

US EPA ARCHIVE DOCUMENT

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Ashland Distribution Company
Facility Address: 3849 Fisher Rd., Columbus, Ohio 43328
Facility EPA ID #: OHD 000 816 736

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)**

Page 2

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **“contaminated”**¹ above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			Volatile organic compounds (VOCs)
Air (indoors) ²		X		Vapor Intrusion modeling using site-specific data indicate no unacceptable risk for either cancer or non-cancer compounds at any locations.
Surface Soil		X		Contaminated soil has been removed already, and the area has been improved.
Surface Water		X		Impacted Groundwater does not reach surface water, VOCs detected in surface water prior to trench are below Criteria.
Sediment		X		Impacted Groundwater does not reach surface water, VOCs detected in sediment prior to trench are below Criteria.
Subsurf.Soil (e.g.,2ft)	X			Contamination exceeds the screening criteria in one sample location, SB-18 (1-1.5') which is below a pavement.
Air (outdoors)		X		Onsite surveys have not detected organics at the ground surface or in the air.

_____ If no (for all media)-skip to #6 and enter “YE”, status code after providing or citing appropriate “levels”, and referencing sufficient supporting documentation demonstrating that these “levels”: are not exceeded.

_____ If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter “IN” status code.

Rationale and Reference(s):

Groundwater: Concentrations of volatile organic compounds (VOCs) in groundwater are above United States Environmental Protection Agency (USEPA) Maximum Contaminant Levels (MCLs) and concentration limits established for the site in wells monitoring the shallow groundwater from the unconsolidated deposits, as presented in the Supplemental to the Post Closure Care Plan (URS 2009a), Volatile Organic Compounds (VOCs) detected in the groundwater at the site above the MCLs and/or the site specific concentrations limits include the following: 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (DCA), 1,1-dichloroethene (DCE), 4-methyl-2-pentanone (MIBK), acetone, benzene, chloroethane, cis-1,2-dichloroethene, ethylbenzene, hexane, methyl ethyl ketone, tetrachloroethene, toluene, trans-1,2-dichloroethene, trichloroethene, vinyl chloride, and total xylenes .

Indoor Air: Vapor Intrusion modeling was performed using the USEPA’s Johnson & Ettinger (J&E) spreadsheets and utilized current site specific data to evaluate the potential for vapor intrusion risks for the site. The USEPA’s J&E spreadsheets allow the user to start with volatile organic compound (VOC) levels

in soil, groundwater, or soil gas. Model runs were performed using groundwater data collected at the site and the latest version of the J&E model available on the USEPA website. Cancer risks were compared to a 1E-05 level per Ohio EPA (2005) guidance and a hazard index of one (i.e., HI = 1). Per Ohio guidance (OEPA, 2005), toxicity information for trichloroethylene was based on Cal EPA values. USEPA default values or conservative inputs based on site-specific data were used. The building is used for distribution purposes and consists of a large open warehouse with an office area. Input values for ceiling height and building ventilation for this type of building were used rather than the USEPA default values, which are based on residential buildings. The predicted indoor air concentrations of VOCs derived from groundwater are far below the applicable occupational levels (Occupational Safety and Health Administration (OSHA) permissible exposure limits). The predicted cancer risk and non-cancer hazard are also acceptable. Based on the modeling results, no further action is warranted at this time. Should higher groundwater concentrations be measured in the future or the operation and/or use of the building change, further evaluation may be warranted.

Surface Soils (<2 ft): Surface soil samples were collected during the supplemental investigations in 1989 from various areas around the site that identified several locations with VOC impacts. The analytical results of the samples were compared to the Generic Direct Contact Soil Standard for Ohio (effective March 1, 2009).

Surface Water and Sediment: Impacted groundwater originating from the site is isolated from the South Fork Dry Run Creek (a surface water feature located on the south and east sides of the facility) by a groundwater interceptor trench, which captures the impacted groundwater before it can reach the South Fork Dry Run Creek. Groundwater is pumped from the trench, treated to remove the VOC impacts, and discharged to the sanitary sewer. The groundwater samples from monitoring wells in the vicinity of the creek currently show low to no impacts in the groundwater. There have been no recent exceedences of an MCL in any routine monitoring program well along the eastern (downgradient) property boundary: MW-1, MW-2C and MW-3B. These wells are up gradient of the trench (Figure 1)

Surface water and sediment samples were collected in December 1990 (prior to the installation of the installation of the groundwater interceptor trench) to evaluate if any groundwater impacts from the site were reaching the South Fork Dry Run Creek. The results of the sampling event are summarized in Tables 4 and 5, and the sample locations are displayed in Figure 2. The analytical results of the surface water sampling event detected constituents identified in onsite groundwater. Surface water samples contained 1,1,1-TCA, 1,2-DCA, 2-butanone (MEK), MIBK, acetone, benzene, chloroethane, ethylbenzene, toluene, vinyl chloride and xylenes. Sample SW-1, collected on the northeast side of the site and the farthest downstream side of the facility, exceeded the Ohio River Basin (South Fork Dry Run Creek ultimately feeds into the Ohio River via the Scioto River) Aquatic Life Outside the Mixing Zone Criteria for toluene and xylenes. However the stream is a highly industrialized stream of limited ecological value. In addition, two compounds were also detected in the upstream samples, and are likely derived from other surface water contributors from an adjacent site (an asphalt manufacturer).

Sediment samples collected in December 1990 contained VOC impacts, and are summarized in Table 5. Sediment samples contained 1,1,1-TCA, 1,1-DCE, 1,2-DCA, acetone, ethylbenzene, toluene, trans-1,2-DCE, vinyl chloride and xylenes. Ohio EPA has no sediment standards which these values can be screened against. Both of the samples were collected on the upstream side of the facility, and side-gradient of the area of highest groundwater impacts (MW-5). Based on their location, the direction of groundwater flow, and the location of the groundwater impact source, the VOCs detected at CS-4/CS-6 are not related to the groundwater impacts being monitored and contained at the site.

Subsurface Soils (>2): Subsurface soil samples were collected during the supplemental investigations in 1989 from various areas around the site, and identified several locations with VOC impacts. Subsurface soil sampling analytical results were compared to the Generic Direct Contact Soil Standard for Ohio, and found to be below all criteria when compared to the Generic Direct Contact Soil Standard for Ohio. One sample location (SB-18 (1-1.5')) exceeded the criteria for tetrachloroethene, trichloroethene, and xylenes. The sample location is currently paved; therefore, the direct contact pathway is currently incomplete. The site also has a Soil Management Plan (SMP) in place to address future expansion or site upgrade activities

that may require the removal of foundation or earthen materials, and has specific reference to the soil boring SB-18 location.

Footnotes

¹ “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)**

3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

<u>Contaminated Media</u>	<u>Potential Human Receptors (Under Current Conditions)</u>						
	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	No	No	No	No	No	No	No
Air (Indoor)							
Soil (surface, e.g., <2 ft)							
Surface Water							
Sediment							
Soil (subsurface e.g., >2 ft)	No	No	No	No	No	No	No
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

- Strike-out specific Media including Human Receptors' spaces for Media which are not “contaminated”) as identified in #2 above.
- Enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“___”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- X If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- _____ If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.
- _____ If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code

Rationale and Reference(s): **Skip to #6**

Groundwater: Groundwater is not used for potable purposes on site or off site. Environmental workers utilize personal protective gear (i.e., gloves, protective coverings, etc.) when working with the groundwater collection trench and treatment system, and/or monitoring wells. Treated groundwater is discharged directly into the publicly owned treatment works (POTW). In 1984, the source of the contamination (UST) was removed. The surrounding soils including all associated piping were also removed, thereby eliminated exposure. If construction activities occur in areas where impacted groundwater exists, workers will be monitoring the air and following the procedures laid out in the facility Soil Management plan for the site, and thereby protected. Groundwater impacts volatilizing and migrating (Vapor Intrusion) to buildings were evaluated using the USEPAs J&E Model. The modeled results are below the cancer risk and OSHA standards. It is on this basis that groundwater is not considered a complete pathway.

Sub Surface Soils : Construction workers have a potential to come in contact with impacted surface soils if construction activities were to occur in the future (no construction activities are planned at this time). A Soil Management Plan is in place to manage impacted soils if construction activities occur in the area of known impacts. It is on this basis that surface soils (<2 ft) are not considered a complete pathway.

³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)**

Page 4

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**⁴ (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

_____ If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s): Skip to #6

⁴ If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

Facility Name: Ashland Distribution Company
EPA ID#: OHD 000 816 736
City/State: Columbus, Ohio

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)**

Page 6

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

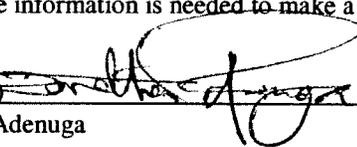
YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Ashland Distribution Company facility, EPA ID #OHD 000 816 736, located at 3849 Fisher Rd., Columbus, OH under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by

(signature)

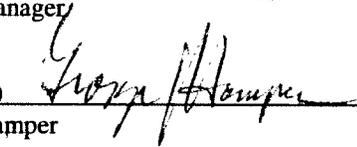

Jonathan Adenuga
Project Manager

Date

6/22/10

Supervisor

(signature)


George Hamper
Supervisor
Region 5

Date

6/22/10

Locations where References may be found:

U.S. EPA Region 5
77 West Jackson Boulevard
Chicago IL 60604
7th Floor Records Center

Ashland Inc., October 1993. Revision 1 to the Post-Closure Care Plan for the Former Underground Storage Tank Area. Ashland Chemical Inc., Columbus, Ohio.
Ashland Inc., July 1994. Closure Certification Report for the Former Underground Storage Tank Area, Ashland Chemical Inc., Columbus, Ohio
Ashland Inc., May 1996. Revision 2 to the Post-Closure Care Plan for the Former Underground Storage Tank Area. Ashland Chemical Inc., Columbus, Ohio.
Environmental Strategies Corporation, March 1993. Phase II Additional Investigation Report, Ashland Chemical Inc., Columbus,
T.M. Gates, Inc., January 1990. Supplemental Assessment Report, Ashland Chemical Inc., IC&S, Columbus, Ohio.
URS, November 2004, Soil Management Plan, Ashland Distribution Company, Columbus, OH

- URS, February 2008. 2007 Supplementary Annual Groundwater Monitoring Report. Ashland Distribution Company, Columbus, Ohio
- URS, February 2009a. 2008 Supplementary Annual Groundwater Monitoring Report. Ashland Distribution Company, Columbus, Ohio
- URS, February 2009b. Supplemental to the Post-Closure Care Plan for the Former Underground Storage Tank Area, Ashland Inc, Columbus, Ohio
- URS, August 2009c. Groundwater Monitoring Report, First Half-2009, Ashland Distribution Company, Columbus, Ohio
- URS, February 2010. 2009 Supplementary Annual Groundwater Monitoring Report. Ashland Distribution Company, Columbus, Ohio

Contact telephone and e-mail numbers

(name) Jonathan Adenuga

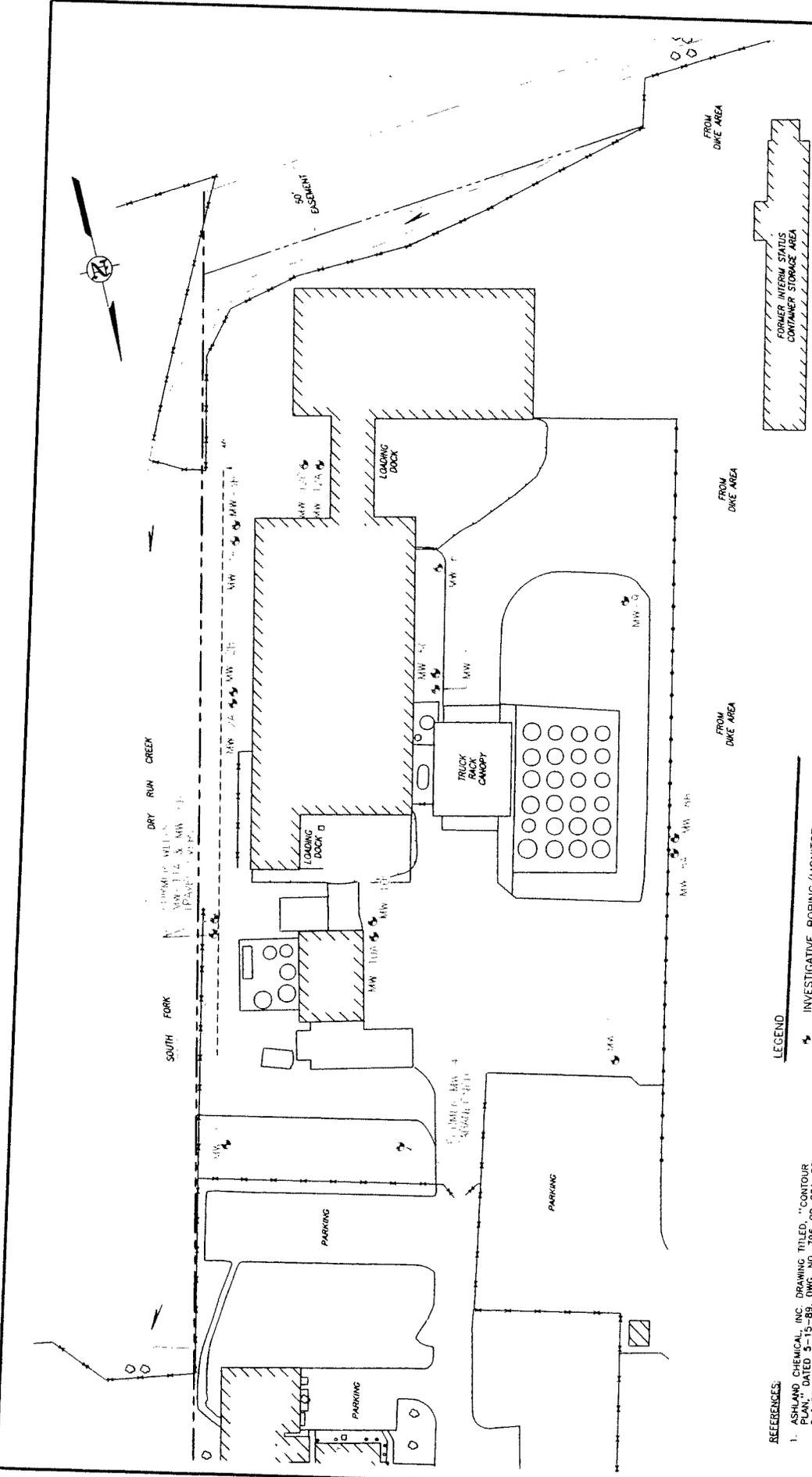
(phone #) (312) 886-7954

(e-mail) adenuga.jonathan@epa.gov

Table 5
Analytical Results for Sediment Samples
 Asland Inc.
 Columbus, OH - Fisher Road

Analyte	Generic Direct Contact Soil (Ohio VAP)	Regional Screening Levels - Dec. 2009 (US EPA) Residential Soil	Ohio River Basin Human Health Non-Public Water Supply	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6
1,1,1-Trichloroethane	1,300,000	8,700,000	76	ND	3.0 J	ND	150	ND	100
1,1-Dichloroethylene	410,000	240,000	210	ND	ND	ND	ND	ND	18
1,1-Dichloroethane	2,000,000	3,300	ID	ND	ND	ND	22	ND	ND
Acetone	64,000,000	61,000,000	n/a	22.0 J	ND	240	ND	280	ND
Ethylbenzene	230,000	5,400	61	ND	ND	ND	18	ND	19
Toluene	520,000	5,000,000	62	ND	ND	20	31	ND	34
Trans-1,2-Dichloroethene	180,000	150,000	210	ND	ND	ND	12	ND	ND
Vinyl Chloride	12,000	60	930	ND	ND	ND	68	ND	ND
Xylenes	370,000	630,000	27	ND	ND	ND	65	ND	69

Ohio River Basin Criteria as of 10/20/2009
 All values in ug/l
 Exceedance of Criteria



URS			
CLIENT: ASHLAND DISTRIBUTION COMPANY			
LOCATION: COLUMBUS, OHIO (FISHER RD.)			
SITE LAYOUT MAP			
DRAWN BY:	CHECKED BY:	PROJECT NO:	DATE:
MDO	JR	37679455	11-01-07
			FIGURE NO:
			1



LEGEND

★ INVESTIGATIVE BORING/MONITORING WELL

- REFERENCES:**
1. ASHLAND CHEMICAL, INC. DRAWING TITLED, "CONTOUR PLAN" DATED 12-28-95. DWG. NO. 796-CD-001. REV. 2 DATED 12-28-95. SCALE: 1" = 40'-0"
 2. ASHLAND CHEMICAL, INC. DRAWING TITLED, "SITE PLAN, GROUNDWATER COLLECTION," DATED 5/26/93. DWG. NO. 7807-AD-001. REV. 1 DATED 6/10/93. SCALE: 1" = 40'-0"

