	0.32
Thallium	23.2 U	0.17 UJ

SD-03	mg/kg
Antimony	15.8 U
Arsenic	0.8 U
Beryllium	0.79 U
Mercury	0.38 U
Nickel	24.1
Selenium	7.9 U
Thallium	15.8 U

SD-35	mg/kg
Antimony	7.4
Arsenic	1.2 U
Beryllium	0.25 U
Mercury	0.12 U
Nickel	14.9
Selenium	1.0 U
Thallium	5.0 UJ

SD-36	mg/kg
Antimony	< 10.8
Arsenic	4.1
Beryllium	0.41 U
Mercury	5.0
Nickel	34.6
Selenium	4.1 U
Thallium	5.0 U

SD-32	mg/kg
Antimony	6.0 U
Arsenic	3.0 U
Beryllium	0.30 U
Mercury	0.14 U
Nickel	8.1
Selenium	1.2 U
Thallium	6.0 UJ

SD-18	mg/kg
Antimony	7.2 U
Arsenic	0.4 U
Beryllium	0.36 U
Mercury	0.18 U
Nickel	6.1
Selenium	4.0 J
Thallium	7.2 U

SD-34	mg/kg
Antimony	7.8 U
Arsenic	3.9 U
Beryllium	0.39 U
Mercury	0.17 U
Nickel	11.5
Selenium	1.6 U
Thallium	7.8 UJ

SD-29	mg/kg
Antimony	7.0 U
Arsenic	1.0
Beryllium	0.35 U
Mercury	0.15 U
Nickel	12.0
Selenium	1.4 U
Thallium	7.0 U

SD-21	mg/kg
Antimony	1.2 U
Arsenic	2.2
Beryllium	0.64
Mercury	0.27
Nickel	12.1
Selenium	1.2 U
Thallium	1.7 U

SD-19	mg/kg
Antimony	< 7.6
Arsenic	2.5
Beryllium	0.28 U
Mercury	0.11 U
Nickel	8.6
Selenium	0.5 J
Thallium	0.6 U

SD-17	mg/kg
Antimony	6.6 U
Arsenic	0.6
Beryllium	0.33 U
Mercury	0.15 U
Nickel	11.0
Selenium	0.7 U
Thallium	0.7 U

SD-20	mg/kg
Antimony	< 3.9
Arsenic	1.1 U
Beryllium	1.1
Mercury	0.43 U
Nickel	< 7.7
Selenium	3.9
Thallium	4.3 U

SD-04	mg/kg
Antimony	10.0 U
Arsenic	4.0
Beryllium	0.50 U
Mercury	0.24 U
Nickel	12.9
Selenium	5.0 U
Thallium	10.0 U

SD-33	mg/kg
Antimony	10.7 U
Arsenic	5.3 U
Beryllium	0.53 U
Mercury	0.24 U
Nickel	8.2
Selenium	2.2
Thallium	10.7 UJ

SD-24	mg/kg
Antimony	5.9 U/11.4 U
Arsenic	2.6 J/2.8 J
Beryllium	0.29 U/0.27 U
Mercury	0.11 U/0.11 U
Nickel	13.9/11.0
Selenium	0.5 J/0.6 J
Thallium	5.9 U/5.4 U

SD-16	mg/kg
Antimony	< 11.7
Arsenic	0.3 U
Beryllium	0.34 U
Mercury	0.17 U
Nickel	5.6
Selenium	0.7 U
Thallium	6.7 U

SD-12	mg/kg
Antimony	28.9 U
Arsenic	14.5 U
Beryllium	1.4 U
Mercury	0.63 U
Nickel	18.9
Selenium	5.8 U
Thallium	28.9 UJ

SD-07	mg/kg
Antimony	28.0 U
Arsenic	14.0 U
Beryllium	1.4 U
Mercury	0.64 U
Nickel	<10.4
Selenium	14.0 U
Thallium	28.0 U

SD-30	mg/kg
Antimony	5.2 U
Arsenic	0.3 U
Beryllium	0.26 U
Mercury	0.11 U
Nickel	6.8
Selenium	1.0 U
Thallium	5.2 U

SD-31	mg/kg
Antimony	18.9 U
Arsenic	9.4 U
Beryllium	1.4
Mercury	0.45 U
Nickel	15.4
Selenium	18.9 U
Thallium	18.9 UJ

SD-28	mg/kg
Antimony	< 12.6
Arsenic	5.4 U
Beryllium	0.54 U
Mercury	0.26 U
Nickel	75.8
Selenium	1.3 J
Thallium	10.9 U

SD-05	mg/kg
Antimony	12.0/8.2 U
Arsenic	0.7/2.0 U
Beryllium	0.40 U/0.41 U
Mercury	0.18 U/0.18 U
Nickel	8.2/12.2
Selenium	1.6 U/1.6 U
Thallium	4.0 U/8.2 UJ

SD-14	mg/kg	(Phase II) mg/kg
Antimony	42.9 U	<0.99
Arsenic	3.2	0.98
Beryllium	2.1 U	0.34
Mercury	1.00 U	.10 U
Nickel	<20.1	4.0
Selenium	4.3 U	1.2
Thallium	42.9 U	.22UJ

SD-27	mg/kg
Antimony	7.0 U
Arsenic	0.5 J
Beryllium	0.35 U
Mercury	0.13 U
Nickel	5.4
Selenium	0.4 U
Thallium	7.0 U

SD-26	mg/kg
Antimony	6.1 U
Arsenic	0.3 UJ
Beryllium	0.30 U
Mercury	0.13 U
Nickel	<3.4
Selenium	0.6 J
Thallium	6.1 U

SD-13	mg/kg
Antimony	< 6.2
Arsenic	0.5
Beryllium	0.26 U
Mercury	0.10 U
Nickel	6.8
Selenium	1.0 U
Thallium	5.2 UJ

SD-37	mg/kg
Antimony	8.8 U
Arsenic	4.4 U
Beryllium	0.44 U
Mercury	0.16 U
Nickel	6.8
Selenium	2.2 U
Thallium	0.9 U

SD-38	(Phase II) mg/kg
Antimony	1.0 U
Arsenic	1.5
Beryllium	0.65
Mercury	0.09 U
Nickel	5.0
Selenium	3.5
Thallium	.26UJ

SD-22	mg/kg	(Phase II) mg/kg
Antimony	28.4 U	1.3 U
Arsenic	14.2 U	1.7
Beryllium	1.4 U	0.38
Mercury	0.68 U	0.10 U
Nickel	<20.9	4.7
Selenium	12.8 J	3.0
Thallium	2.8 U	.33UJ

SD-25	mg/kg	(Phase II) mg/kg
Antimony	30.3 U	1.0 U
Arsenic	1.5 U	1.6
Beryllium	1.5 U	0.57
Mercury	0.69 U	0.10
Nickel	< 23.1	4.4
Selenium	7.6 U	4.2
Thallium	3.0 U	.26UJ

SD-15	mg/kg
Antimony	<27.0
Arsenic	1.2 U
Beryllium	1.2 U
Mercury	0.54 U
Nickel	<12.3
Selenium	6.0 U
Thallium	24.0 U

SD-23	mg/kg
Antimony	21.6 U
Arsenic	1.1 UJ
Beryllium	1.1 U
Mercury	0.45 U
Nickel	< 7.1
Selenium	5.4 U
Thallium	21.6 U

SD-06	mg/kg
Antimony	3.3 U/3.8 U
Arsenic	1.5/1.9
Beryllium	1.2/1.5
Mercury	0.48 U/0.58 U
Nickel	<9.6/<11.7
Selenium	4.2/3.8 U
Thallium	4.4 U/5.1 U

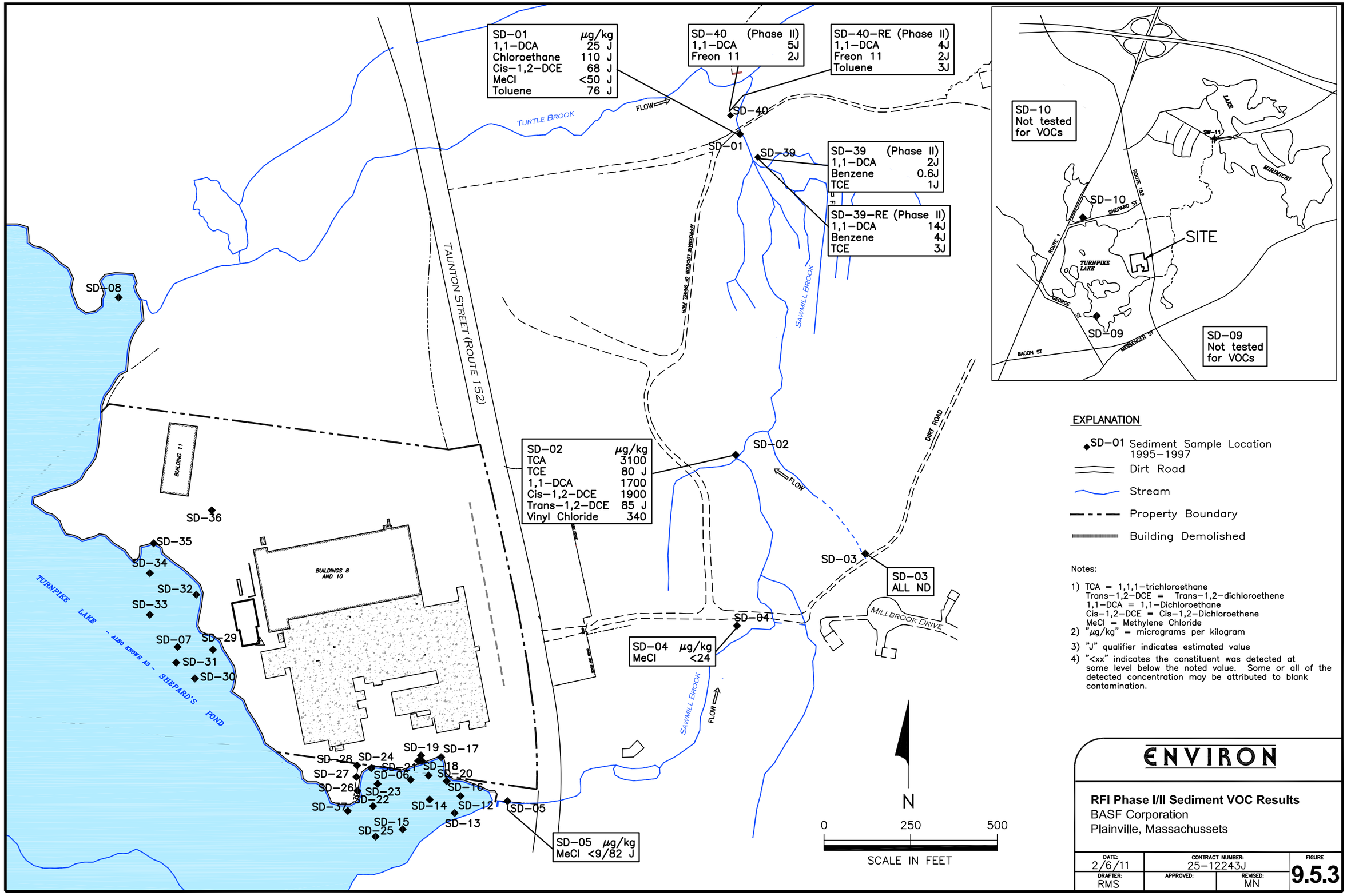
Notes:

(1) "mg/kg" = milligrams per kilogram
(2) "xx U" qualifier indicates not detected above detection limit xx.
(3) "J" qualifier indicates estimated value
(4) "xx/xx" indicates primary and duplicate sample results
(5) "< xx" indicates the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.

ENVIRON

Additional Selected Metals in Sediments
BASF Corporation
Plainville, Massachussets

DATE: 2/6/11	CONTRACT NUMBER: 25-12243J		FIGURE 9.5.2
DRAFTER: RMS	APPROVED:	REVISED: MN	



EXPLANATION

- SD-01 Sediment Sample Location 1995–1997
- Dirt Road
- Stream
- Property Boundary
- Building Demolished

Notes:

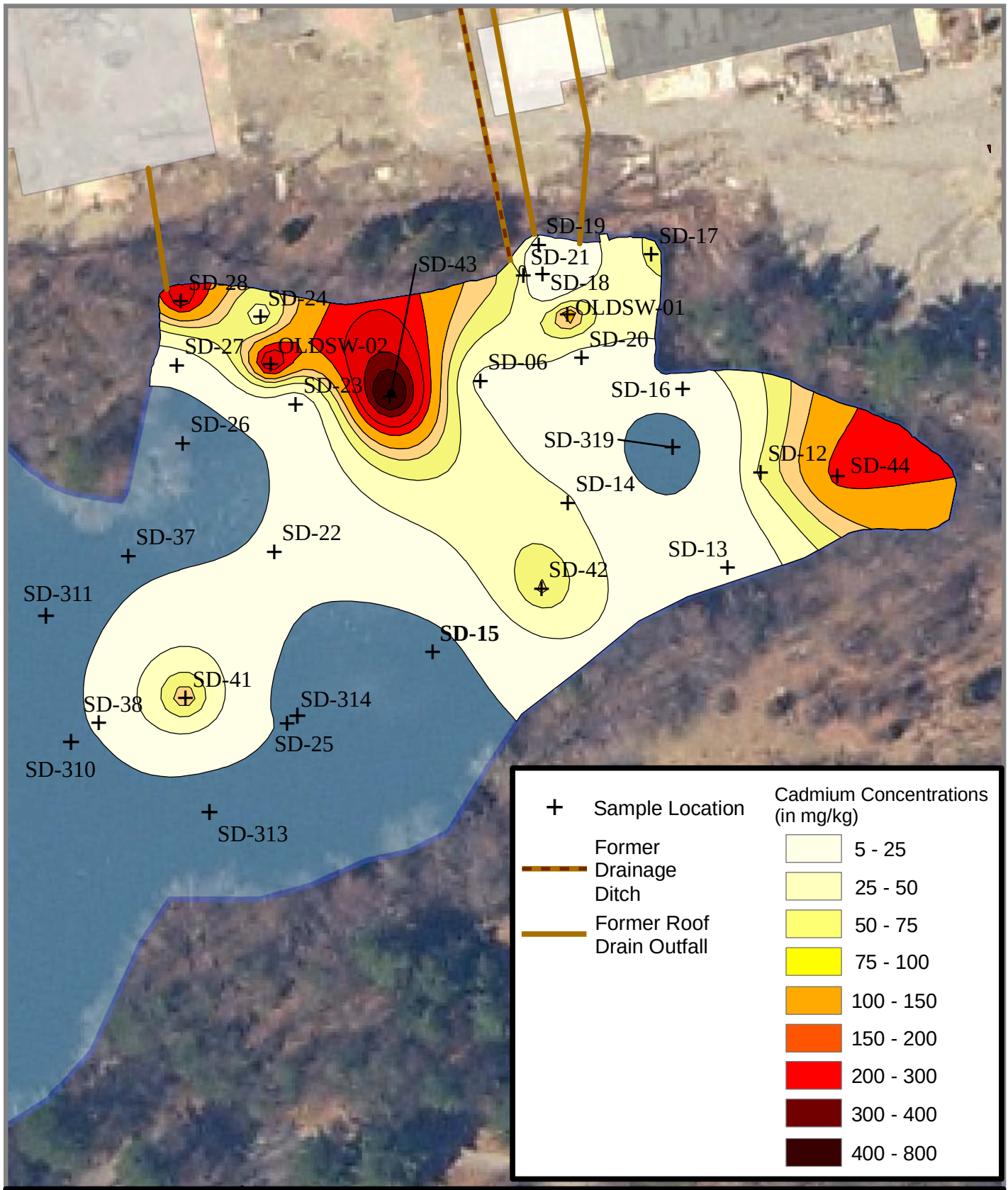
1) TCA = 1,1,1-trichloroethane
   Trans-1,2-DCE = Trans-1,2-dichloroethene
   1,1-DCA = 1,1-Dichloroethane
   Cis-1,2-DCE = Cis-1,2-Dichloroethene
   MeCl = Methylene Chloride
2) "µg/kg" = micrograms per kilogram
3) "J" qualifier indicates estimated value
4) "<xx" indicates the constituent was detected at some level below the noted value. Some or all of the detected concentration may be attributed to blank contamination.

ENVIRON

RFI Phase I/II Sediment VOC Results
BASF Corporation
Plainville, Massachussets

DATE:	CONTRACT NUMBER:		FIGURE
2/6/11	25-12243J		9.5.3
DRAFTER: RMS	APPROVED:	REVISED: MN	

Q:\DRAWINGS\2512243J\Figure 9.5.3.dwg – Wed, 23 Mar 2011 – 2:59pm



ENVIRON
www.environcorp.com

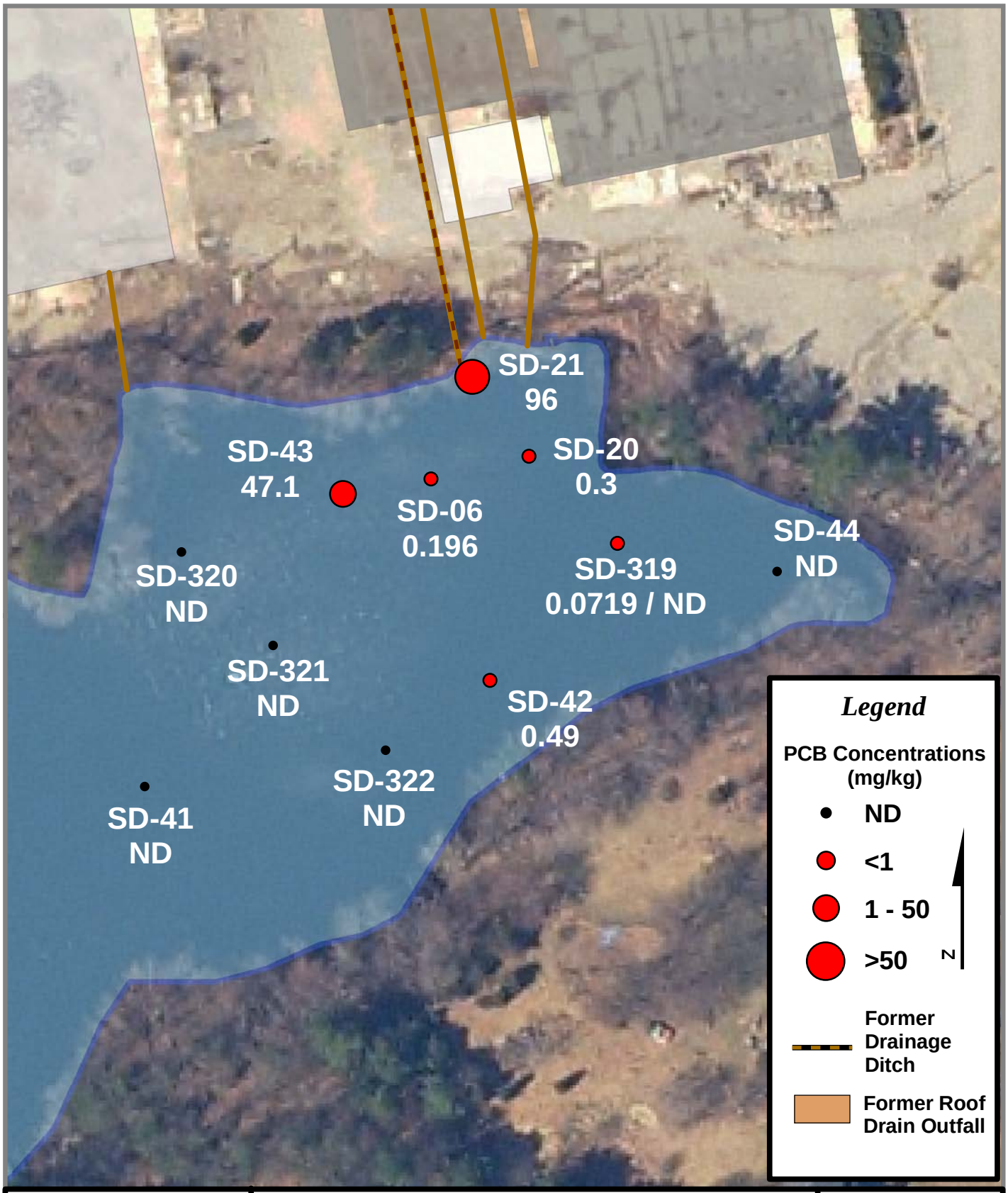
0 50 Feet

N

Distribution of Cadmium in the South Embayment of Turnpike Lake

BASF Facility, Plainville Massachusetts

FIGURE 9.5.4



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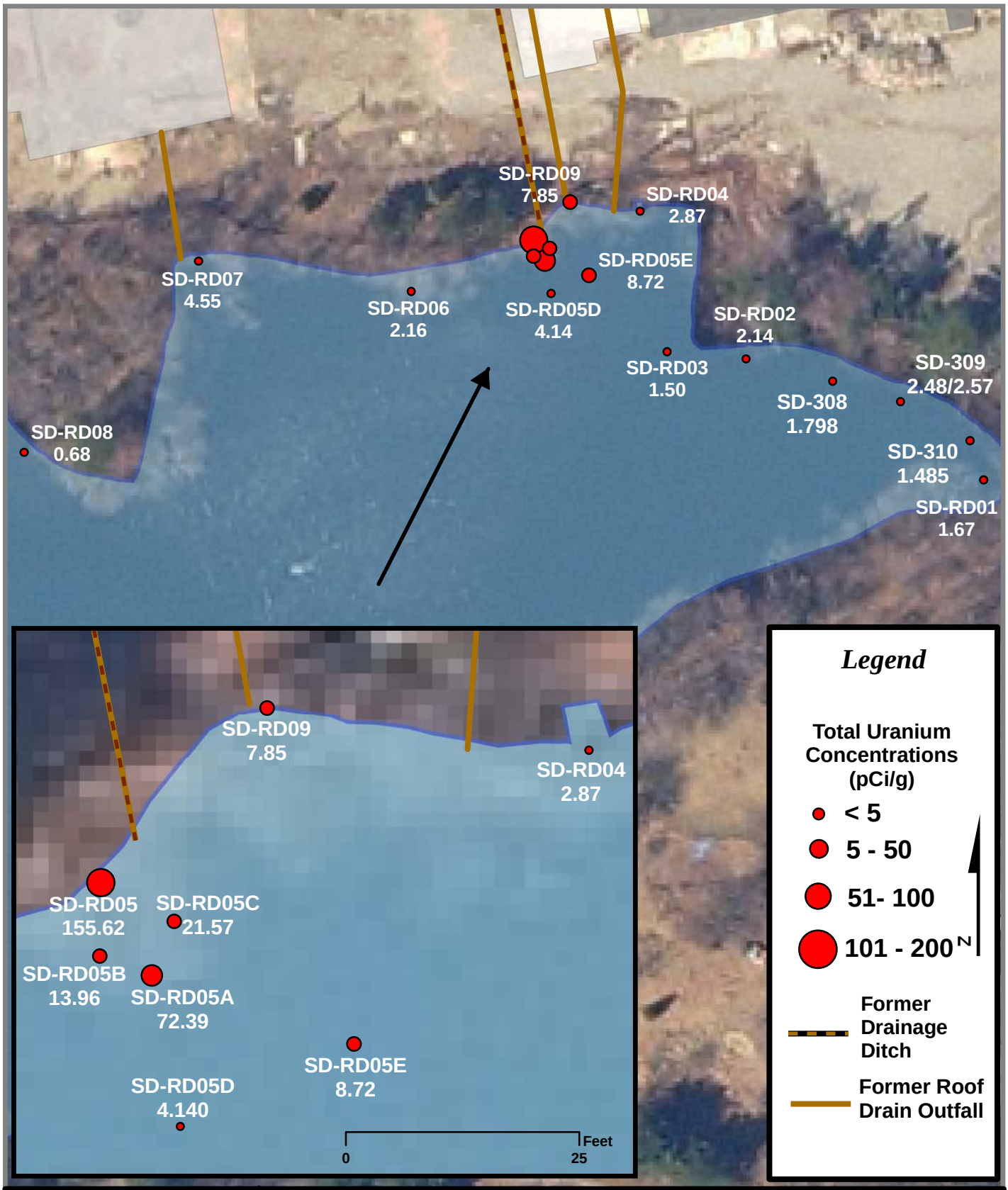
0 50 100 Feet

Distribution of PCBs in the South Embayment of Turnpike Lake

BASF Facility, Plainville Massachusetts

FIGURE 9.5.5



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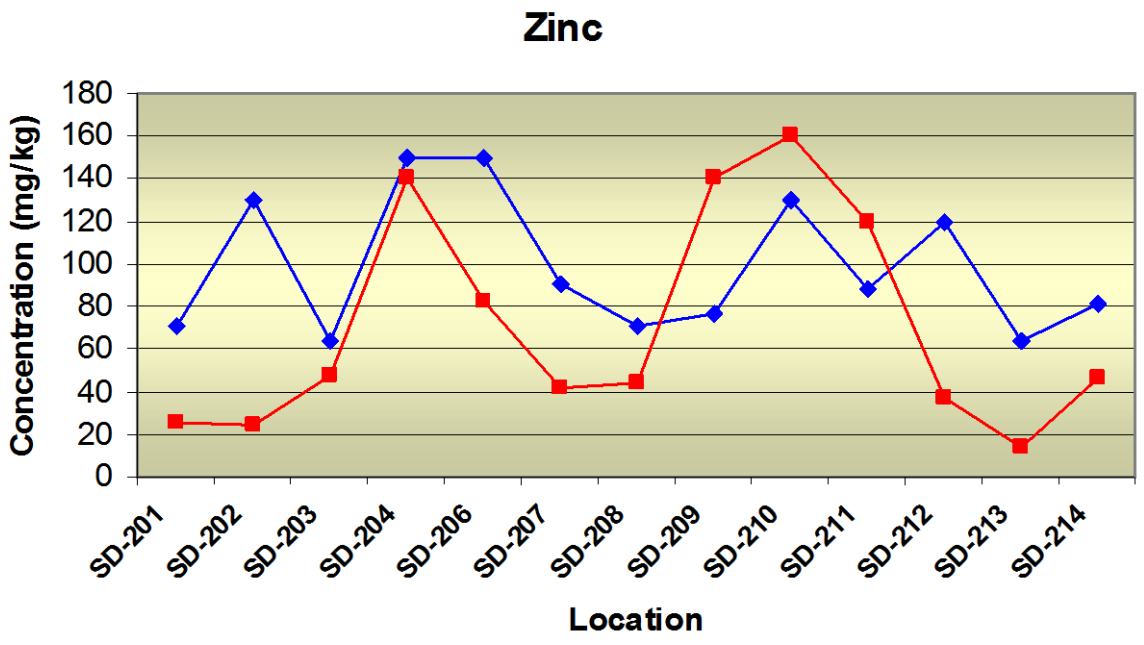
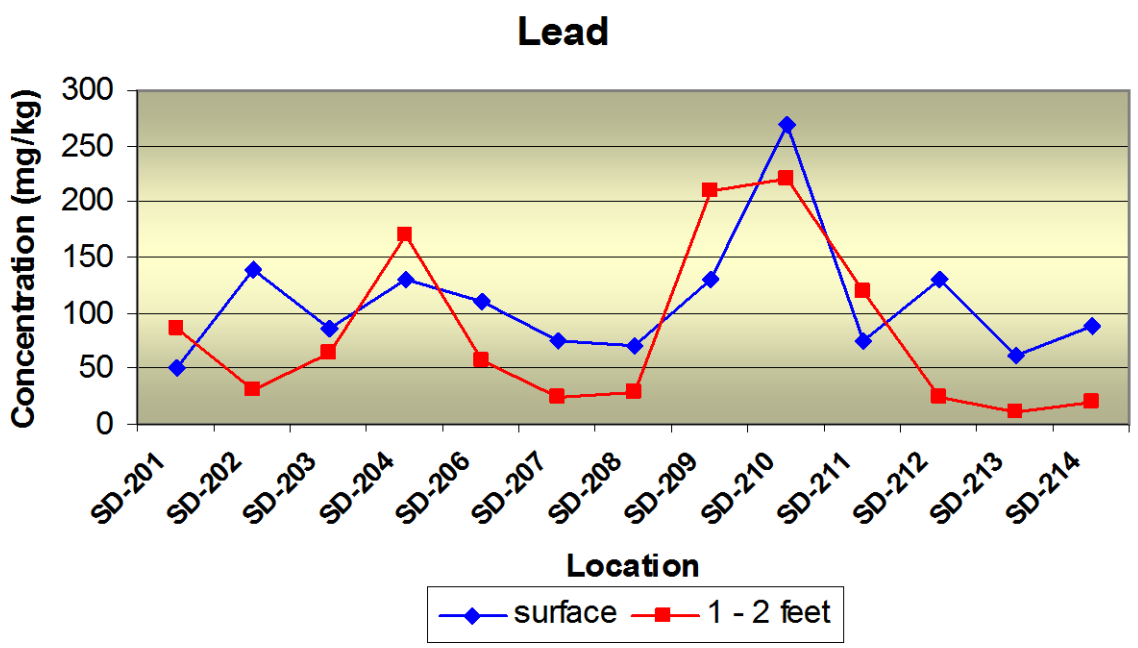
Feet
0 50 100

Distribution of Total Uranium in the South Embayment of Turnpike Lake
BASF Corporation, Plainville, Massachusetts

FIGURE 9.5.6





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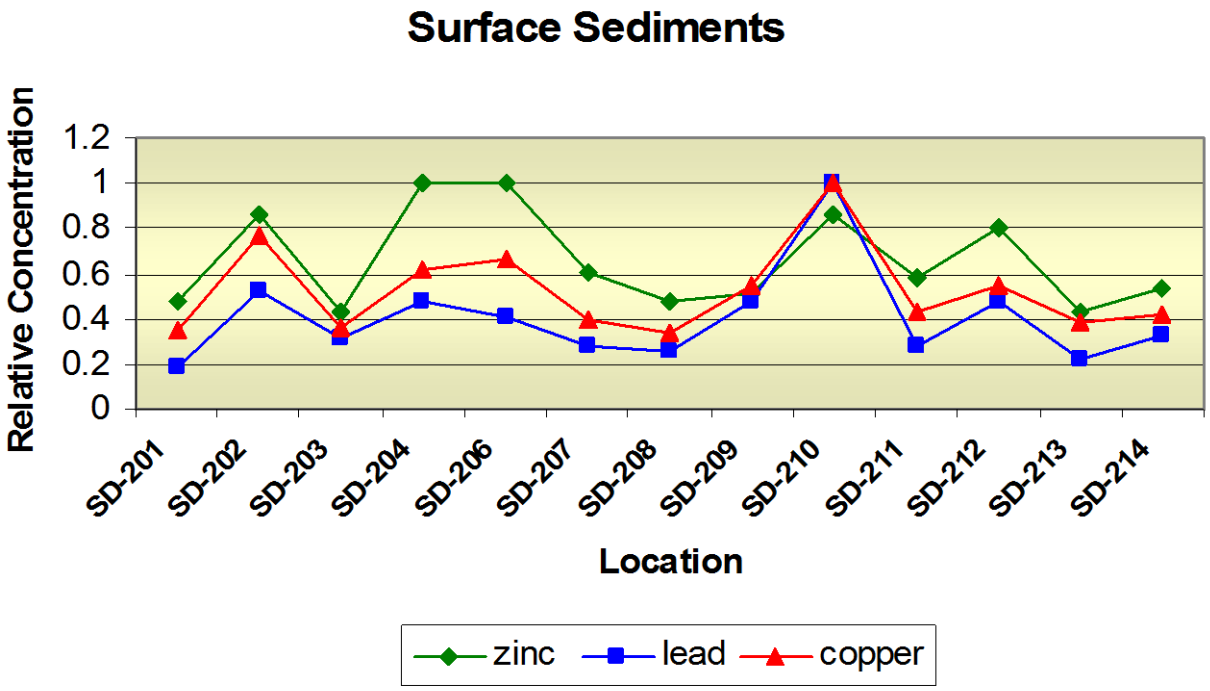
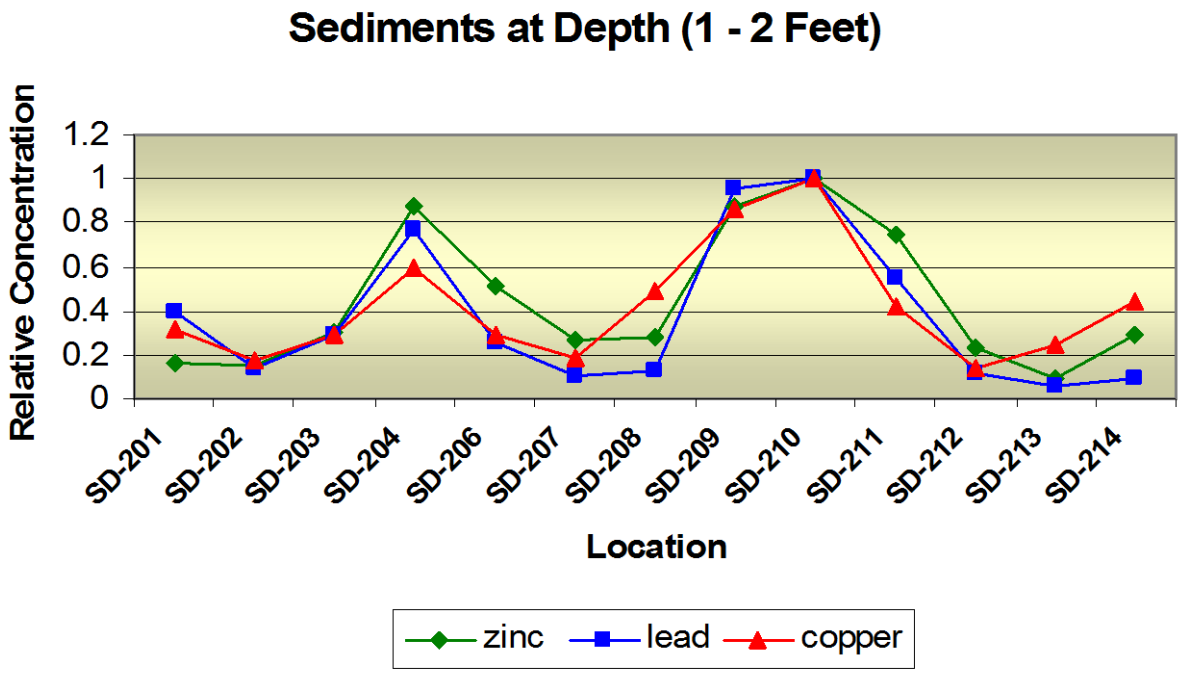
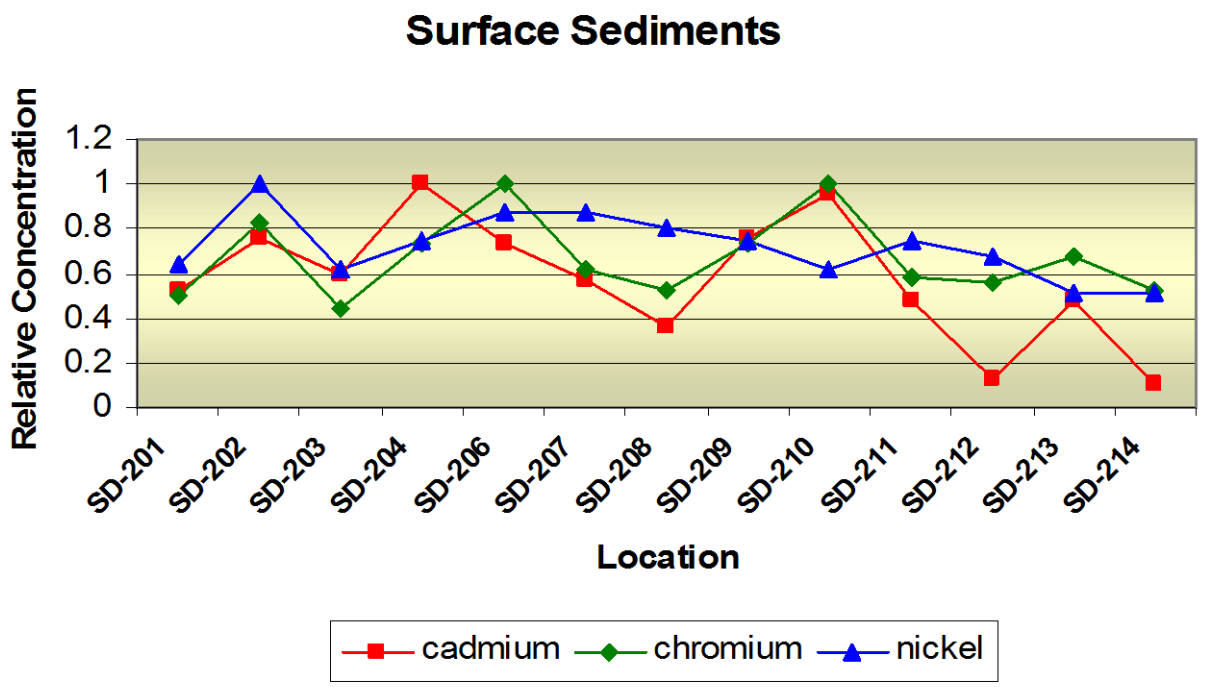
Concentrations of Zinc and Lead in Sawmill Brook Sediments

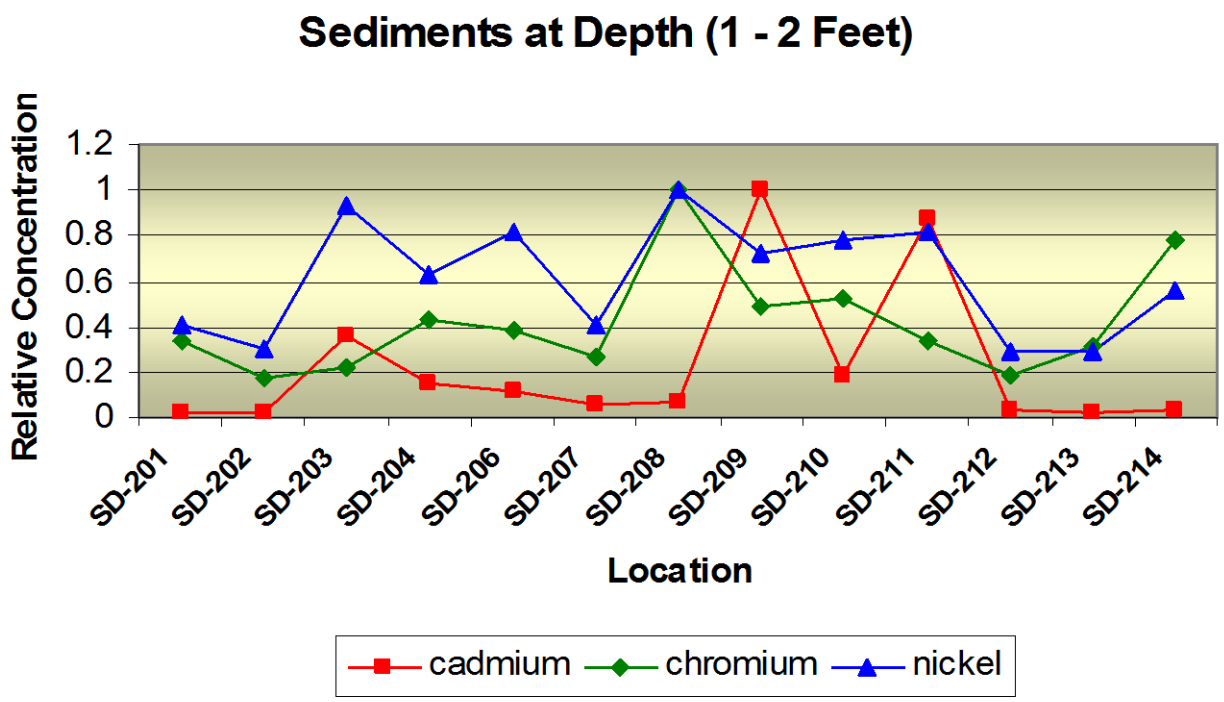
Figure 9.5.7



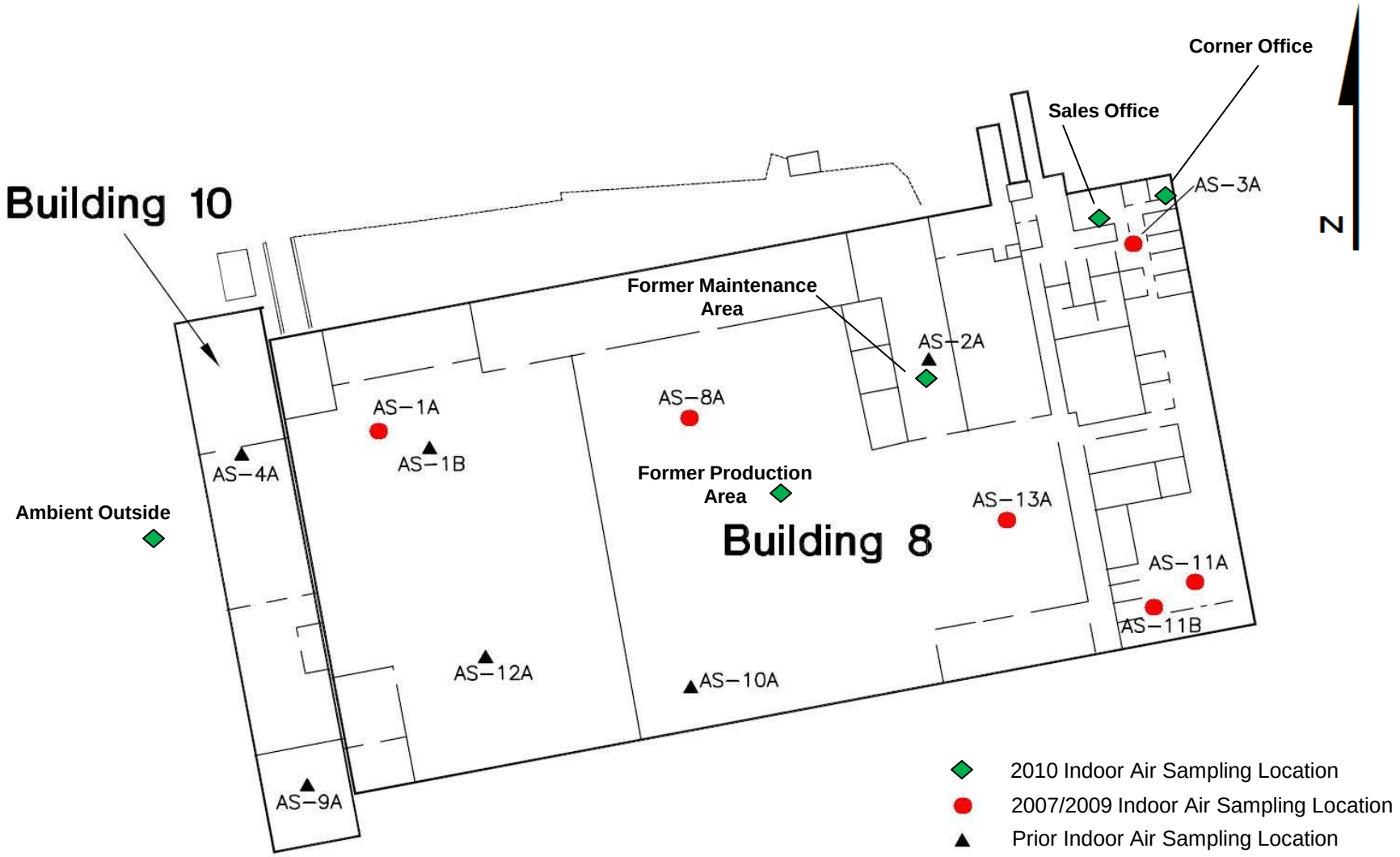


ENVIRON	**Relative Concentrations of Zinc, Lead and Copper in Sawmill Brook Sediments at the Surface and at Depth (1 – 2 feet)**	**Figure 9.5.8**





ENVIRON	**Relative Concentrations of Cadmium, Chromium and Nickel in Sawmill Brook Sediments at the Surface and at Depth**	**Figure 9.5.9**



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Indoor Air Sampling Locations

BASF Corporation – Plainville, Massachusetts

FIGURE 9.7.1

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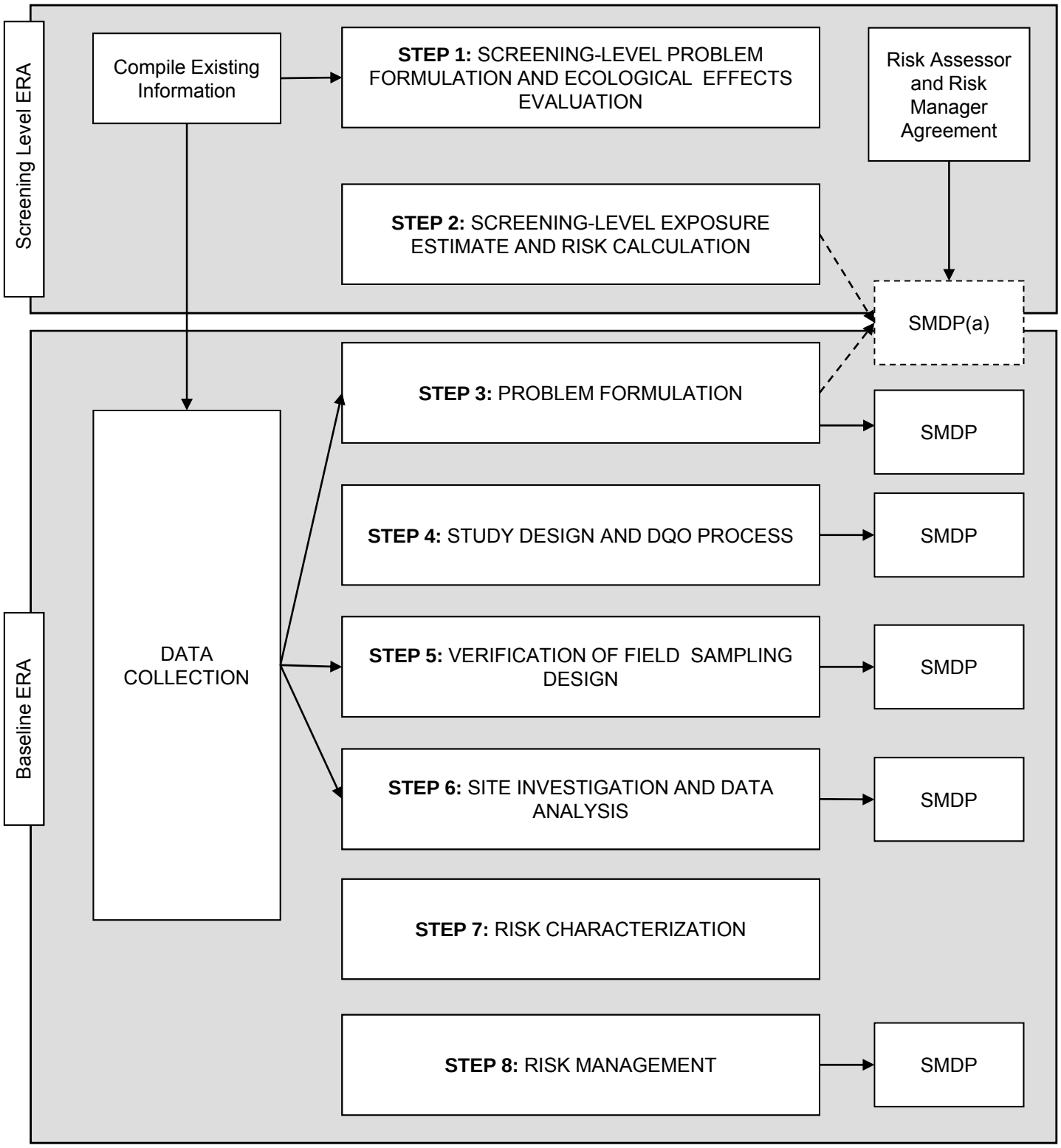
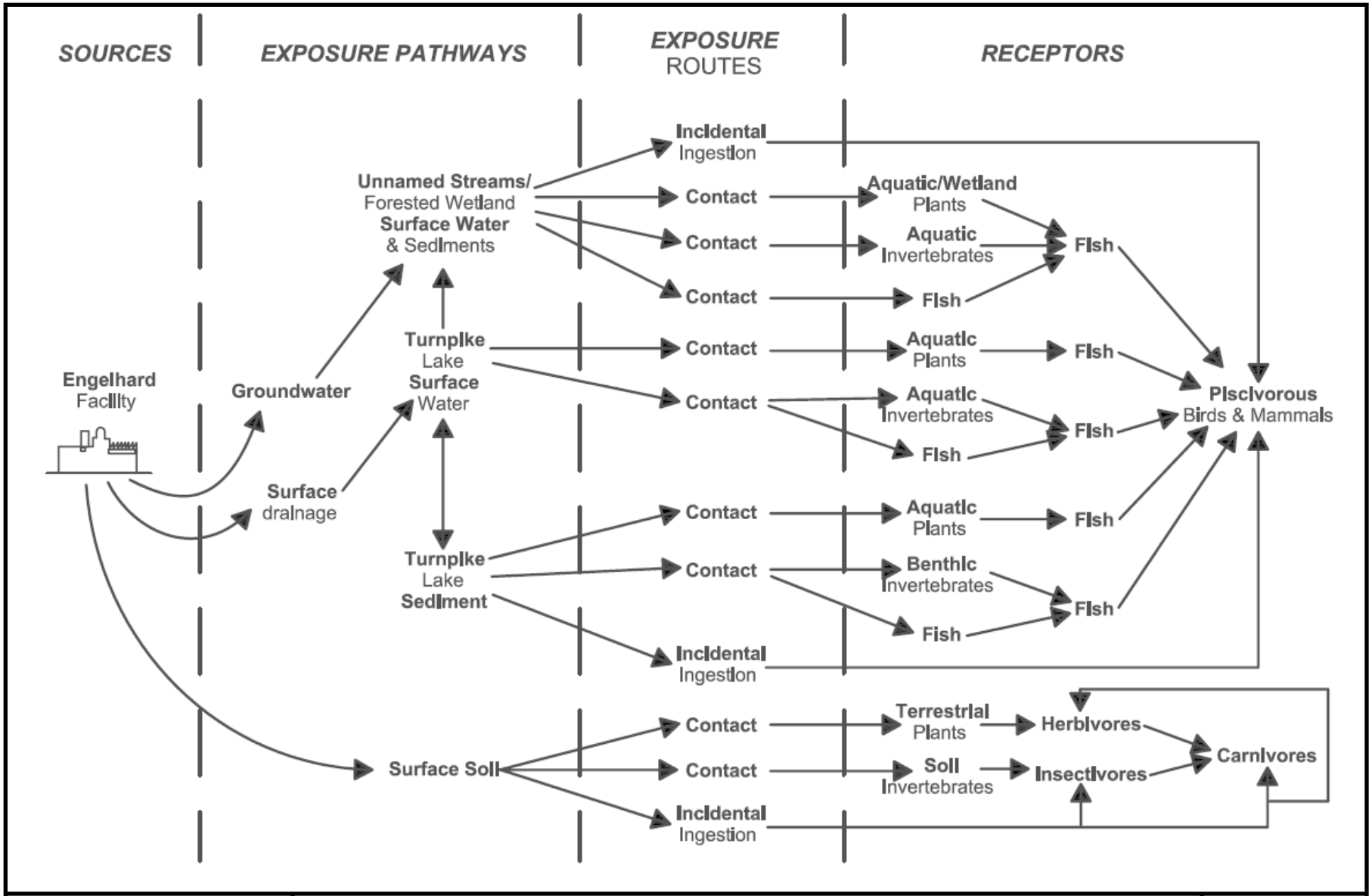
Figure 11-1

USEPA Eight-Step Ecological Risk Assessment Process
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts



Notes:

(a) SDMP occurs EITHER after Step 2 or after Step 3a.
ERA Ecological Risk Assessment.
SMDP Scientific Management Decision Point.
Source: Adapted from USEPA, 2000a.



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Diagrammatic Conceptual Site Model for the Study Area

Revised Draft RFI Report, BASF Corporation, Plainville, Massachusetts

FIGURE 11.2

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Figure 11-3

Benthic Community Assessment Metric Results
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

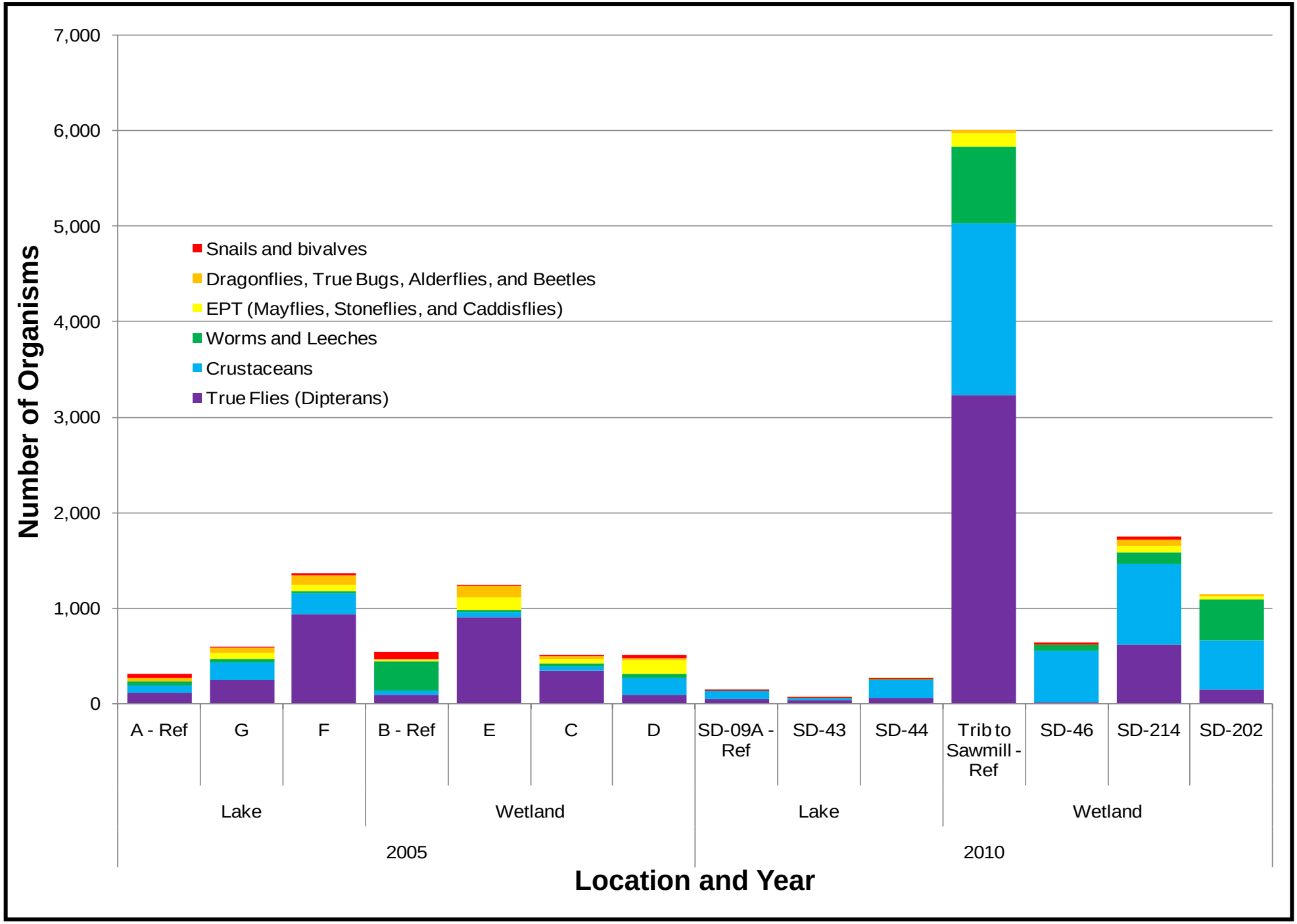

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Figure 11-4

Cadmium Species Sensitivity Distribution
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

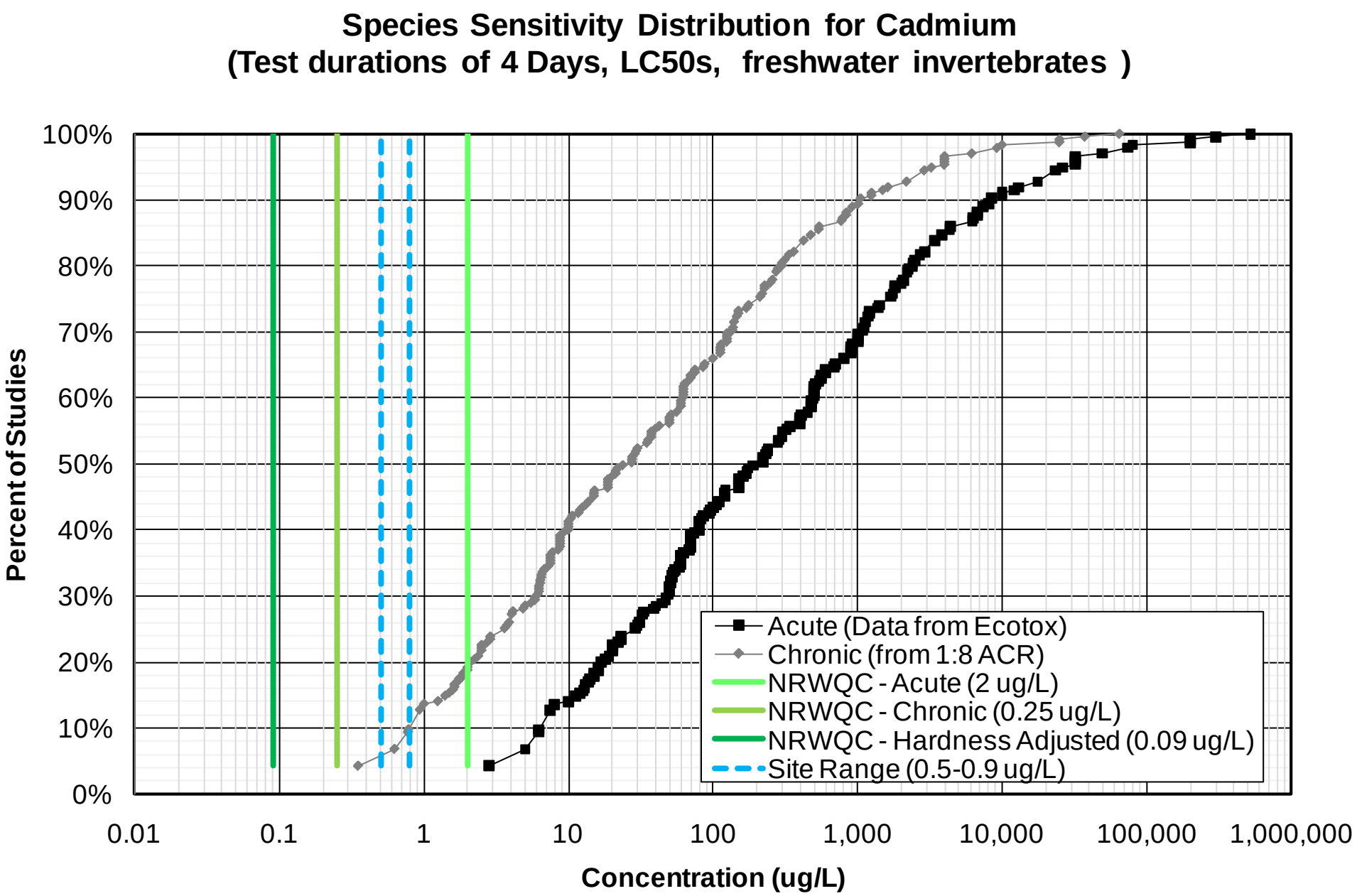

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Figure 11-5

Cadmium Species Sensitivity Distribution
Revised Draft RFI Report
BASF Corporation, Plainville, Massachusetts

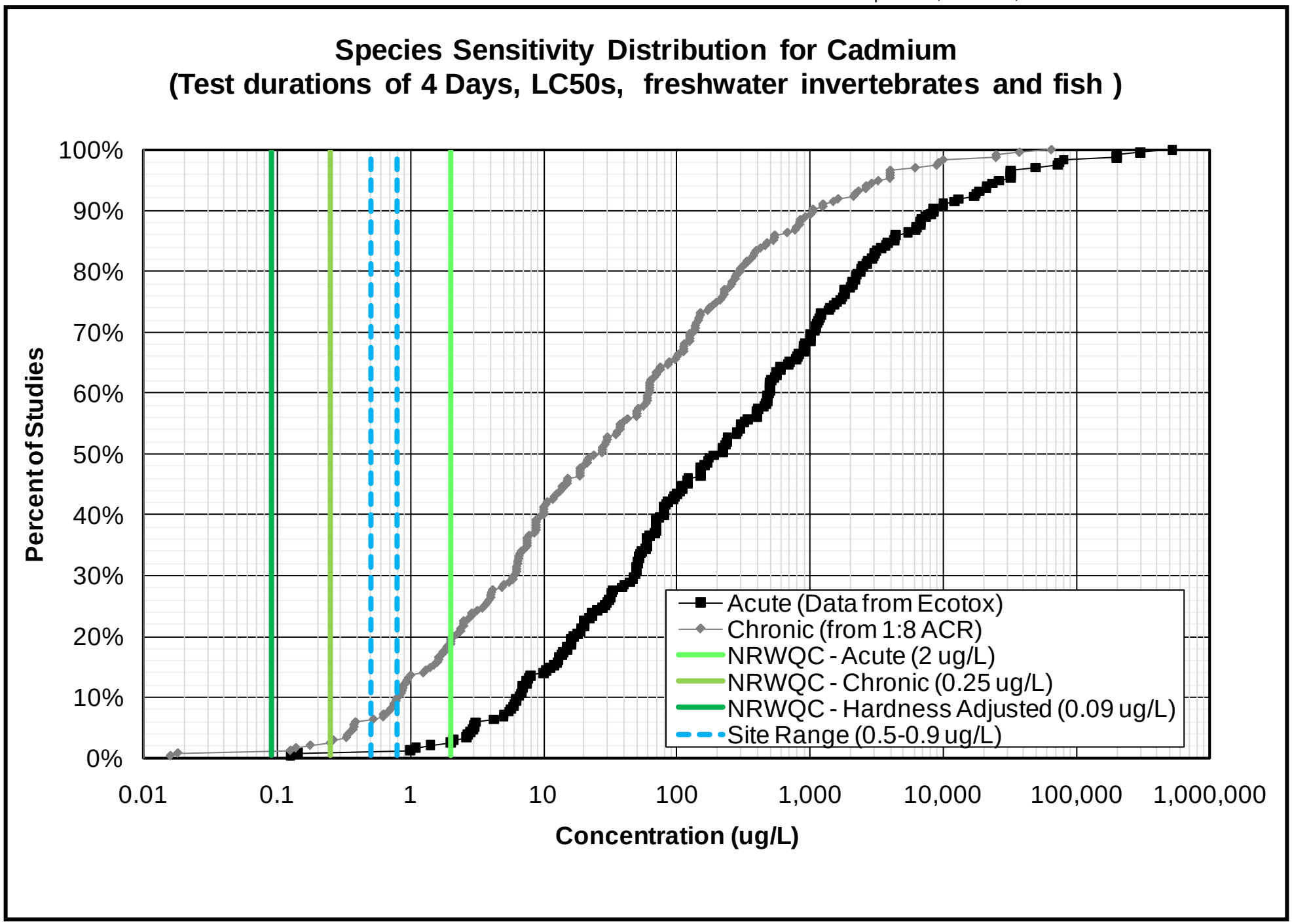

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Figure 11-6

Relative Size of AOC B

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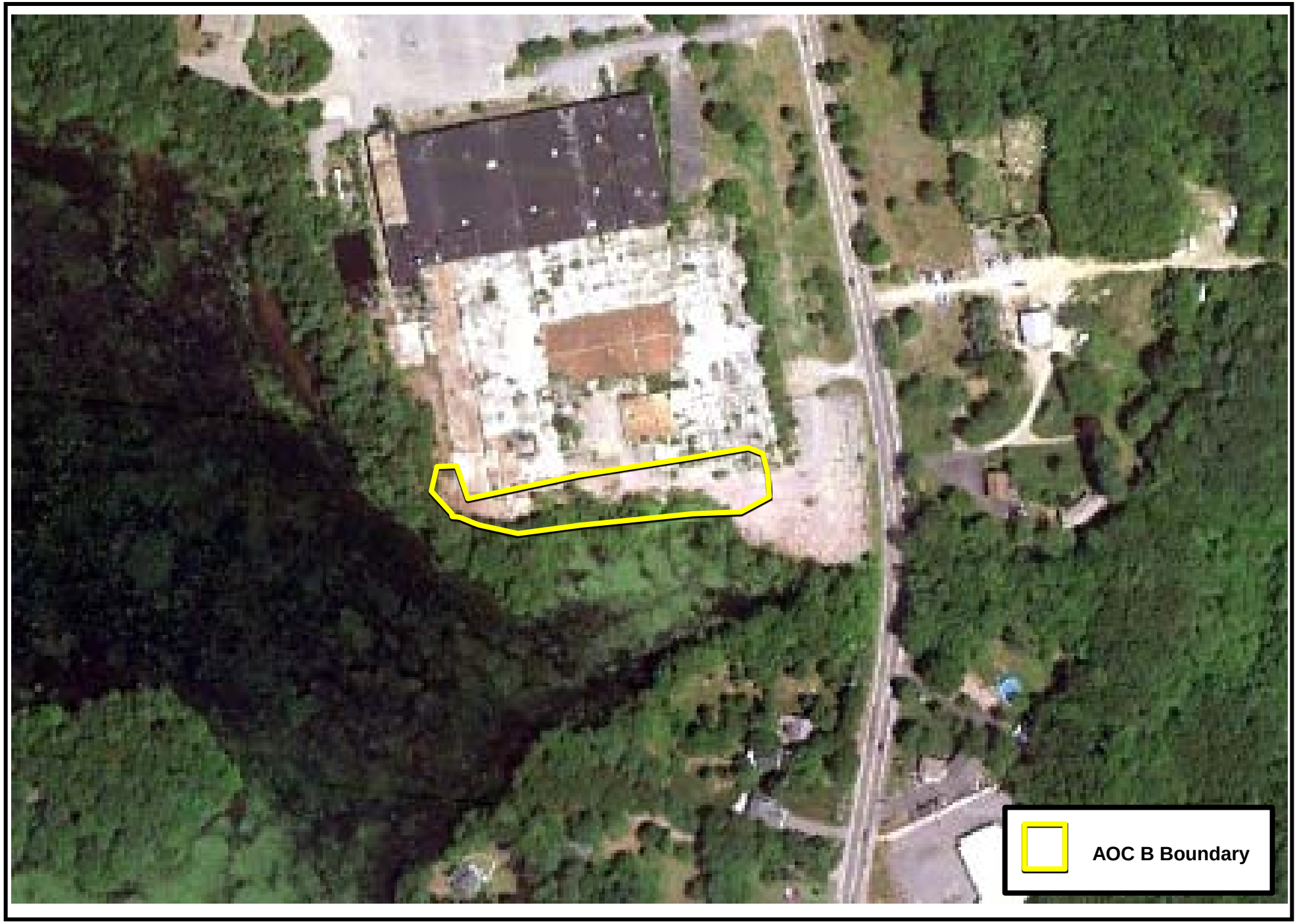

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Figure 11-7

AOC B Photos

Revised Draft RFI Report

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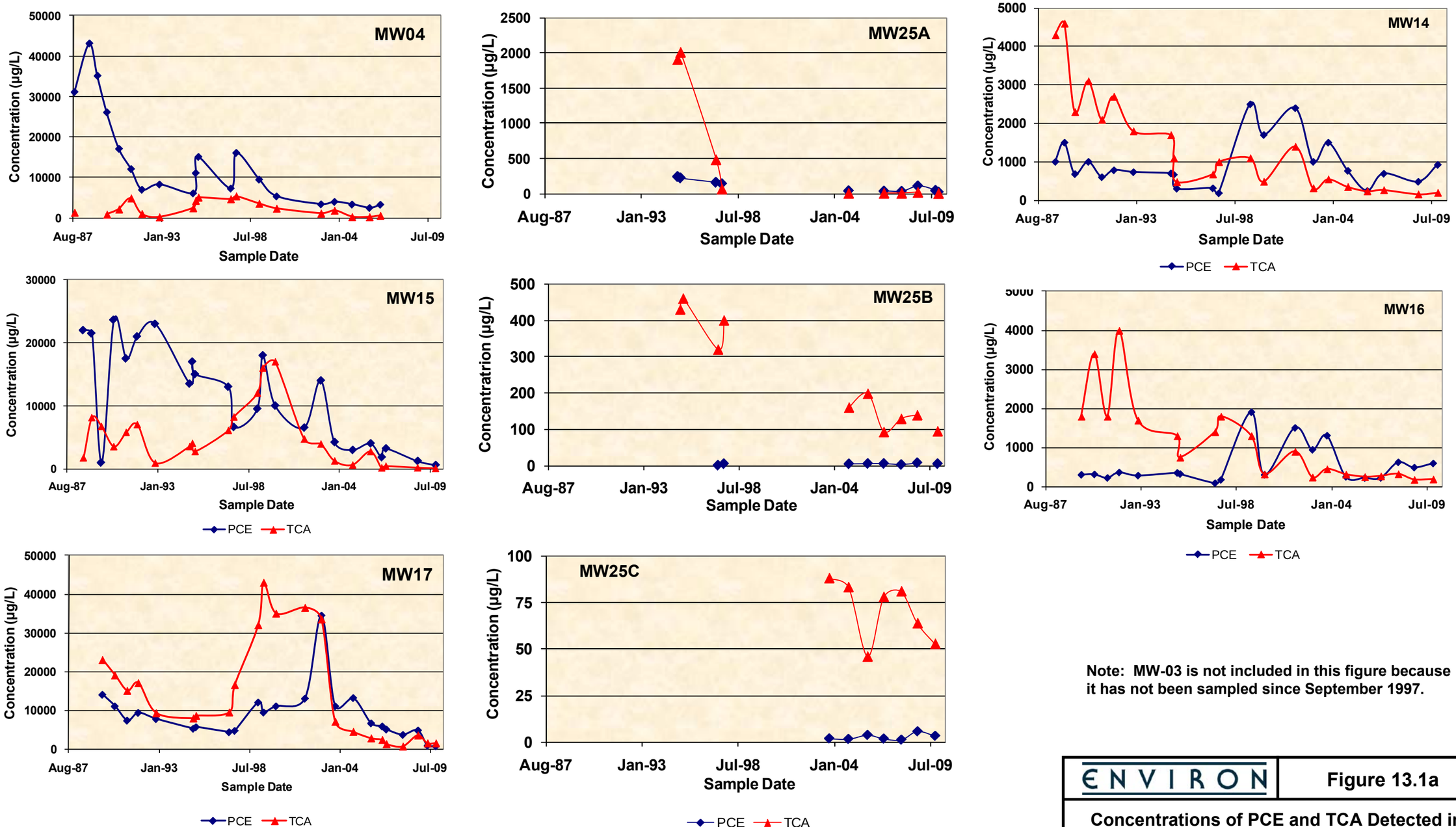

Note: MW-03 is not included in this figure because it has not been sampled since September 1997.

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Figure 13.1a

Concentrations of PCE and TCA Detected in Monitoring Well Nests Located along the GSM

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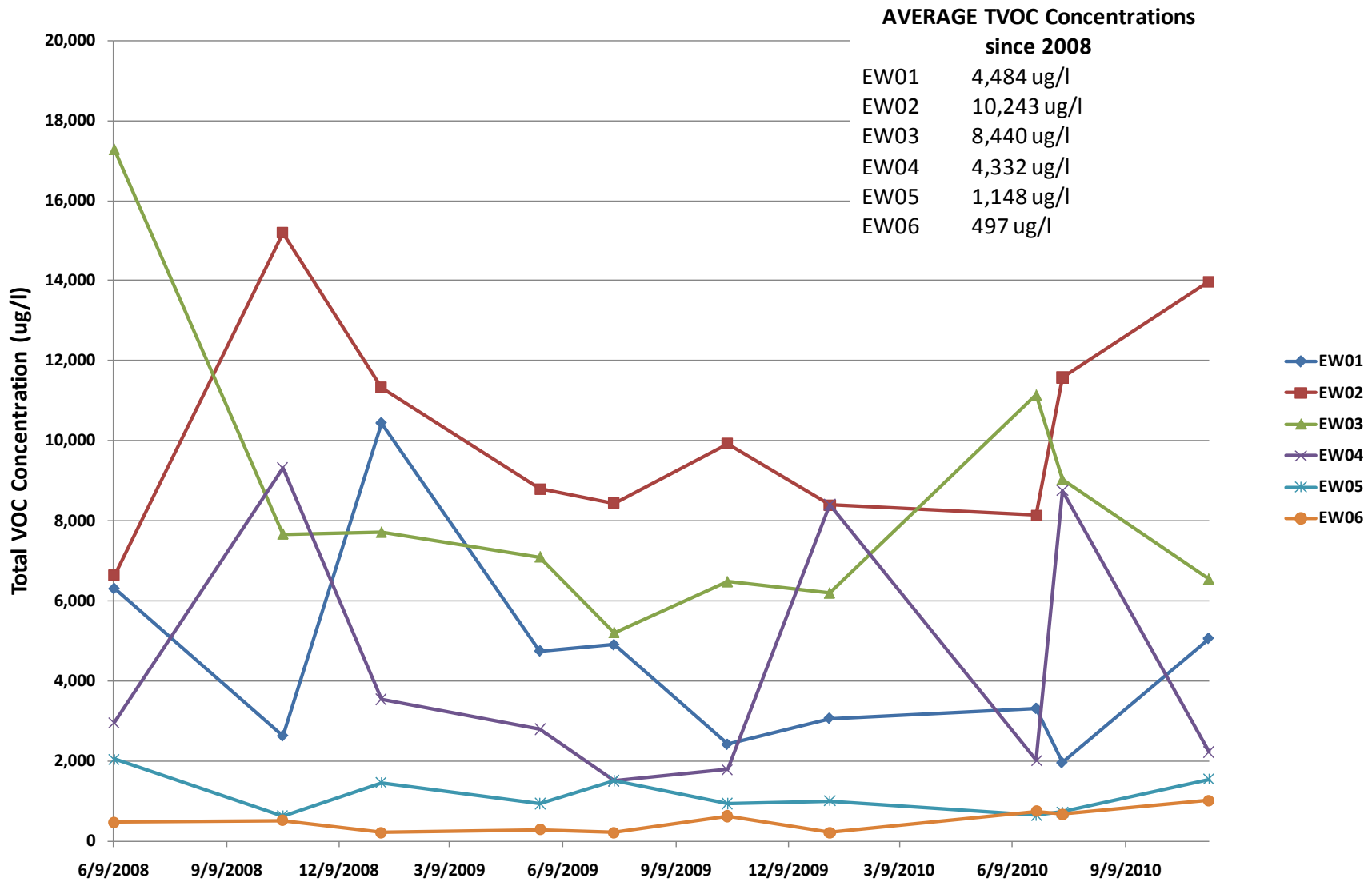

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Total VOC Concentrations (µg/L) Detected in Individual Extraction Wells

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FIGURE 13.1b

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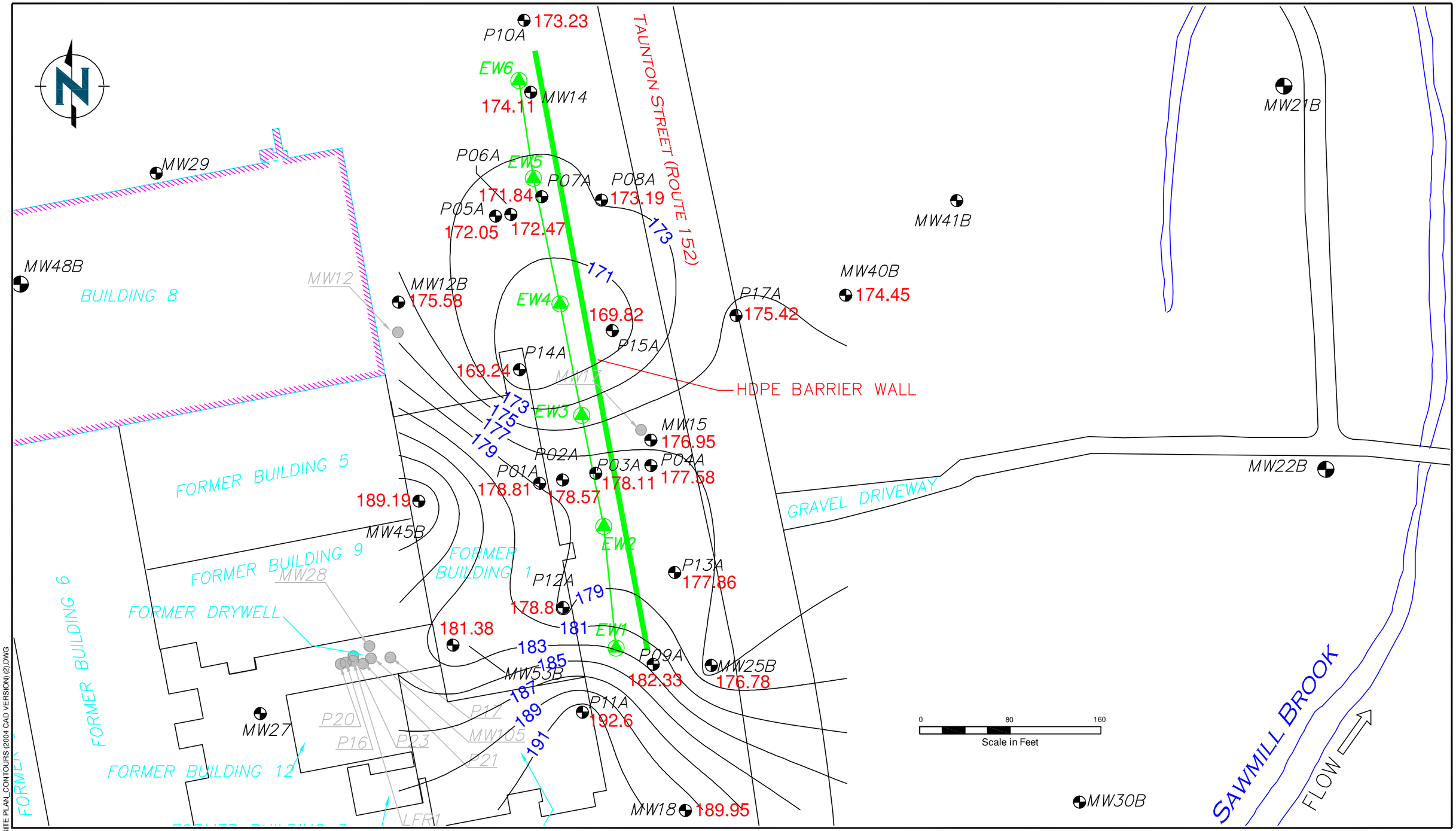

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DATE: 12/29/2010

GSM Bedrock Groundwater Elevation Contours - 6/30/10

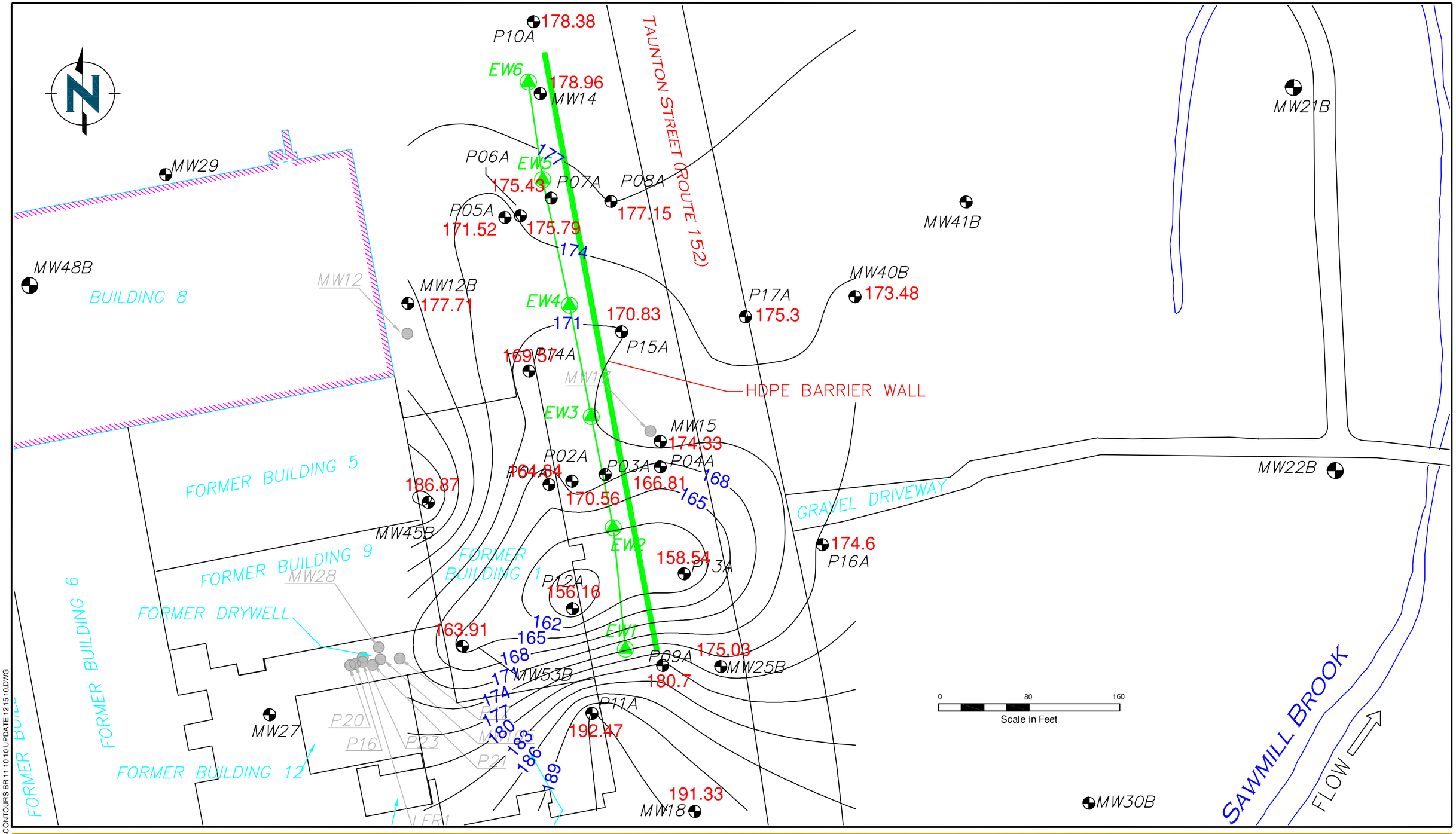
BASF Corporation

32 Taunton Street, Plainville, Massachusetts

Figure

13.2

C:\PROJECTS\08-23887B\SITE PLAN_CONTOURS (2004 CAD VERSION) (2).DWG



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DATE: 12/29/2010

GSM Bedrock Groundwater Elevation Contours - 11/10/10

BASF Corporation

32 Taunton Street, Plainview, Massachusetts

Figure

13-3

C:\PROJECTS\08-23887B\CONTOURS BR 11 10 10 UPDATE 12 15 10.DWG