INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

SITE REASSESSMENT REPORT

FOR

AVANTI DEVELOPMENT SITE
a.k.a.
Design Systems

INDIANAPOLIS, INDIANA
MARION COUNTY

January 31, 2011

Signature Page
for
Site Reassessment Report
AVANTI DEVELOPMENT SITE
a.k.a. Design Systems
INDIANAPOLIS, INDIANA
MARION COUNTY

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SECTION I
INTRODUCTION

The Indiana Department of Environmental Management (IDEM), Site Investigation Section, under a Cooperative Agreement (CA) with the United States Environmental Protection Agency Region V (EPA), has been funded to perform Site Reassessments at certain sites listed in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). This work is conducted under the authority of the Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (a.k.a. Superfund), and the Superfund Amendments and Reauthorization Act (SARA) of 1986. Sites eligible for Site Reassessment include those sites for which the Screening Site Inspection (SSI) or Preliminary Assessment (PA) determined that a designation of "No Further Remedial Action Planned" (NFRAP) was appropriate, but subsequent information resulted in a reopening of the investigation.

The primary objectives of the Site Reassessment are:

- To gather and evaluate new information on site previously assessed under CERCLA to determine if the site should be placed on the National Priorities List (NPL).

- To address immediate threats to human health and/or the environment.

The Avanti Development (Avanti) Site Reassessment also included the following objectives:

- To investigate the site and surrounding neighborhood for contaminants not evaluated in the initial site assessment.

- To investigate soil and ground water at the site, particularly beneath foundation slabs in the vacant warehouses that exist on the property.

- To investigate possible impacts to Eagle Creek through sediment sampling.

The Avanti, a.k.a. Design Systems, site was entered in CERCLIS in May 1993. A Site Assessment Report was completed in January 1994. On March 29, 1994, the EPA issued an Administrative Order to address contamination at the site. The site was defined to include the industrial property located at 502-566 S. Harris Street and the surrounding residential properties. A Removal Action was initiated in August 1994 with completion in January 2000.

The Site Investigation Section was given approval by EPA to conduct a Reassessment at the Avanti site in 2009.

On August 23-25, 2010, IDEM conducted a Reassessment of the Avanti property. The purpose of the Avanti Reassessment is to review the information gathered in the previous environmental assessments, removal actions, and site inspections, to determine the future course of action for this site.

SECTION II
SITE BACKGROUND

2.1 SITE DESCRIPTION

The Avanti site is located at 502-566 S. Harris Street in Indianapolis, Marion County, Indiana. The approximately 18 acre-site lies on relatively flat terrain in a mixed urban environment of residential, commercial, and industrial properties. The site has several large, dilapidated, warehouse buildings in the east and northeast area of the property. The rest of the site is green space including a fenced, 6-acre, "Consolidation Area." The Consolidation Area is made up of smelter related materials and other debris and capped with a 2-foot layer of clay and clean topsoil. Much of the site is overgrown with 10-year old vegetation.

The property is bordered on the north by Victoria Street and on the east by S. Harris Street. The south side is bordered by CSX railroad tracks and to the west side the property is steeply sloped down to Eagle Creek. Eagle Creek originates at the confluence of Big Eagle Creek and Little Eagle Creek, about ¼ mile upstream from Avanti.

The site soils, which have been modified by past industrial and remediation activities, consist of loamy fill soils, to less disturbed native sandy and gravelly soils along the creek. The site geology consists of unconsolidated deposits 40' to 65' below ground surface (bgs) before reaching the New Albany Shale bedrock. The uppermost aquifer at the site is located within the unconsolidated deposits and the depth to ground water is between 20' to 25' bgs.

2.2 SITE HISTORY

Manufacturing began at the site in the mid 1930's. This location has housed various industries over the years including a foundry, battery recycler, lead processor, wood pallet construction, and general warehouse leasing activities. Based on the findings of previous investigations, the lead related industries were responsible for contamination on-site and in the surrounding neighborhood. The site was heavily contaminated with lead and battery casings that were discarded on the property. On-site activities resulted in lead-contaminated dust being deposited in neighborhood yards over a large area generally to the east/northeast. The site was investigated in the early 1990's due to numerous complaints of air-borne lead dust and the discovery of lead contamination in neighboring residential drinking water wells. Investigations documented the presence of lead in the soil both on-site and in nearby residential yards.

In April of 1993, the IDEM and Marion County Health Department conducted surface soil sampling for heavy metals at the site and detected lead concentrations as high as 180,000 mg/kg. In August of 1993, the EPA conducted a site assessment which detected up to 230,000 mg/kg lead in soil samples. EPA uses 400 mg/kg as a screening level for lead hazards in a residential area and a screening level of 1,200 mg/kg in other areas.

On January 20, 1994, the EPA signed an Action Memo for a time-critical removal action. On March 29, 1994, the EPA issued a Unilateral Administrative Order (UAO) to five respondents: Oxide Corporation d/b/a O & C Corporation; Indiana Oxide Corporation; RSR Corporation; Quemetco, Inc.; and Avanti Development, Inc. This UAO was amended on September 7, 1994 to include additional parties. The UAO required the Respondents to conduct removal actions on both residential properties and the site (Attachment A, Figure 1). Phase I (residential work) conducted by Quemetco, Inc. and RSR Corporation was initiated on July 27, 1994. During Phase I activities, soil was excavated from 287 residential yards and stored inside the Avanti east warehouse building.

In October 1995, EPA approved the Phase II-Stage A Work Plan which involved site characterization, excavating soil not meeting site-specific cleanup levels and backfilling excavation areas with segregated soil stockpiled from Phase I work. On March 7, and June 6, 1996, the EPA issued UAO orders requiring additional parties to coordinate with Respondents undertaking the removal actions. There was a substantial increase in volume of material being excavated at the site, and work was suspended in order to reevaluate the appropriate removal option.

On June 3, 1998, the EPA issued a UAO requiring the Respondents to implement an on-site closure (Stage B) of the facility to address the large volume of excavated material. Stage B included the construction of the Consolidation Area, continued removal activities, and site restoration.

The on-site closure work resulted in the removal and disposal of the following:

- four underground storage tanks (USTs);
- five roll-off boxes of tree debris, railroad ties, and utility poles;
- twenty-five 55-gallon drums and 5-gallon containers of various liquid and solids;
- several hundred used tires.

Approximately 32,000 cubic yards of stockpiled Phase II excavated material and approximately 7,500 cubic yards of additional soil excavated on-site, was added to the Consolidation Area. The Consolidation Area was covered with 18" of clay and 6" of topsoil, excavation areas were backfilled with segregated residential soils, all buildings were decontaminated, and bare soil was either covered by crushed stone or planted after proper grading. The completed Consolidation Area covers approximately 6 acres west of the warehouse buildings.

The Respondents also conducted a groundwater monitoring program plan to determine the direction of ground water flow and the concentrations of antimony, arsenic, copper, lead, and mercury in the upper aquifer. Results of samples collected from six on-site monitoring wells indicated concentrations of selected constituents were undetected except for lead in MW-5 (7.4 ug/l) and MW-1 (6.4 ug/l). The drinking water action level for lead is 15 ug/l. Monitoring wells MW-5 and MW-6 were located in the area now covered by the Consolidation Area and were closed prior to consolidation activities. Groundwater flow direction was to the south and southeast. Groundwater elevations ranged from 677.42 to 678.63.

From August 29 to September 14, 1998, approximately 16,900 cubic yards of contaminated residential soil were removed from the Avanti east warehouse and disposed at Twin Bridges Landfill. Approximately 738 cubic yards of residential debris was also disposed as solid waste.

The Phase I removal action of residential areas was completed in 1999. The Phase I included the removal of contaminated soil and the re-vegetation of 287 residences. City utility water mains were extended to serve homes using private drinking water wells down-gradient of ground water flow from the site.

The Phase II removal action of the Avanti Industrial Site was also completed in 1999. Phase II included removal or consolidation of contaminated soil and debris, decontamination of existing buildings, fencing, and re-vegetation. All lead impacted soil outside of the Consolidation Area was excavated to the site specific cleanup level or to a depth of 2' and covered with clean soil.

The Phase I and Phase II Final Reports, dated February 7, 2000 and September 16, 1999, were prepared by ENTACT, Inc., consultant for the Respondents. Both reports are available on IDEM's Virtual File Cabinet (VFC) under document numbers #48358448 and #43066219 respectively.

Respondents also agreed to an Operation and Maintenance Plan which requires maintenance of the site, quarterly inspections for 30 years (beginning in 1998), and corrective action if necessary.

SECTION III
PROCEDURES, FIELD INVESTIGATIONS AND ANALYTICAL RESULTS

3.1 INTRODUCTION

This section outlines the procedures, observations, and analytical results of the Avanti Reassessment activities from May through September, 2010.

3.2 REASSESSMENT SAMPLING PROCEDURES

To implement the Reassessment of the Avanti site, IDEM personnel were divided into three teams. Sampling Team #1 was responsible for surface soil and sediment sampling. Sampling Team #2 utilized direct-push boring (Geoprobe) and conducted ground water and additional surface and sub-slab soil (>8" bgs) sampling. Team #3 was the Forms II Lite team responsible for the documentation, packaging, and shipping of all samples. Team #3 was located at the Thatcher Community Center, part of the Indianapolis Parks and Recreation Department, about 2 miles from the Avanti site.

All sample collection and analysis was conducted in accordance with the IDEM approved Quality Assurance Protection Plan (QAPP), dated April 30, 2008, and the Contract Lab Program (CLP) protocol.

The majority of all samples were analyzed for volatile organic analytes (VOAs), semi-volatile organic analytes (SVOAs), metals, pesticides, and PCBs. A few surface soil samples, used to determine background constituents, were analyzed for metals only. All sample locations were photographed and recorded using the Global Positioning System (GPS). See Attachment A, Figure 2, for all sampling locations. Photos are in Attachment D.

On August 23, 2010, Team #1 began sediment sampling in Eagle Creek. The team started sampling at the farthest point downstream (SE4) and worked their way upstream to avoid disturbing sediments which could affect downstream samples. Samples were taken with a shovel below the surface of the water as close to the bank as possible. Samples locations were labeled SE1 through SE7 and were not taken in numerical order. Samples SE1 and SE6 were taken upstream from Avanti and serve as background sediment examples.

Team #2 initiated sub-slab sampling in a vacant Avanti building on the east side of the property bordering S. Harris Street. Three borings were completed on the first day. Sub-slab soil samples were collected below the slab in the top 24" of soil at each boring location labeled SB10 through SB12. Ground water samples were also collected at two of the boring locations and similarly labeled GW11 and GW12. A duplicate ground water sample was taken at GW10 and labeled GW17. All ground water samples were collected at approximately 25' bgs.

All samples collected on August 23, 2010, were documented, iced, and shipped via overnight shipping to the appropriate CLP laboratory by Team #3 that evening.

On August 24, 2010, Team #1 began surface soil sampling on the western side of the Avanti property. Samples were taken at three locations (SF17 through SF19) west and southwest of the Consolidation Area. A duplicate of the sample SF17 was taken and labeled as SF20. All surface samples were taken with disposable scoops in the top 6" of soil.

Team #2 began direct-push borings at three locations along the southern boundary of the Avanti property. SB14/GW14 was taken near the entrance gate from S. Harris Avenue. Soil was taken >24" bgs and a ground water sample was collected at approximately 30' bgs. A duplicate of GW14 was taken and labeled GW24. A second ground water sample was also collected at location GW15, approximately 150' W/SW of SB14/GW14. No subsurface soil sample was collected at this location. A third ground water sample was collected at GW16, approximately 350' W/SW of SB14/GW14. No subsurface soil sample was collected at this location. All subsequent ground water samples were taken at approximately 30' bgs. An additional sub-slab soil sample was collected at SB13 in the westernmost Avanti building on the northern end of the property. The sample was taken in the top 24" of soil below the building slab.

All samples collected on August 24, 2010, were documented, iced, and shipped via overnight shipping to the appropriate CLP laboratory by Team #3 that evening.

On August 25, 2010, Team #1 began collecting off-site surface soil samples to establish background constituent levels and to reassess the extent of the airborne contamination from the Avanti site. Samples SF1 and SF3 were taken in the top 6" of soil west and southeast of the site respectively. Samples SF4 and SF5 were taken northeast of the Avanti site beyond the Phase I neighborhood removal area. Northeast is the direction of the prevailing wind from the Avanti site and these samples were taken to reassess the proper extent of the removal area. Samples SF4 and SF5 were analyzed for metals only.

Team #2 began direct-push borings at three locations outside of the Avanti property. Two borings (SF6 and SF7/GW7) were conducted within the neighborhood removal area. Soil samples were taken from undisturbed native soil between 8" and 24" bgs. Soil was taken >8" bgs to avoid any fill placed on-site following the excavation of residential soils in the removal area. Ground water at SF7/GW7 was collected at approximately 22' bgs.

The third boring (SF8/GW8) was conducted northwest of the Avanti property outside of the neighborhood removal area. SF8 was collected in the top 24" of soil. Ground water was collected at approximately 20' bgs.

Ground water samples taken at GW7 and GW8 are up-gradient of the Avanti site and were used to establish ground water background constituent levels.

All samples collected on August 25, 2010, were documented, iced, and shipped via overnight shipping to the appropriate CLP laboratory by Team #3 that evening.

All samples were taken using dedicated equipment. Shovels used for stream sediment samples were thoroughly rinsed between sample locations. Ground water samples were obtained using a bladder pump.

3.3 ANALYTICAL RESULTS

Analytical results were received by IDEM via electronic mail starting on October 4, 2010. Additional results were received through November 4, 2010.

The laboratory results from the Avanti Reassessment have been determined to be acceptable for use and satisfy the criteria contained in the CLP. Relevant sample results are contained in the Key Findings Sample Tables in Attachment C. Complete sample documentation is contained in Attachment F. Samples may exhibit a "J" (+ or -), "U" or "R" flag. "J" indicates an estimated value. This flag is used when the mass spectral data indicate the presence of an analyte meeting all the identification criteria but the result is less than the Contract Required Quantitation Limit (CRQL), but greater than zero. Only "J" flagged results that were above the CRQL were recalculated as described in the November 1996 USEPA Publication *Using Qualified Data to Document an Observed Release*. Only metals were affected by the recalculation. A table with the recalculated "J" metals results is contained in Attachment F. The "U" flag indicates the constituent was undetected. The "R" flag means the sample was rejected and the datum is unusable.

Sample results were compared to the Superfund Chemical Data Matrix (SCDM), EPA approved site specific cleanup levels for lead (400 mg/kg residential/1,000 mg/kg on-site industrial), and background constituent levels. Background levels were established through samples SE1 and SE6 for sediment, SF1 and SF3 for surface soils, and GW7 and GW8 for ground water. Several samples exhibited 3 times background for calcium, magnesium, and sodium. These elements are not in SCDM and are not included in the Key Findings Tables in Attachment C.

3.3.1 Sediment Samples

Sediment samples SE2-5 and SE7, taken in Eagle Creek, exhibited no contaminants 3 times above the background sample analytical results for VOAs, SVOAs, pesticides, PCBs, and metals except for cadmium in SE5 and magnesium in SE7. The cadmium level in SE5 was 1 mg/kg. This exceeds 3 times the background levels of 0.2304 mg/kg (SE1) and 0.1792 mg/kg (SE6) following recalculation but not the SCDM benchmark of 39.10 mg/kg. This sample was taken from the west side of Eagle Creek.

SE7 was a duplicate sample of SE3. SE3 did not exceed 3 times background for magnesium. Magnesium is not listed in SCDM. See Attachment A, Figure 3, for all sample locations and Key Findings.

There is no evidence of the migration of contaminants from Avanti affecting the sediment in Eagle Creek.

3.3.2 Soil Samples

Surface soil samples (SF) were divided into 2 categories: samples taken in the top 8" bgs (SF1-5, SF8, SF17-19) and those taken between 8" and 24" bgs (SF6, SF7). Samples were taken at >8" bgs in those areas of previous Phase I or Phase II removal activities to insure collection of undisturbed native soil. Sub-slab soil samples (SB10-13) were taken in the top 24" of the soil beneath the building foundation slab. All soil samples were compared to background samples SF1 and SF3.

Subsurface sample SB14 was the only sample taken from soil >24" bgs. This was done to insure undisturbed native soil from the southeast corner of the Avanti property.

None of the SF samples exhibited VOAs 3 times the background levels. Both SF7 and SF8 exceeded 3 times background for several SVOAs and metals. The source of the SVOAs is unknown but not likely to be associated with Avanti operations. Metal exceedances included chromium, lead, and beryllium. SF7 exceeded 3 times background for pesticides and SF8 exceeded 3 times background for PCBs.

The soil sample at SF7 contained the pesticide Endrin ketone (19 ug/kg). Endrin ketone was below detection limits in the background samples. Beryllium (1.5 mg/kg) slightly exceeded 3 times the highest background level (0.49 mg/kg), but is significantly below its SCDM benchmark. SF7 is located in a residential area north of Avanti and inside the neighborhood removal area.

The surface soil sample at SF8 contained lead at 672 mg/kg. This exceeds 3 times the background levels for lead contained in SF1 (76.7 mg/kg) and SF3 (74.7 mg/kg) but did not exceed the EPA approved industrial cleanup levels for lead. PCB (Aroclor-1248) was also detected at more than 3 times its detection level (35 ug/kg). SF8 is located in an industrial area NW of Avanti and outside of the neighborhood removal area.

Beryllium at SF7 (1.5 mg/kg) slightly exceeded 3 times the highest background level (0.49 mg/kg), but is significantly below its SCDM benchmark.

Almost all SF samples exceeded 3 times background for non-SCDM elements calcium, magnesium, and sodium.

None of the SB samples exhibited contaminants 3 times above the background sample analytical results for VOAs, SVOAs, pesticides, or PCBs. Several SB samples had metals above background levels. SB14 exhibited chromium 3 times background at 48.2 mg/kg but the sample was taken >24" bgs and would not be considered a surface sample. Non-SCDM elements Calcium,

magnesium, and sodium were significantly higher than background levels in almost all SB samples.

Samples SF4 and SF5 were analyzed for metals only. These samples were taken to evaluate the proper extent of the neighborhood removal action. Neither sample indicated the presence of lead above the site specific clean-up goal of 400 mg/kg but SF5 (246 mg/kg) slightly exceeded 3 times the background levels for lead in SF1 and SF3 (76.7/74.7).

Although some soil contamination was discovered in exceedance of 3 times background levels, contaminants were below SCDM benchmarks or EPA site specific cleanup levels. See Attachment A, Figure 4, for all sample locations and Key Findings.

3.3.3 Ground Water Samples

Background ground water samples were collected at GW7 and GW8. These locations are up-gradient of ground water flow through the Avanti site. The analysis of the ground water samples exhibited several VOAs, SVOAs, and metals but only Tetrachloroethene (PCE) exceeding its SCDM benchmark (5 ug/l) in GW8 (8.5 ug/l). No pesticides or PCBs were detected in the ground water background.

On-site sub-slab ground water samples GW10/17(duplicate) and GW11 exceeded the SCDM benchmark for Trichloroethene (TCE) (5 ug/l) at 6.9 to 9.0 ug/l. Only GW11 exceeded 3 times the highest background result for TCE which was 2.5 ug/l in GW8. TCE can be a breakdown product of PCE. It is possible, but unconfirmed, that TCE contamination under the slab may be heightened by up-gradient PCE sources.

Other VOAs were detected but none exceeded the CRQL after bias adjustments. Metals were detected, particularly lead at 12.5 ug/l in GW 10, but not at 3 times the background level of 7 ug/l (GW8). No SVOAs, pesticides, or PCBs were detected at 3 times the background levels.

Samples GW14, GW15, and GW16 were taken along the south border of the Avanti property. Several VOAs were detected in GW14, GW15, and GW16 but none exceeded 3 times the highest background VOA. TCE was detected above the SCDM benchmark in GW14 at 6.4 ug/l but this is not 3 times background result of 2.5 ug/l (GW8). GW15 exhibited several metal contaminants above 3 times background including chromium, cobalt, lead, nickel, vanadium, and zinc. Manganese exceeded both 3 times background and its SCDM benchmark. GW15 was located approximately 50' southeast of the Consolidation Area. No SVOAs, pesticides, or PCBs were detected in ground water at 3 times the background levels.

Ground water contamination with VOAs was discovered both on and off the Avanti property. Previous investigations in the area have documented VOA contamination up-gradient of ground water flow through the Avanti property. High levels of VOAs can contribute to vapor intrusion in homes and businesses. Vapor intrusion was not evaluated in this Reassessment.

Ground water contamination for metals was noted at one location on-site. A ground water sample from the nearest potable well did not show any significant metals contamination. See Attachment A, Figure 5, for all sample locations and Key Findings.

3.4 X-RAY FLUORESCENCE (XRF) SCREENING INVESTIGATIONS

On May 27 and September 30, 2010, IDEM personnel conducted XRF screenings of the surrounding neighborhood. Soil from various directions and locations from the Avanti property was analyzed on-site using a Niton XRF analyzer. Soils were screened for metals content with emphasis on lead which was the contaminant of concern in the original Avanti assessment and eventual clean-up. Lead levels slightly exceeding the site specific clean-up level of 400 mg/kg (412.72 and 477.03 mg/kg) were encountered in a street right-of-way at approximately 2600 W. Oliver Avenue, SE of the Avanti site. This location and the surrounding neighborhood is currently being investigated by the IDEM Permitting Branch regarding the proper closure of the nearby former Link-Belt/FMC facility.

The XRF screening results for lead appears to show the designated boundaries for the Phase I neighborhood removal were adequate. XRF screening results are shown on Attachment A, Figure 6.

SECTION IV
DISCUSSION OF MIGRATION PATHWAYS

4.1 INTRODUCTION

Potential migration pathways for contaminants migrating from the Avanti site are discussed in this section. Potential contaminant migration through ground water, surface water (including Drinking Water Threat, Human Food Chain Threat, and Environmental Threat), soil exposure, and air are discussed.

4.2 GROUND WATER PATHWAY

The site is located in the Eagle Creek Basin. Unconsolidated deposits of gravel, sand, and silt are estimated to be between 40' to 65' bgs before encountering New Albany Shale bedrock. Ground water is generally found at greater than 20' bgs.

The ground water aquifer is not being used as a potable water supply in the vicinity of the Avanti site except for one known private well approximately ¼ mile southeast of the

site. This household has declined hook-up to the city water utility. The well has been monitored by IDEM and exhibits VOAs below the Maximum Contamination Limits (MCLs) for drinking water. TCE had the highest concentration at 2.9 ug/l. The MCL for TCE is 5 ug/l. The background level for TCE was established as 2.5 ug/l (GW8). Metals content does not exceed any MCLs. Lead, the ground water contaminant of concern in the previous Avanti investigation, was 2.5 ug/l at this residence. The MCL for lead is 15 ug/l.

All neighborhoods surrounding the Avanti site are served by the City of Indianapolis public water utility. The utility draws its water from 23 ground water wells between 2 and 3 miles northeast of the site.

The Town of Speedway, which is northwest of the Avanti site and surrounded by Indianapolis, is served by 11 municipal ground water wells within the town limits. The town also draws water directly from Big Eagle Creek approximately 3 miles up-stream from Avanti.

The Avanti site is not in a wellhead protection area (WHPA) for either municipality but there are 34 wellheads for both cities within a 4-mile radius. None of the wellheads are closer than 2 miles and all are up-gradient of ground water flow from the site.

Ground water samples taken on the Avanti property exhibited VOA and metals concentrations above drinking water Maximum Contaminant Limits (MCLs). Background samples taken less than 1,000' up-gradient exhibited the same characteristics for VOAs although compounds were varied. Ground water contamination with VOAs is known to exist in the area but cannot be solely attributed to Avanti.

4.3 SURFACE WATER PATHWAY

The surface water/overland flow migration component was evaluated in the Avanti reassessment. The site is adjacent to Eagle Creek which is a tributary to the White River.

Runoff from the site has the potential to flow directly to Eagle Creek or be collected by surrounding storm drains. Storm drains located along Harris Street and the surrounding neighborhood pass through the Avanti property and discharge directly to Eagle Creek. These drains can collect runoff to Harris Street along with the natural runoff flow from other areas of the property.

4.3.1 Drinking Water Threat

The majority of residents within the 4-mile radius of the Avanti site obtain drinking water from the Indianapolis, or the Town of Speedway, municipal water utilities which draw their water from ground water wells and reservoirs in the Indianapolis area. Speedway does have a surface water intake in Big Eagle Creek but it is approximately three (3) miles upstream of Avanti. All municipal ground water drinking water sources within a 4-mile radius are up-gradient of the Avanti

site. There are no known surface water intakes within the Target Distance Limit of the combined Eagle Creek/White River waterway downstream of the Avanti site. A threat to drinking water via the surface water pathway does not exist.

4.3.2 Human Food Chain Threat

This pathway generally targets fisheries where consumption of contaminated species may occur. Eagle Creek, in the vicinity of Avanti, has limited access but fishing was evident near the site. The creek is approximately 6 miles downstream from Eagle Creek Reservoir and passes through assorted industrial, commercial, and residential areas. Flow and water level can fluctuate greatly due to control by the reservoir dam. Eagle Creek joins the White River approximately 3 miles downstream from the Avanti site. PCB contamination of fish in Eagle Creek has been documented from upstream of the site to the creek's confluence with the White River. According to the Indiana Fish Consumption Advisory, a Level 3 Fish Advisory is posted for some species of fish in Eagle Creek due to excessive PCB concentrations. The White River has fish advisories for both PCBs and Mercury.

Some PCB waste was removed from the Avanti property during the removal action but no PCB contamination has been encountered in any ground water or sediment analytical.

Sediment sample SE5, taken on the western side of Eagle Creek (opposite of Avanti), exhibited a cadmium level (1 mg/kg) 3 times the sediment background (0.2304 mg/kg) but well below the SCDM benchmark.

A previous investigation of Avanti conducted by the EPA's FIELDS Group in April 2009, indicated excessive lead levels exist on surface soil on the west side of the Consolidation Area. These results could not be duplicated by IDEM personnel.

Neither cadmium nor lead is included in the Indiana Fish Consumption Advisory for Eagle Creek or the White River. A threat to the human food chain does not exist.

4.3.3 Environmental Threat

The site is in a residential and industrial area within the city limits of Indianapolis and has been significantly altered during the removal action. Some areas are being maintained under the existing operation and maintenance plan while other areas exhibit close to 10 years of vegetation growth. An environmental threat would most likely exist to the Eagle Creek waterway but there is no indication that this has occurred.

The Indiana Department of Natural Resources/Division of Nature Preserves-Heritage Program (IDNR/DNP-HP) documents sensitive environments

and/or endangered or threatened species within the State of Indiana. Marion County is home to the federally-endangered Indiana bat *(Myotis sodalis)* which uses small stream corridors as a foraging habitat. Eagle Creek could provide the appropriate corridor for the Indiana Bat. There is no documentation of its existence on or near the site.

According to the 2010 Indiana Federally Endangered, Threatened and Rare Species List, the federally endangered Northern Riffleshell, Rough Pigtoe, and Clubshell mussels have been identified in Marion County waterways. There is no documentation to show the Avanti site has had an impact on any of these species.

An environmental threat via the surface water pathway does not exist.

4.4 SOIL EXPOSURE PATHWAY

The majority of the surface soil on the Avanti property was altered during Phase II of the removal action. Soils which exceeded the site specific action levels were excavated to a minimum depth of 8" or capped with 18" of clay and a 6" layer of topsoil in the Consolidation Area.

Surface soil samples taken on-site showed no contamination above background levels. The site is vacant except for the monthly maintenance crew which is responsible for maintaining the overall site in its present condition. It is possible these workers could be exposed to hazardous constituents should they excavate >8" bgs or below the cap of the Consolidation Area. As stated earlier, the FIELDS Group discovered lead contamination in surface soil west of the Consolidation Area. This area was heavily vegetated during the IDEM sampling event and the past sampling results could not be duplicated. The potential for a soil exposure pathway could exist should the area be excavated through redevelopment.

4.5 AIR PATHWAY

The air pathway was not evaluated in this reassessment. The site is vacant. No Avanti operations are taking place and no odors were evident at the time of the IDEM Reassessment. VOA vapor intrusion from ground water contamination was not evaluated in this Reassessment. There is no known risk to nearby residents via the air pathway from the Avanti site at this time.

SECTION V
SUMMARY

The Avanti site was reassessed to fill in data gaps not addressed during the initial site assessment and removal action, and to determine whether further Superfund attention is needed. Specific data gaps included the possibility of

additional contaminants not investigated during the initial assessment, unknown contamination sources remaining on-site beneath the warehouse building slabs and, the impact that any remaining contamination may have if the site is redeveloped.

Background samples were collected at SE1 and SE6 for sediment, SF1 and SF3 for surface soils, and GW7 and GW8 for ground water.

One sediment sample (SE5) exhibited cadmium 3 times the background concentrations. This sample was taken from the west side of Eagle Creek opposite of Avanti. A large auto salvage operation runs along the entire west bank of Eagle Creek. Cadmium is not a constituent of concern at the Avanti site or in the Indiana Fish Consumption Advisory for Eagle Creek or the White River.

The results from the on-site sampling indicated that ground water contamination exists beneath the warehouse slab foundations but it is not significantly different or excessive when compared to background concentrations. Ground water taken off-site at GW8 exhibited the highest concentration of a VOA (PCE). This location is up-gradient of ground water flow to the Avanti site and may indicate another source of VOA contamination which could influence ground water beneath the Avanti property. The highest VOA concentration beneath a slab foundation was at GW11 which contained TCE at 9 ug/l. This result exceeds both 3 times background and the SCDM benchmark.

A ground water sample taken on-site (not sub-slab) at GW15 contained metals concentrations in excess of 3 times background. The source of this contamination is undetermined but this location is down-gradient of ground water flow beneath the Consolidation Area.

There is one known private drinking water well within ¼ mile down gradient of ground water flow from the Avanti site. The home owner has declined connection to the city water utility. This well has been tested and is being monitored by IDEM. Contaminants in the well do not exceed MCLs or background levels obtained during the reassessment. Previous investigations could not find any private potable wells down-gradient of the site for at least ½ mile.

Soil samples were collected off-site either in the neighborhood removal area or in areas not affected by the removal action. Samples taken in the removal areas were taken >8" bgs to avoid possible fill material. SVOA, pesticide, and metals contamination was discovered above 3 times background concentrations in SF7-8. It is questionable whether these contaminants can be attributed to Avanti activities via the airborne route. SF7 was taken in soil between 8" and 24" bgs. SF8 was taken in the top 24" in an industrial/commercial area northwest of Avanti. SF8/GW8 exhibited some of the highest contaminant levels.

Soil samples collected on-site at SB10-14 and SF17-20, did not exhibit any contaminant levels above SCDM benchmarks or 3 times the background levels.

Soil beneath the foundation slabs showed no indication of contamination except for excessive levels of calcium, magnesium, and sodium.

One sediment sample (SE5) exhibited cadmium 3 times the background concentrations. This sample was taken from the west side of Eagle Creek opposite of Avanti. A large auto salvage area runs along the entire west bank of Eagle Creek. Cadmium is not a constituent of concern at the Avanti site or in the Indiana Fish Consumption Advisory for Eagle Creek or the White River.

Based on these results, it does not appear the Avanti site remains a significant potential for harm to human health or the environment through the ground water, surface water, or soil exposure pathways.

SECTION VI
REFERENCES

Entact, Inc., Phase I Final Report, February 7, 2000

Entact, Inc., Phase II Final Report, September 16, 1999

FIELDS Group, Avanti Superfund Site, Soil and Sediment Sampling, April 27-28, 2009

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IDEM Preliminary Assessment, Avanti Corporation Site, September 6, 1993