

FINAL DRAFT

WORK PLAN FOR ADDITIONAL PCDD/PCDF SAMPLING

BEAZER EAST, INC. FORMER KOPPERS WOOD-TREATING SITE CARBONDALE, ILLINOIS

Introduction/Purpose

As a follow-up to a letter submitted to the United States Environmental Protection Agency (USEPA) dated June 30, 2010 and discussions during a September 9, 2010 conference call, Beazer East, Inc. (Beazer) has prepared this Work Plan for additional soil sampling activities within and south of the southern drainage ditches area and at the western end of the Former Koppers Wood-Treating Site in Carbondale, Illinois (the Site; Figure 1). The proposed scope of work is a follow-up to sampling conducted in these areas in December 2009 and March 2010, and incorporates USEPA's comments received in a letter dated January 5, 2011.

Background

Surficial soil samples from within, near and south of the southern drainage ditches area and the western end of the Site have been collected on multiple occasions over the last several years:

- In March 2005, USEPA collected surficial soil samples from residential areas south of the Site; samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) and pentachlorophenol
- In May 2005, Beazer collected surficial soil samples to confirm/modify the proposed Former Process Area surface cover limits; samples were analyzed for PAHs and pentachlorophenol
- In March 2006, March 2008 and June 2008, Beazer collected surficial soil samples to characterize the nature and extent of impacts in the southern drainage ditches area; samples were analyzed for PAHs, pentachlorophenol, polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDDs/PCDFs), and/or arsenic
- In July 2006, the City of Carbondale collected surficial soil samples from residential areas south of the Site; samples were analyzed for PAHs and pentachlorophenol
- In December 2009 and March 2010, Beazer collected additional samples to characterize and delineate the extent of Site-related constituents in the southern drainage ditches area and western end of the Site, among other areas; samples were analyzed for PAHs, pentachlorophenol, PCDDs/PCDFs, and/or arsenic

The sample locations associated with these sampling events, and that lie near or within areas where additional investigations are proposed herein, are shown on Figure 1.

Scope/Procedures

Additional soil sampling is proposed at a total of 22 locations (Figure 1), including:

- Four locations (A1-50, A1-51, A1-56 and A1-57) in the vicinity of previous sample locations A1-37 and A1-48, as initially proposed on Beazer's June 30, 2010 letter to the USEPA;
- Two locations (A3-33 and A3-34) north and northeast of previous sample location A1-48, as requested in USEPA's January 5, 2011 letter;

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- Four locations (A3-29 through A3-32) north of the main Site access road as described/requested by USEPA during a conference call on September 9, 2010¹ (the locations of three of these were subsequently moved approximately 100 feet north per USEPA's January 5, 2011 letter);
- Four locations (A3-25 through A3-28) at the western end of the Site to further characterize an area noted by USEPA in email correspondence to Beazer dated September 10, 2010;
- Three locations (A1-58 through A1-60) within and adjacent to Glade Creek upstream of the western end of the Site, one of which (A1-59) also represents the residential area south of the Site, to further characterize an area noted by USEPA in email correspondence to Beazer dated September 10, 2010; and
- Five additional locations (A1-52 through A1-55, and A1-61) in the residential area south of the Site, one of which corresponds to a 2005 soil sample collected by the USEPA and analyzed for other Site-related constituents

The location description and rationale for each sample location are summarized in Table 1. Note that a residential area in closest proximity to the southern portion of the Site was identified for further investigation during the September 9, 2010 conference call. An appropriate number of samples to be collected from this area was not stated on the call, although USEPA indicated that the number of samples should be consistent with the prior sampling conducted in 2006 by the City of Carbondale. Based on this suggestion, Beazer reviewed the prior scopes of work associated with the USEPA's 2005 and the City's 2006 sampling south of the Site. Recall that neither of these sampling events indicated the presence of Site-related constituents (PAHs and pentachlorophenol) at concentrations above Illinois Tiered Approach to Corrective Action Objectives (TACO) criteria for residential properties. In total, the City collected 11 samples from six locations in 2006, of which one location was within the area identified for sampling during the September 9, 2010 call. The USEPA collected 13 off-site samples in 2005, 12 of which were south of the Site property line near the residential area, and four of those were within the area identified for sampling during the September 9, 2010 call. Based on these prior investigations, Beazer proposed five additional sample locations within the area identified for sampling during the September 9, 2010 call (i.e., exceeding the scope of either prior investigation within this area). A sixth sample was added to this area based on USEPA's January 5, 2011 letter. These samples are also in addition to the nine locations that have been previously sampled along the Beazer and/or railroad property lines that abut this residential area.

At each of the proposed 22 sample locations, soils will be collected from the 0- to 0.5-foot depth interval using a stainless-steel trowel. At each of the 16 non-residential sample locations, a single, discrete soil sample will be collected. At each of the six residential sample locations (A1-52 through A1-55, A1-59 and A1-61), soils will be collected at a minimum of five² discrete locations spatially distributed throughout the parcel, and composited into a single sample for laboratory analysis.

Soil types/characteristics and descriptions of any non-aqueous phase liquid (NAPL), staining, odors and/or sheens will be recorded in a field notebook. Recovered soils will be homogenized prior to placing them into sample containers. Excess soils will be placed back into the hole following sample collection. All sample locations will be staked and surveyed (or GPS-located) so that they can be accurately depicted

¹ One of the proposed locations, A3-32 was moved from the location discussed with USEPA on September 9, 2010, to a location outside of the re-worked soil area near the office building, construction trailers and wastewater treatment system.

² Sampling densities may be adjusted upward once individual residential access agreements are obtained, and in the event that a particular parcel is larger than average. Efforts will be made to avoid collecting discrete samples from any visibly evident potential property-specific sources (e.g., burn pits or barrels).

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on the site plan and re-established in the future, if necessary. Samples will be analyzed for PCDDs/PCDFs via USEPA SW-846 Method 8290.

Property Access

Sixteen of the 22 proposed sample locations are located on non-Beazer-owned properties. Following USEPA approval of the proposed sample locations and prior to mobilizing for the sampling work, Beazer will attempt to obtain permission from the associated property owners to collect samples from these locations. Any difficulties in obtaining property access will be communicated to USEPA.

Quality Assurance/Quality Control

PCDD/PCDF samples will be analyzed by Vista Analytical Laboratory in El Dorado Hills, California. Quality assurance/quality control (QA/QC) samples will be collected at the frequencies specified in the Quality Assurance Project Plan (QAPP; ARCADIS, February 2008). Analytical data will be validated in accordance with USEPA National Functional Guidelines for Data Review, as discussed in the QAPP.

Equipment Cleaning and Waste Management

Non-dedicated/non-disposable sampling equipment will be cleaned prior to use at each sample location following procedures outlined in the QAPP (i.e., non-phosphate detergent wash, distilled/deionized water rinse, and triple rinse sequence of solvent followed by distilled/deionized water).

Equipment cleaning fluids will be collected for treatment at the onsite wastewater treatment system (WWTS). Used personal protective equipment, disposable sampling equipment, and other miscellaneous wastes will be placed into a 55-gallon drum and staged at a designated area near the WWTS for subsequent characterization and disposal by Beazer.

Data Review and Reporting

Following completion of the sampling and receipt/validation of the laboratory analytical data, Beazer will prepare data summary tables and sample locations maps for review/discussion with USEPA. Data summary tables will include 2,3,7,8-TCDD Toxic Equivalents (TEQ; calculated using WHO-2005 Toxic Equivalency Factors).

Schedule

It is anticipated that the field work will be initiated within approximately two weeks following USEPA approval of the sampling scope and the receipt of necessary access approvals, pending suitable weather and field conditions. The work described herein will require approximately three days to complete once all access approvals are obtained. To account for the data validation timeframe, data summary tables and sample location maps will be submitted to the USEPA within approximately six weeks following receipt of all associated laboratory analytical data.

**TABLE 1
PROPOSED SAMPLING SCOPE AND RATIONALE**

**Beazer East, Inc.
Former Koppers Wood-Treating Site
Carbondale, Illinois**

Sample ID	Location Description	Depth Interval (ft)	Rationale
A1-50	Approximately 10 feet north of the top of ditch bank at A1-48	0-0.5	Delineate PCDD/PCDFs near A1-48 as proposed in 6/30/2010 letter
A1-51	Approximately 10 feet south of the top of ditch bank at A1-48	0-0.5	Delineate PCDD/PCDFs near A1-48 as proposed in 6/30/2010 letter
A1-52*	Approximately 150 feet south/southeast of A1-45 at north end of N. Allman St	0-0.5	Assess the presence of PCDDs/PCDFs in residential area south of the Site
A1-53*	Approximately 100 feet south of A1-43 along west side of N. Robert A Stalls Ave	0-0.5	Assess the presence of PCDDs/PCDFs in residential area south of the Site
A1-54*	Approximately 100 feet south of A1-42 adjacent to 2005 USEPA sample location S3	0-0.5	Assess the presence of PCDDs/PCDFs in residential area south of the Site; corresponds to prior USEPA sample location
A1-55*	Approximately 100 feet south of A1-41 along west side of N. Wall St	0-0.5	Assess the presence of PCDDs/PCDFs in residential area south of the Site
A1-56	Approximately 50 feet southwest of A1-37	0-0.5	Delineate PCDD/PCDFs near A1-37 as proposed in 6/30/2010 letter
A1-57	Approximately 50 feet east of A1-37	0-0.5	Delineate PCDD/PCDFs near A1-37 as proposed in 6/30/2010 letter
A1-58	Approximately 50 feet west of Glade Creek, approximately 450 feet downstream of A1-60	0-0.5	Assess the presence of PCDDs/PCDFs along Glade Creek upstream of the Site; characterize area noted by USEPA via email on 9/10/2010
A1-59*	Approximately 200 feet south and 425 feet west of A1-52	0-0.5	Assess the presence of PCDDs/PCDFs toward residential area south of the Site; characterize area noted by USEPA via email on 9/10/2010
A1-60	In Glade Creek, approximately 180 feet downstream of North Marion Street crossing	0-0.5	Supplement existing PCDD/PCDF dataset for Glade Creek sediment upstream of the Site; characterize area noted by USEPA via email on 9/10/2010
A1-61*	Between samples A1-54 and A1-55 (on a separate residential property)	0-0.5	Assess the presence of PCDDs/PCDFs in residential area south of the Site, as requested by USEPA's 1/5/2011 letter
A3-25	In southwest corner of Beazer's property on west side of North Marion Street	0-0.5	Supplement existing PCDD/PCDF dataset for western portion of the Site; assess potential migration beyond Glade Creek; characterize area noted by USEPA via email on 9/10/10
A3-26	Approximately midway between A3-25 and A3-27, on east side of Glade Creek	0-0.5	Supplement existing PCDD/PCDF dataset for western portion of the Site, specifically near prior location A3-20; characterize area noted by USEPA via email on 9/10/2010
A3-27	Approximately midway between A3-8 and A3-20, on west side of North Marion Street	0-0.5	Supplement existing PCDD/PCDF dataset for western portion of the Site, specifically near prior location A3-20; characterize area noted by USEPA via email on 9/10/2010
A3-28	Approximately 300 feet north/northwest of A3-8, between North Marion Street and former RR tracks	0-0.5	Supplement existing PCDD/PCDF dataset for western portion of the Site adjacent to public roadway; characterize area noted by USEPA via email on 9/10/2010
A3-29	Approximately 120 feet north of main Site access road	0-0.5	Assess the presence of PCDDs/PCDFs in previously unsampled area north of main Site access road; location specifically identified by USEPA on 9/9/2010, and revised as requested by USEPA's 1/5/2011 letter
A3-30	Approximately 120 feet north of main Site access road	0-0.5	Assess the presence of PCDDs/PCDFs in previously unsampled area north of main Site access road; location specifically identified by USEPA on 9/9/2010, and revised as requested by USEPA's 1/5/2011 letter
A3-31	Approximately 120 feet north of main Site access road	0-0.5	Assess the presence of PCDDs/PCDFs in previously unsampled area north of main Site access road; location specifically identified by USEPA on 9/9/2010, and revised as requested by USEPA's 1/5/2011 letter
A3-32	Near intersection of Site access road and Beazer property line	0-0.5	Assess the presence of PCDDs/PCDFs in previously unsampled area north of main Site access road; location specifically identified by USEPA on 9/9/2010, but modified to account for presence of the office building, construction trailers and WWTS.
A3-33	Within the 390-foot contour southwest of the Site	0-0.5	As requested by USEPA's 1/5/2011 letter
A3-34	Approximately 175 feet east of sample A3-33	0-0.5	As requested by USEPA's 1/5/2011 letter

PCDDs/PCDFs = polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans (USEPA SW-846 Method 8290)

* - indicates sample will be composited from a minimum of five locations on the target property

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. FORAKER LD: PIC: R. ANDERSON PM: J. HOLDEN TM: D. BESSINGPAS LXR: ONE OFF: REF
 G:\ENVCAD\SYRACUSE\ACT\80038143\2010\00001\DWG\PCDD-PCDF\38143G01.DWG LAYOUT: 1 SAVER: 1/24/2011 11:27 AM ACADVER: 18.05 (LMS TECH) PAGES: 1 OF 1 PLOT: 1/24/2011 4:30 PM BY: FORAKER, LYDIA
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- LEGEND:**
- EDGE OF WATER
 - DRAINAGE DITCH AND DIRECTION OF FLOW
 - PROPERTY BOUNDARY (SEE NOTE 2)
 - FENCELINE
 - EXISTING CONTOUR LINE
 - FORMER PROCESS AREA SURFACE COVER
 - SOIL REMOVAL AREA (SOIL/DEBRIS PILES AND SURFICIAL ASPHALT-LIKE MATERIALS)
 - PORTIONS OF SOUTHERN DRAINAGE DITCHES THAT HAVE BEEN FILLED IN PRIOR TO OR DURING SURFACE COVER CONSTRUCTION OR REMOVAL OF SOIL AND DEBRIS PILES.
 - S1 ● 2005 RESIDENTIAL SAMPLE LOCATIONS (USEPA)
 - SB-102 ● 2005-2010 SAMPLE LOCATIONS (BEAZER)
 - B ● 2006 RESIDENTIAL SAMPLE LOCATIONS (CITY OF CARBONDALE)
 - A1-30 ● PROPOSED SAMPLE LOCATIONS
 - A3-33 ● NEW EPA-PROPOSED LOCATIONS (JANUARY 5, 2011)

- NOTES:**
1. SITE FEATURES AND TOPOGRAPHY OBTAINED FROM PHOTOGRAMMETRIC MAPPING PROVIDED BY LOCKWOOD MAPPING COMPANY IN SEPTEMBER 2001 AND SURVEY DATA PROVIDED BY ENGINEERING SOURCE, INC. IN JANUARY 2004, AND BASED ON AERIAL PHOTOGRAPHY PROVIDED BY LOCKWOOD MAPPING, INC. TAKEN ON NOVEMBER 22, 1996 AT AN APPROXIMATE SCALE OF 1"=500'. TOPOGRAPHY IN THE EASTERN SOUTHERN DRAINAGE DITCHES AREA BASED ON TOPOGRAPHIC FIELD SURVEY CONDUCTED IN AUGUST 2007.
 2. PROPERTY BOUNDARY IS APPROXIMATE; OBTAINED FROM A COMBINATION OF SITE SURVEY DATA, HISTORICAL MAPS AND TAX MAPS.
 3. THE 2006 RESIDENTIAL SAMPLE LOCATIONS ARE APPROXIMATE.
 4. FIVE RESIDENTIAL SAMPLES (A1-52 THROUGH A1-55, AND A1-61) WILL EACH BE COMPOSITES FROM FIVE LOCATIONS ON THE RESPECTIVE PROPERTIES.



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BEAZER EAST, INC.
 FORMER KOPPERS WOOD TREATING SITE
 CARBONDALE, ILLINOIS

**PROPOSED ADDITIONAL PCDD/PCDF
 SAMPLE LOCATIONS**



FIGURE
1