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Mr. Christopher Saari
Wisconsin Department of Natural Resources
2501 Golf Course Rd
Ashland, WI 54806

Subject:
Former Koppers Inc. Facility – Superior, WI
WID 006 179 493
Work Plan for Supplemental Off-Property Investigations

ENVIRONMENT

Date:
June 28, 2013

Contact:
David Bessingpas

Phone:
218.829.4607

Email:
david.bessingpas@arcadis-us.com

Our ref:
B0039276.0000

Dear Mr. Saari:

1. Introduction

On behalf of Beazer East, Inc. (Beazer), ARCADIS has prepared this Work Plan to describe the proposed scope of work and procedures for supplemental investigations planned for the off-property portion of the Former Koppers Inc. Facility in Superior, Wisconsin (the Site). The scope of work presented herein is consistent with the scope initially presented to the WDNR during a meeting in Madison on April 19, 2013, as modified to address WDNR's comments discussed during a May 24, 2013 conference call/web meeting and a June 26, 2013 meeting. The primary objectives of the investigations are to further delineate the nature and extent of impacts in consideration of comments issued by the WDNR based on their review of the historical investigation data presented in the *Off-Property Data Summary Report* (BBL, February 2006). The WDNR comments were outlined in a letter from to Beazer dated October 9, 2012, and further discussed during various follow-up meetings and conference calls.

In summary, the proposed supplemental investigations include the following:

- 14 direct push soil borings, plus additional (contingent) step-out borings as needed based on the specific investigation objectives
- 13 hand auger borings, plus additional (contingent) step-out borings as needed based on the specific investigation objectives
- Collection and laboratory analysis of up to 20 soil samples from up to 16 locations
- Installation of five shallow/deep temporary monitoring well pairs and two rounds of groundwater sampling and analysis, as practicable.

The proposed investigation locations are shown on the attached Figure 1. A description of the location, scope, and objective(s) for each proposed investigation location are summarized in the attached Table 1. Additional details regarding the scope and procedures of the proposed supplemental investigations are presented below in Section 2.

2. Scope and Procedures

Direct Push Soil Borings

A direct push rig (e.g., Geoprobe® or similar) will be used to advance soil borings at the 14 locations specified in Table 1 and shown on Figure 1. At certain soil boring locations, where the objective is to delineate the horizontal extent of visibly impacted soil (see Table 1), if visibly impacted materials are observed at the proposed boring location, additional step-out borings will be advanced in an iterative manner until the horizontal delineation objective has been achieved (pending equipment accessibility). It is anticipated that step-out borings will be advanced between 25 and 50 feet away from the original boring location, extending farther up the floodplain. The actual distance will depend on accessibility, topography, and findings from nearby investigations (either historical, or other direct push or hand auger soil borings conducted as part of this work scope).

The targeted depth for each boring will be 25 feet below ground surface (bgs), or 30 feet bgs if the location is designated for a deep monitoring well (discussed further below). If visibly impacted soils are observed at the bottom of the targeted depth, the boring will continue until visible impacts are no longer observed for a minimum of 2 feet, or until refusal by the boring equipment (due to the tight clay nature of the soils, it is anticipated that the direct push equipment will have a depth limit of around 30 feet bgs). Recovered soils from each boring will be screened with a photoionization detector (PID) and logged for soil type and visual/olfactory evidence of impacts as a function of depth. Borings will be tremie grouted upon completion, unless designated for a deep monitoring well.

As indicated in Table 1, at soil boring locations where visibly impacted materials are observed, soil samples will be collected from the 0.5-foot visibly unimpacted interval immediately below the deepest observed visibly impacted interval for laboratory analysis of polycyclic aromatic hydrocarbons (PAHs; USEPA Method 8270).

Hand Auger Borings[1]

Hand auger borings will be advanced at the 13 locations specified in Table 1 and shown on Figure 1. As shown on Figure 1, the hand auger borings will be advanced along transects oriented perpendicular to the edge of the floodplain. In general, the hand auger borings will be advanced at four locations along each transect[2]:

- Below the 2-year flood elevation (612.6 feet AMSL)[3]
- Between the 2- (612.6 feet AMSL) and 25-year flood elevations (617.3 feet AMSL)
- Between the 25- (617.3 feet AMSL) 100-year flood elevations (619.0 feet AMSL)
- Above the 100-year flood elevation (619.0 feet AMSL), or above where visible signs of flooding are evident – such as debris or water marks on trees

The targeted depth for each hand auger boring will be 4 feet bgs. If visibly impacted soils are observed at the bottom of the targeted depth, the boring will continue until visible impacts are no longer observed for a minimum of 2 feet, or until hand auger refusal (due to the tight clay nature of the soils, it is anticipated that the hand auger will have a depth limit of around 4 to 6 feet bgs). Provided that the location is accessible for the equipment, a direct push rig will be used to continue the boring in the event that the maximum depth of the hand auger is exceeded. Recovered soils from each boring will be screened with a PID and logged for soil type and visual/olfactory evidence of impacts as a function of depth. The hand auger borings will be backfilled with soil cuttings upon completion; borings that go deeper than 4 feet or where creosote-like product is observed will be tremie grouted upon completion.

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[1] These borings may be advanced using a direct push rig instead of a hand auger, if accessible by the equipment.

[2] Flood elevations for Crawford Creek based on Nemadji River flood flows and water surface elevations obtained from *Flood Frequency Characteristics of Wisconsin Streams* (USGS, 2003), adjusted to correlate with FEMA 100-year flood elevation (NGVD 29).

[3]Along two of the four transects, a direct push soil boring will be advanced at the "below 2-year flood elevation" location instead of a hand auger boring, based on the added objective of delineating the horizontal extent of visible impacts at those specific locations.

If visible impacts are observed at a "above the 100-year flood elevation" hand auger boring, additional step-out borings will be advanced in an iterative manner until the horizontal extent of the visible impacts have been delineated. It is anticipated that step-out borings will be advanced between 10 and 20 feet away from the original boring location, extending farther up the floodplain. The actual distance will depend on accessibility, topography, and findings from nearby investigations (either historical, or other direct push or hand auger soil borings conducted as part of this work scope).

At each of the four "above the 100-year flood elevation" locations (or the first visibly unimpacted step-out boring, if applicable), soil samples will be collected from the 0- to 0.5-foot and 0.5- to 1-foot depth intervals for laboratory analysis of PAHs (USEPA Method 8270) and polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans (dioxins; USEPA Method 8290).

Temporary Monitoring Well Installation and Groundwater Sampling

Temporary monitoring wells will be installed using a direct push rig at the five locations specified in Table 1 and shown on Figure 1. Permanent monitoring wells are not feasible for this floodplain environment. At each location, a "shallow" and "deep" well will be installed. At investigation locations M and P (Figure 1), the shallow well is intended to be screened across a visibly impacted soil zone and the deep well is intended to be screened across a visibly unimpacted zone located below a visibly impacted zone. At the remaining three locations (and at locations M and P, if visible impacts are not observed), the 2- to 12-foot bgs and 20- to 30-foot bgs depth intervals will be targeted for shallow and deep well screens, respectively.

The well construction will be consistent with NR 141 requirements, to the extent possible given the equipment being used. It is assumed that 1- to 2-inch diameter PVC wells will be installed, with 10-foot-long screens (5-foot screens may be used if impacted zones being targeted for sampling are less than 10 feet in length). The temporary wells will be developed prior to sampling.

Samples will be collected using low-flow sampling techniques and equipment appropriate for the well diameter and installed depths. Based on experience from prior investigations, it is expected that the wells screened in clay will be pumped dry and sampled following recharge. Groundwater samples will be submitted for laboratory analysis of volatile organic compounds (VOCs; USEPA Method 8021B) and semivolatile organic compounds (SVOCs; USEPA Method 8270C). If possible, two groundwater sampling events will be conducted, after which time the temporary wells will be abandoned.

3. Quality Assurance/Quality Control

Soil samples designated for PAH analysis will be analyzed by TestAmerica in Pittsburgh, Pennsylvania. Soil samples designated for dioxin analysis will be analyzed by Vista Analytical Laboratory in El Dorado Hills, California. Groundwater samples will be analyzed by TriMatrix Laboratories, Inc. in Grand Rapids, Michigan.

Quality assurance/quality control (QA/QC) samples will be collected at the following frequencies:

- 1 blind duplicate per 10 field samples (both soil and groundwater)
- 1 equipment blank per 20 field samples (for soil samples collected using non-dedicated/non-disposable sampling equipment)
- 1 matrix spike/matrix spike duplicate per 20 field samples (both soil and groundwater)
- 1 trip blank per cooler containing VOC samples

Analytical data will be validated in accordance with USEPA National Functional Guidelines for Data Review.

4. Equipment Cleaning

Non-dedicated/non-disposable sampling equipment will be cleaned prior to use at each sample location, using the following procedure:

- Clean large particles with a brush and non-phosphate detergent wash
- Rinse with distilled/deionized water
- Rinse with solvent (e.g., hexane) followed by distilled/deionized water (repeat three times)

5. Waste Management

Waste materials, including, but not limited to, equipment cleaning fluids, used personal protective equipment (PPE), disposable sampling equipment, and soil cuttings from the soil borings and well installations, will be removed from the floodplain at the end of each day and placed into 55-gallon drums for subsequent characterization and disposal by Beazer.

6. Survey

All investigation locations will be located and marked with wooden stakes prior to conducting the work. Investigation location added (i.e., step-out borings) or moved following the initial survey/layout will be marked with wooden stakes and surveyed at the completion of the work. Ground surface elevations will also be surveyed at each location. Top of casing elevations for each temporary monitoring well will also be surveyed so that depth to water measurements can be converted to potentiometric surface elevations.

7. Data Review and Reporting

Following completion of the field work and receipt/validation of the laboratory analytical data, Beazer will prepare a letter report to summarize the scope and findings of the supplemental investigation activities. The report will provide an assessment of whether the investigation objectives were met, and will include tables summarizing the laboratory analytical results, a map showing the surveyed investigation locations, soil boring/hand auger/temporary monitoring well construction logs, data validation reports, and laboratory analytical data sheets.

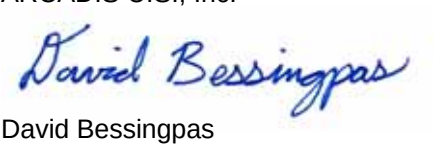
8. Schedule

It is anticipated that the field work will be initiated within 15 days following WDNR approval of this Work Plan and execution of the necessary property access agreements. The actual schedule will also be determined based upon amenable field and weather conditions (e.g., a dry period will be targeted so that low-lying areas within the floodplain are accessible). Note that if the field work is initiated after October 1, it is unlikely that the temporary monitoring wells can be installed, developed and sampled prior to the on-set of winter and frozen ground conditions. In that event, Beazer will coordinate with WDNR regarding an alternate schedule for that component of the work. A summary report will be submitted to the WDNR within 60 days following receipt of all laboratory analytical data.

Please feel free to contact Jane Patarcity of Beazer (412.208.8813) or me with any questions or comments regarding this Work Plan.

Sincerely,

ARCADIS U.S., Inc.



David Bessingpas
Sr. Project Manager

Copies:
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Jane Patarcity, Beazer
Jeff Holden, ARCADIS
Stu Messur, Anchor QEA
Mark Thimke, Foley & Lardner

Beazer East, Inc.
Former Koppers Inc. Facility - Superior, WI

Table 1. Proposed Scope of Work for Supplemental Off-Property Investigations

ID	Location Description	Scope	Objective(s)	Soil Sample-PAHs	Soil Sample-Dioxins	GW Sample-VOCs/SVOCs
A	Step-out from former sample location FP-14-5'L, between 2 and 25 year flood elevations	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual	- Assess visual impacts at higher flood elevations			
B	Step-out from A, between 25 and 100 year flood elevations	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual	- Assess visual impacts at higher flood elevations			
C	Step-out from B, above 100 year flood elevation/debris line	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual (additional step-out boring(s)[1], if visible impacts observed) - Sample 0-0.5' and 0.5-1' intervals for PAHs and dioxins (at this location, or first visibly unimpacted step-out boring, if applicable)	- Assess visual impacts and PAH/dioxin concentrations in surface soils at higher flood elevations (delineate PAHs beyond FP-14-5'L)	X	X	
D	Step-out from (and between) former test pits S23-4 and S24-4, between 2 and 25 year flood elevations	- Direct push boring to ~25' - visual (additional step-out boring(s)[2], if visual impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Delineate horizontal/vertical extent of visible impacts observed at former test pits S23-4 and S24-4 - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Sample added per WDNR comment on 5/24/13]**	X (if visible impacts present)		
E	Step-out from (and between) former test pits S24-4 and S25-3, below 2 year flood elevation (near former location FP-15-175'R)	- Direct push boring to ~25' - visual (additional step-out boring(s)[2], if visual impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Delineate horizontal extent of visible impacts observed at former test pits S24-4 and S25-3 - Assess visual impacts at higher flood elevations - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Sample added per WDNR comment on 5/24/13]**	X (if visible impacts present)		
F	Step-out from E, between 2 and 25 year flood elevations	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual	- Assess visual impacts at higher flood elevations			
G	Step-out from F, between 25 and 100 year flood elevations	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual	- Assess visual impacts at higher flood elevations			

Beazer East, Inc.
Former Koppers Inc. Facility - Superior, WI

Table 1. Proposed Scope of Work for Supplemental Off-Property Investigations

ID	Location Description	Scope	Objective(s)	Soil Sample-PAHs	Soil Sample-Dioxins	GW Sample-VOCs/SVOCs
H	Step-out from G, above 100 year flood elevation/debris line	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual (additional step-out boring(s)[1], if visible impacts observed) - Sample 0-0.5' and 0.5-1' intervals for PAHs and dioxins (at this location, or first visibly unimpacted step-out boring, if applicable)	- Assess visual impacts and PAH/dioxin concentrations at higher flood elevations (delineate PAHs beyond FP-15-175'R and dioxins beyond SOIL-T24)	X	X	
I	Step-out from (and between) former test pits S21-4 and S22-4, below 2 year flood elevation	- Direct push boring to ~30' - visual (additional step-out boring(s)[2], if visual impacts observed) - Shallow and deep temporary well pair (at original boring location, or first step out where no visible impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Delineate horizontal extent of visible impacts observed at former test pits S21-4 and S22-4 - Assess visual impacts at higher flood elevations - Assess groundwater concentrations outside visible impacted area - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Sample added per WDNR comment on 5/24/13]**	X (if visible impacts present)		X (shallow and deep)
J	Step-out from I, between 2 and 25 year flood elevations	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual	- Assess visual impacts at higher flood elevations			
K	Step-out from J, between 25 and 100 year flood elevations	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual	- Assess visual impacts at higher flood elevations			
L	Step-out from K, above 100 year flood elevation/debris line	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual (additional step-out boring(s)[1], if visible impacts observed) - Sample 0-0.5' and 0.5-1' intervals for PAHs and dioxins (at this location, or first visibly unimpacted step-out boring, if applicable)	-Assess visual impacts and PAH/dioxin concentrations at higher flood elevations (delineate PAHs beyond FP-15-125'L and dioxins beyond SOIL-T23)	X	X	

Beazer East, Inc.
Former Koppers Inc. Facility - Superior, WI

Table 1. Proposed Scope of Work for Supplemental Off-Property Investigations

ID	Location Description	Scope	Objective(s)	Soil Sample-PAHs	Soil Sample-Dioxins	GW Sample-VOCs/SVOCs
M	Between former test pits S21-1 and S20-3 (in former tributary flowpath area)	- Direct push boring to ~30' - visual - Shallow and deep temporary well pair (one sample from visibly impacted zone, one below visibly impacted zone) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Assess groundwater concentrations within/below visibly impacted area - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Sample added per WDNR comment on 5/24/13]**	X (if visible impacts present)		X (shallow and deep)
N	Near former test pit S11-1	- Direct push boring to ~25' - visual - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs	- Delineate vertical extent of visible impacts observed at former test pit S11-1 - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Sample added per WDNR comment on 5/24/13]**	X (if visible impacts present)		
O	Step-out from (and between) former test pits S3-2 and S4-2	- Direct push boring to ~25' - visual (additional step-out boring(s)[2], if visual impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Delineate horizontal extent of visible impacts observed at former test pits S3-2 and S4-2 - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Sample added per WDNR comment on 5/24/13]**	X (if visible impacts present)		
P	Between former test pits N2-1, N2-2, N3-2 and N3-3 (in former beaver pond area)	- Direct push boring to ~30' - visual - Shallow and deep temporary well pair (one sample from visibly impacted zone, one below visibly impacted zone) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs	- Delineate vertical extent of visible impacts observed at former test pit N2-1, N2-2, N3-2 and N3-3 - Assess groundwater concentrations within/below visibly impacted area - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Sample added per WDNR comment on 5/24/13]**	X (if visible impacts present)		X (shallow and deep)

Beazer East, Inc.
Former Koppers Inc. Facility - Superior, WI

Table 1. Proposed Scope of Work for Supplemental Off-Property Investigations

ID	Location Description	Scope	Objective(s)	Soil Sample-PAHs	Soil Sample-Dioxins	GW Sample-VOCs/SVOCs
Q	Step out from former test pit N3-4	- Direct push boring to ~30' - visual (additional step-out boring(s)[2], if visual impacts observed) - Shallow and deep temporary well pair (at original boring location, or first step out where no visible impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Delineate horizontal extent of visible impacts observed at former test pit N3-4 (former beaver pond area) - Assess groundwater concentrations outside visible impacted area - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Sample added per WDNR comment on 5/24/13]**	X (if visible impacts present)		X (shallow and deep)
R	Step-out from SOIL-T1, below 2 year flood elevation	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual	- Assess visual impacts at higher flood elevations			
S	Step-out from R, between 2 and 25 year flood elevations	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual	- Assess visual impacts at higher flood elevations			
T	Step-out from S, between 25 and 100 year flood elevations	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual	- Assess visual impacts at higher flood elevations			
U	Step-out from T, above 100 year flood elevation/debris line	- Hand auger boring to 4' (deeper if impacts observed at bottom) - visual (additional step-out boring(s)[1], if visible impacts observed) - Sample 0-0.5' and 0.5-1' intervals for PAHs and dioxins (at this location, or first visibly unimpacted step-out boring, if applicable)	- Assess visual impacts and PAH/dioxin concentrations at higher flood elevations (delineate dioxins beyond SOIL-T1)	X	X	
V	Along west side of Crawford Creek, approx. midway between confluence with Tributary and RR embankment, in low-lying/ponded area, near 2005 composite sample transect SOIL-T13	- Direct push boring to ~30' - visual (additional step-out boring(s)[2], if visual impacts observed) - Shallow and deep temporary well pair (at original boring location, or first step out where no visible impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Assess visual impacts in low-lying/ponded area - Assess groundwater concentrations outside visible impacted area - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils [Sample added per WDNR comment on 5/24/13]	X (if visible impacts present)		X (shallow and deep)

Beazer East, Inc.
Former Koppers Inc. Facility - Superior, WI

Table 1. Proposed Scope of Work for Supplemental Off-Property Investigations

ID	Location Description	Scope	Objective(s)	Soil Sample-PAHs	Soil Sample-Dioxins	GW Sample-VOCs/SVOCs
W	Along west side of Crawford Creek, in low-lying/ponded area, between 2005 composite sample transects SOIL-T10 and SOIL-T12	- Direct push boring to ~25' - visual (additional step-out boring(s)[2], if visual impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Assess visual impacts in low-lying/ponded area - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Location added per WDNR comment on 5/24/13]**	X (if visible impacts present)		
X	Along west side of Crawford Creek, in low-lying/ponded area, near 2005 composite sample transect SOIL-T6	- Direct push boring to ~25' - visual (additional step-out boring(s)[2], if visual impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Assess visual impacts in low-lying/ponded area - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Location added per WDNR comment on 5/24/13]**	X (if visible impacts present)		
Y	Along west side of Crawford Creek, in low-lying/ponded area, near 2005 composite sample transect SOIL-T1	- Direct push boring to ~25' - visual (additional step-out boring(s)[2], if visual impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Assess visual impacts in low-lying/ponded area - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Location added per WDNR comment on 5/24/13]**	X (if visible impacts present)		
Z	Along east side of Crawford Creek, near the confluence of the former tributary flowpath (as shown on a 1973 aerial photograph) with Crawford Creek	- Direct push boring to ~25' - visual (additional step-out boring(s)[2], if visual impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Assess visual impacts in previously uninvestigated area - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Location added per WDNR comment on 6/26/13]**	X (if visible impacts present)		

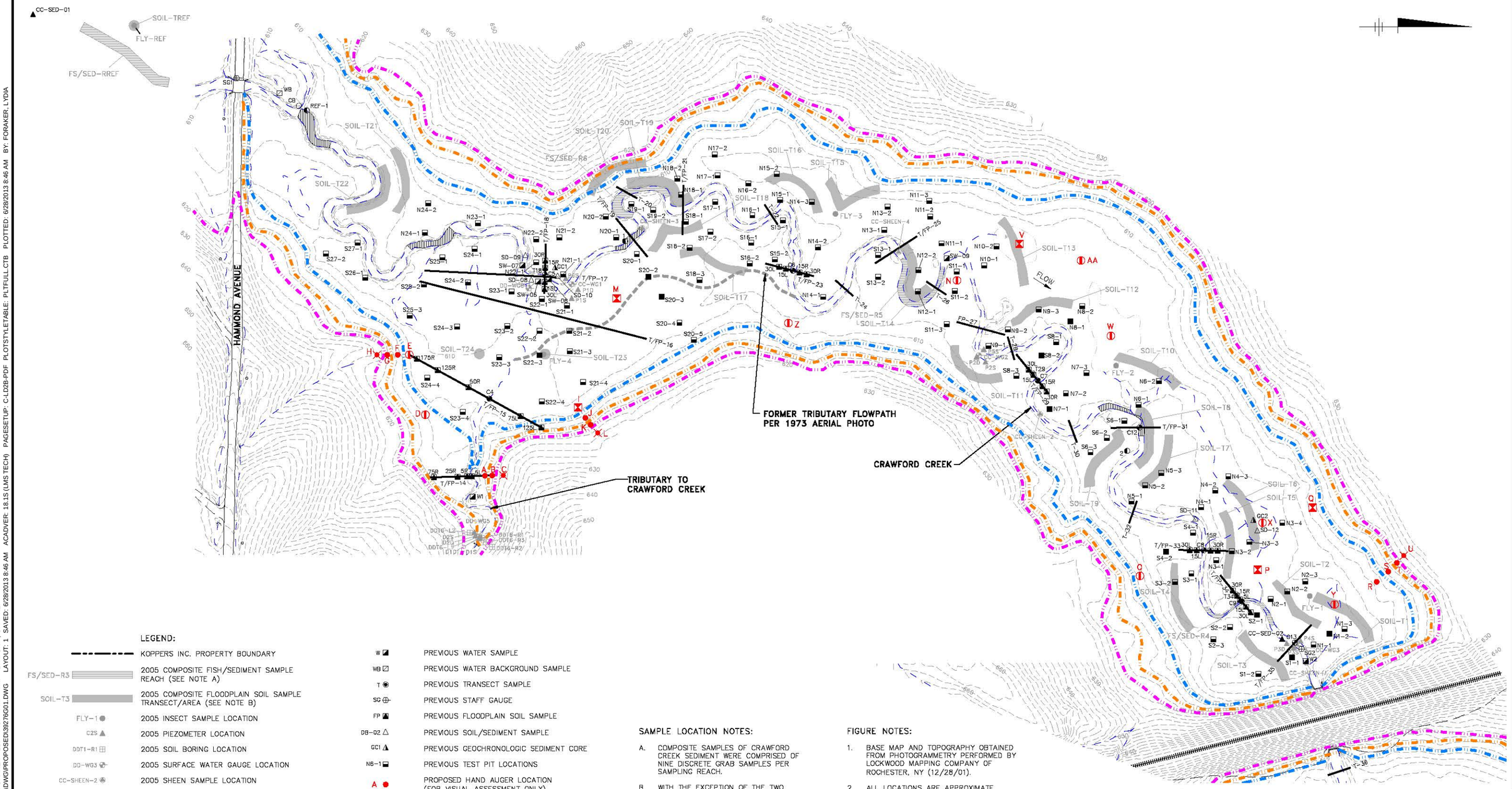
Beazer East, Inc.
Former Koppers Inc. Facility - Superior, WI

Table 1. Proposed Scope of Work for Supplemental Off-Property Investigations

ID	Location Description	Scope	Objective(s)	Soil Sample-PAHs	Soil Sample-Dioxins	GW Sample-VOCs/SVOCs
AA	Along west side of Crawford Creek, between proposed investigation locations V and W	- Direct push boring to ~25' - visual (additional step-out boring(s)[2], if visual impacts observed) - If visible impacts observed, sample 0.5' visibly unimpacted soil interval immediately below deepest observed visibly impacted interval for PAHs (applies to original location only; not step-outs)	- Assess visual impacts in previously uninvestigated area - Assess PAH concentrations in visibly unimpacted soils located below visibly impacted soils **[Location added per WDNR comment on 6/26/13]**	X (if visible impacts present)		

Notes:

1. For hand auger borings, it is anticipated that step-out borings will be advanced between 10 and 20 feet away from the original boring location, extending farther up the floodplain. The actual distance will depend on accessibility, topography, and findings from nearby investigations (either historical, or other direct push or hand auger soil borings conducted as part of this work scope).
2. For direct push borings, it is anticipated that step-out borings will be advanced between 25 and 50 feet away from the original boring location, extending farther up the floodplain. The actual distance will depend on accessibility, topography, and findings from nearby investigations (either historical, or other direct push or hand auger soil borings conducted as part of this work scope).



LEGEND:

KOPPERS INC. PROPERTY BOUNDARY	
FS/SED-R3 — 2005 COMPOSITE FISH/SEDIMENT SAMPLE REACH (SEE NOTE A)	
SOIL-T3 — 2005 COMPOSITE FLOODPLAIN SOIL SAMPLE TRANSECT/AREA (SEE NOTE B)	
FLY-1 — 2005 INSECT SAMPLE LOCATION	
C2S — 2005 PIEZOMETER LOCATION	
DDT1-R1 — 2005 SOIL BORING LOCATION	
DD-WG3 — 2005 SURFACE WATER GAUGE LOCATION	
CC-SHEEN-2 — 2005 SHEEN SAMPLE LOCATION	
PREVIOUS SEDIMENT/FLOODPLAIN SOIL BORING TRANSECT	
PREVIOUS FISH SURVEY AREA	
PREVIOUS INSECT SAMPLE	
PREVIOUS FLOODPLAIN SOIL SAMPLE (2/03)	
PREVIOUS SEDIMENT SAMPLE (5/03)	
C — PREVIOUS SEDIMENT CORE SAMPLE	
CB — PREVIOUS SEDIMENT CORE BACKGROUND SAMPLE	
W — PREVIOUS WATER SAMPLE	
WB — PREVIOUS WATER BACKGROUND SAMPLE	
T — PREVIOUS TRANSECT SAMPLE	
SG — PREVIOUS STAFF GAUGE	
FP — PREVIOUS FLOODPLAIN SOIL SAMPLE	
DB-02 — PREVIOUS SOIL/SEDIMENT SAMPLE	
GC1 — PREVIOUS GEOCHRONOLOGIC SEDIMENT CORE	
N6-1 — PREVIOUS TEST PIT LOCATIONS	
A — PROPOSED HAND AUGER LOCATION (FOR VISUAL ASSESSMENT ONLY)	
H — PROPOSED HAND AUGER LOCATION WITH SOIL SAMPLING	
D — PROPOSED SOIL BORING LOCATION	
M — PROPOSED SOIL BORING/TEMPORARY MONITORING WELL PAIR LOCATION	
2-YEAR FLOOD ELEVATION — 613 FT AMSL	
25-YEAR FLOOD ELEVATION — 617 FT AMSL	
100-YEAR FLOOD ELEVATION — 619 FT AMSL	

SAMPLE LOCATION NOTES:

A. COMPOSITE SAMPLES OF CRAWFORD CREEK SEDIMENT WERE COMPRISED OF NINE DISCRETE GRAB SAMPLES PER SAMPLING REACH.

B. WITH THE EXCEPTION OF THE TWO CIRCULAR AREAS ADJACENT TO THE OUTFALL 001 DRAINAGE DITCH AND THE CIRCULAR AREA SOUTH OF HAMMOND AVENUE, EACH COMPOSITE FLOODPLAIN SOIL SAMPLE WAS COMPRISED OF FIVE DISCRETE GRABS WITHIN EACH INDICATED SAMPLING AREA. COMPOSITE SAMPLES FROM THE THREE CIRCULAR AREAS WERE COMPRISED OF FOUR DISCRETE GRAB SAMPLES.

FIGURE NOTES:

1. BASE MAP AND TOPOGRAPHY OBTAINED FROM PHOTOGRAMMETRY PERFORMED BY LOCKWOOD MAPPING COMPANY OF ROCHESTER, NY (12/28/01).
2. ALL LOCATIONS ARE APPROXIMATE.
3. FLOOD ELEVATIONS FOR CRAWFORD CREEK BASED ON NEMADJI RIVER FLOOD FLOWS AND WATER SURFACE ELEVATIONS OBTAINED FROM "FLOOD FREQUENCY CHARACTERISTICS OF WISCONSIN STREAMS " (USGS, 2003), ADJUSTED TO CORRELATE WITH FEMA 100-YEAR FLOOD ELEVATION (NGVD 29).

0 100' 200'
GRAPHIC SCALE

BEAZER EAST, INC.
FORMER KOPPERS INC. FACILITY
SUPERIOR, WISCONSIN

PROPOSED INVESTIGATION LOCATIONS

ARCADIS

FIGURE 1

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L.FORAKER LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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