Addendum to September 2019 Supplemental Data Gap Investigation Work Plan
Crawford Creek and Tributary Remediation and Restoration Project – Superior, Wisconsin
July 22, 2020

The purpose of this Addendum is to document modifications to the September 2019 Supplemental Data Gap Investigation (DGI) Work Plan for the Great Lakes Legacy Act (GLLA) Crawford Creek and Tributary Remediation and Restoration Project in Superior, Wisconsin, which were agreed upon between Beazer, East, Inc. (Beazer), the United State Environmental Protection Agency (USEPA), and the Wisconsin Department of Natural Resources (WDNR). The following scope changes were agreed to during a May 6, 2020 conference call:

- For all Sub-Area B and C soil borings, in addition to the proposed 0-0.5' below ground surface (bgs), 0.5-1' bgs, 1-2' bgs, and "black stained layer" (if present) sample intervals identified in the Supplemental DGI Work Plan, samples for laboratory analysis of polycyclic aromatic hydrocarbons (PAHs), pentachlorophenol, dioxins/furans, and total organic carbon (TOC) will also be collected from the following intervals: 2-4' bgs, 2' below the channel bottom elevation of Crawford Creek adjacent to the boring location, and 13-15' bgs.
- One additional soil boring (SO-C12) will be added in Sub-Area C, at the location of 2013 soil boring SB-3. At this boring, samples for laboratory analysis of PAHs, pentachlorophenol, dioxins/furans, and TOC will be collected from the following intervals: 0-0.5' bgs, 0.5-1' bgs, 1-2' bgs, 2-4' bgs, 4-6' bgs, 6-8' bgs, 8-10' bgs, 10-13' bgs, and 13-15' bgs.

Note that the specified sample intervals may be adjusted in the field to account for observed changes in visual impacts and lithology (i.e., each sample interval will target a single visual observation type and lithologic type, to the extent possible).

Also, as recommended by Jacobs in a May 13, 2020 email, for Sub-Area D soil borings, in addition to the proposed sample intervals specified in the Supplemental DGI Work Plan (0-0.5' bgs, 0.5-1' bgs, and 1-2' bgs), one additional sample will be collected at depth (below 2') specifically targeting visibly impacted materials (if present), for laboratory analysis of PAHs, pentachlorophenol, dioxins/furans, and TOC.

Supplemental DGI Work Plan Table 2 (Summary of Proposed Data Gap Investigation Scope of Work by Sub-Area) has been updated to reflect the additional analytical sample intervals for Sub-Area B, C, and D soil borings, and the additional soil boring SO-C12. Figure 4 (Sub-Areas B/C and Background Investigation Locations) has been updated to include the additional soil boring SO-C12. Copies of the updated Table 2 and Figure 4 are attached.

One other change that was proposed by Arcadis in a May 7, 2020 email, is for any visibly impacted samples to be analyzed for PAHs using standard Method 8270, rather than Method 8270 Low Level, as was specified in the Supplemental DGI Quality Assurance Project Plan (QAPP). Although this change may raise detection limits, it should result in fewer matrix interference issues and more accurate PAH concentrations for more heavily impacted samples. This analytical method change was agreed to by both USEPA and WDNR in emails dated May 7, 2020.

Table 2
Summary of Proposed Data Gap Investigation Scope of Work by Sub-Area
Supplemental Data Gap Investigation Work Plan
Crawford Creek and Tributary Remediation and Restoration Project
Superior, Wisconsin

[July 22, 2020 ADDENDUM REVISIONS IN RED]

Matrix	Location ID	DGTM Sample ID	Corresponding Historical Sample ID	General Scope [1,2]	Target Depth (feet)	Analytical Sample Depth Intervals (feet)	Grain Size	Sample Type [3]
Sub-Area A								
Sediment	SED-A01	A-Sed-6	N/A (spatial data gap)	Sediment core for visual observation and surface sediment sample for lab analysis	Equip. refusal	0-0.5		Discrete
	SED-A02	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-A03	A-Sed-5	C-3 (1999)	Sediment core for visual observation and surface sediment sample for lab analysis		0-0.5	X	Discrete
	SED-A04	A-Sed-4	N/A (spatial data gap)	Sediment core for visual observation and surface sediment sample for lab analysis		0-0.5		Discrete
	SED-A05	A-Sed-3	N/A (spatial data gap)	Sediment core for visual observation and surface sediment sample for lab analysis		0-0.5	X	Discrete
	SED-A06	A-Sed-2	C-2 (1999)	Sediment core for visual observation and surface sediment sample for lab analysis		0-0.5		Discrete
	SED-A07	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-A08	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-A09	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-A10	A-Sed-1	N/A (spatial data gap)	Sediment core for visual observation and surface sediment sample for lab analysis		0-0.5		Discrete
Bank Soil	SO-A01	A-CB-5	N/A (spatial data gap)	Surface soil samples for visual observation and lab analysis	0.5	0-0.5		Discrete
	SO-A02	A-CB-4	N/A (spatial data gap)				X	
	SO-A03	A-CB-3	N/A (spatial data gap)					
	SO-A04	A-CB-2	N/A (spatial data gap)					
	SO-A05	A-CB-1	N/A (spatial data gap)				X	
	SO-A06	N/A	N/A (spatial data gap)					
Surface Water	SW-A01	A-SW-1	N/A (spatial data gap)	Surface water sample for lab analysis	N/A	Surface		Grab

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Sub-Area B								
Sediment	SED-B01	B-Sed-1	N/A (spatial data gap)	Sediment core for visual observation and surface/subsurface samples for lab analysis	Equip. refusal	0-0.5, 0.5-1, 1-2, 2-EOC [4]		Discrete
	SED-B02	B-Sed-2, T-1	N/A (spatial data gap)	Sediment core for visual observation and surface/subsurface samples for lab analysis		0-0.5, 0.5-1, 1-2, 2-EOC [4]	X	
	SED-B03	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		Discrete
Floodplain Soil	SO-B01	B-FP-1	T-FP17/18 (1999)	Soil boring for visual observation and surface/ subsurface samples for lab analysis	15	0-0.5, 0.5-1, 1-2, 2-4, 2' below adjacent creek bottom elev., 13-15 [4,5]		Discrete
	SO-B02	B-FP-2	N/A (spatial data gap)				X	
Surface Water	SW-B01	N/A	N/A (spatial data gap)	Surface water sample for lab analysis	N/A	Surface		Grab

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Sub-Area C								
Sediment	SED-C01	C-Sed-4	FS/SED-R4 (2005)	Sediment core for visual observation and surface/subsurface samples for lab analysis	Equip. refusal	0-0.5, 0.5-1, 1-2, 2-EOC [4]		Discrete and composite
	SED-C02	T-5	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-C03	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-C04	C-Sed-3	N/A (spatial data gap)	Sediment core for visual observation and surface/subsurface samples for lab analysis		0-0.5, 0.5-1, 1-2, 2-EOC [4]	X	Discrete
	SED-C05	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-C06	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-C07	C-Sed-2, T-4	N/A (spatial data gap)	Sediment core for visual observation and surface/subsurface samples for lab analysis		0-0.5, 0.5-1, 1-2, 2-EOC [4]	X	Discrete
	SED-C08	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-C09	C-Sed-1	FS/SED-R5 (2005)	Sediment core for visual observation and surface/subsurface samples for lab analysis	Equip. refusal	0-0.5, 0.5-1, 1-2, 2-EOC [4]		Discrete and composite
	SED-C10	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-C11	T-3	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-C12	N/A	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-C13	C-Sed-5	FS/SED-R6 (2005)	Sediment core for visual observation and surface/subsurface samples for lab analysis		0-0.5, 0.5-1, 1-2, 2-EOC [4]	X	Discrete and composite
	SED-C14	T-2	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A

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Sub-Area C (Cont.)								
Floodplain Soil	SO-C01 [6]	C-FP-4A	N/A (spatial data gap)	Soil boring for visual observation and surface/subsurface samples for lab analysis	15	0-0.5, 0.5-1, 1-2, 2-4, 2' below adjacent creek bottom elev., 13-15 [4,5]	X	Discrete
	SO-C02	C-FP-4	SOIL-T3 (2005)					Discrete and composite
	SO-C03	C-FP-4B	SOIL-T4 (2005)					Discrete and composite
	SO-C04	C-FP-3A	N/A (spatial data gap)					Discrete
	SO-C05 [6]	C-FP-3B	N/A (spatial data gap)					Discrete
	SO-C06	C-FP-3	SOIL-T9 (2005)					Discrete and composite
	SO-C07 [6]	C-FP-2A	N/A (spatial data gap)					Discrete
	SO-C08	C-FP-2	SOIL-T11 (2005)				X	Discrete and composite
	SO-C09	C-FP-1A	N/A (spatial data gap)					Discrete
	SO-C10	C-FP-1	N/A (spatial data gap)					Discrete
	SO-C11	C-FP-5	SOIL-T18 (2005)				X	Discrete and composite
	SO-C12	N/A	SB-3 (2013)			0-0.5, 0.5-1, 1-2, 2-4, 4-6, 6-8, 8-10, 10-13, 13-15 [4,5]		Discrete
Surface Water	SW-C01	C-SW-1	N/A (spatial data gap)	Collect surface water sample for lab analysis	N/A	Surface		Grab
	SW-C02	C-SW-2	N/A (spatial data gap)					
Groundwater	GW-TMW-C1	C-PZ-1	N/A (spatial data gap)	Soil boring for visual observation, install/develop temporary monitoring well,	12	Screen from 2-12		Grab
	GW-TMW-C2	C-PZ-1	N/A (spatial data gap)					

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Sub-Area D								
Sediment	SED-D01	D-Sed-6	CC-028-B (2014)	Sediment core for visual observation and surface/subsurface samples for lab analysis	Equip. refusal	0-0.5, 0.5-1, 1-2, 2-EOC [4]	X	Discrete
	SED-D02	T-8	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-D03	D-Sed-5	CC-020-C (2014)	Sediment core for visual observation and surface/subsurface samples for lab analysis		0-0.5, 0.5-1, 1-2, 2-EOC [4]		Discrete
	SED-D04	D-Sed-4	N/A (spatial data gap)	Sediment core for visual observation and surface/subsurface samples for lab analysis		0-0.5, 0.5-1, 1-2, 2-EOC [4]	X	Discrete
	SED-D05	T-7	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-D06	D-Sed-3	CC-006-C (2014)	Sediment core for visual observation and surface/subsurface samples for lab analysis		0-0.5, 0.5-1, 1-2, 2-EOC [4]		Discrete
	SED-D07	D-Sed-2	CC-003-C (2014)	Sediment core for visual observation and surface/subsurface samples for lab analysis		0-0.5, 0.5-1, 1-2, 2-EOC [4]		Discrete
	SED-D08	T-6	N/A (spatial data gap)	Sediment core for visual observation		N/A (visual only)		N/A
	SED-D09	D-Sed-1	CC-001A (2014)	Sediment core for visual observation and surface/subsurface samples for lab analysis		0-0.5, 0.5-1, 1-2, 2-EOC [4]	X	Discrete
Floodplain Soil	SO-D01	D-FP-1	CF-01-B (2014)	Collect surface/subsurface samples for visual observation and lab analysis	15	0-0.5, 0.5-1, 1-2 [4,5,7]	X	Discrete
	SO-D02	D-FP-2	CF-03-C (2014)					
	SO-D03	D-FP-3	N/A (spatial data gap)				X	
	SO-D04	D-FP-4	N/A (spatial data gap)					
	SO-D05	D-FP-5	N/A (spatial data gap)		30		X	
	SO-D06	D-FP-6	N/A (spatial data gap)					
Surface Water	SW-D01	D-SW-1	N/A (spatial data gap)	Collect surface water sample for lab analysis	N/A	Surface		Grab
	SW-D02	D-SW-2	N/A (spatial data gap)					

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Background								
Sediment	SED-BG1	BG-Sed-1	FS/SED-RREF (2005)	Collect surface sample for visual observation and lab analysis	0.5	0-0.5	X	Composite
Floodplain Soil	SO-BG1	BG-FP-1	SOIL-TREF (2005)	Collect surface sample for visual observation and lab analysis	0.5	0-0.5	X	Discrete and composite
Surface Water	SW-BG1	BG-SW-1	N/A (spatial data gap)	Collect surface water sample for lab analysis	N/A	Surface		Grab

Notes:
DGTM - Crawford Creek and Tributary Data Gap Evaluation Technical Memorandum (Jacobs 2019)
EOC - end of core
N/A - not applicable
1. All sediment and soil samples collected for lab analysis will be analyzed for polycyclic aromatic hydrocarbons (PAHs), pentachlorophenol, dioxins/furans, and total organic carbon (TOC); grain size testing will be performed on a subset of the samples, as indicated above.
2. All surface water and groundwater samples will be analyzed for PAHs, pentachlorophenol, dioxins/furans, and total suspended solids (TSS).
3. Refer to the applicable section of the DGI Work Plan for a detailed description of the composite sampling approach for each of the proposed composite sample locations.
4. Note that sample intervals may be adjusted in the field to account for observed changes in visual impacts and lithology (i.e., each sample interval will target a single visual observation type and lithologic type, to the extent possible).
5. In addition to the specified analytical sample depth intervals, a sample of the "black stained layer" will be collected from soil borings where it is encountered.
6. Data from soil borings SO-C01, SO-C05, and SO-C07 will be used for evaluation of the potential creek channel relocation route.
7. For Sub-Area D soil borings, in addition to the specified analytical sample depth intervals, one additional sample will be collected at depth (below 2') specifically targeting visibly impacted materials (if present).

TS-030-01381-00
MADSEN

TS-030-01379-01
JOHNSON

TS-030-01324-00
KOLANCZYK

TS-030-01324-01
KOLANCZYK

TS-030-01309-00
DOUGLAS COUNTY

TS-030-01336-00

HAMMOND AVENUE

CRAWFORD CREEK

TRIBUTARY TO
CRAWFORD CREEK

FLOW

SED-BG1-US
SOIL-TREF
SO-BG1
SED-BG1
SW-BG1
FS/SED-RREF
SED-BG1-DS

SED-C13
SED-C13-DS
FS/SED-R6
SED-C13-US
SO-C11-D
SO-C11-C
SED-C14
SO-C11-B
SO-C11
SO-C11-A
SOIL-T18
SED-C12
SED-C11
SO-C10
SO-C09
SED-C10
SED-C08
SED-C09-US
SED-C09-DS
SED-C09
FS/SED-R5
SO-C07
SO-C08-A
SO-C08-B
SO-C08
SED-C07
SED-C06
SO-C08-D
SO-C08-C
SOIL-T11
SO-C05
SED-C05
SO-C06-A
SED-C04
SO-C06-B
SO-C06
SO-C06-C
SOIL-T9
SO-C06-D
SED-C03
SO-C04
SO-C12
SED-C02
SO-C03-A
SOIL-T4
SO-C01
SO-C03-B
SW-C01
TMW-C01
SO-C03
SED-C01-US
SO-C03-C
SED-C01
SED-C01-DS
SO-C03-D
SO-C02-A
FS/SED-R4
SO-C02-B
SO-C02
SO-C02-C
SOIL-T3
SO-C02-D

SED-B01
SO-B01
SW-B01
SW-C02
TMW-C02
SED-B02
SO-B02
SED-B03

LEGEND:

- CRAWFORD CREEK
- TRIBUTARY TO CRAWFORD CREEK
- DOUGLAS COUNTRY TAX MAP PARCEL BOUNDARY
- PROPOSED SEDIMENT CORE/SAMPLE LOCATION
- PROPOSED SOIL BORING/SAMPLE LOCATION
- PROPOSED SURFACE WATER SAMPLE LOCATION
- PROPOSED TEMPORARY MONITORING WELL/GROUNDWATER SAMPLE/SLUG TEST LOCATION
- FS/SED-R3 — 2005 COMPOSITE SEDIMENT SAMPLE LOCATION
- SOIL-T3 — 2005 COMPOSITE SOIL SAMPLE LOCATION

NOTES:

1. ESRI AERIAL DATED 2017.
2. ONLY 2005 SAMPLE LOCATIONS THAT ARE TARGETED FOR RE-SAMPLING AS PART OF THE 2019 SUPPLEMENTAL DATA GAP INVESTIGATION ARE SHOWN ON THIS FIGURE.

0 80' 160'
GRAPHIC SCALE

CRAWFORD CREEK AND TRIBUTARY SITE
SUPERIOR, WISCONSIN

SUPPLEMENTAL DATA GAP INVESTIGATION WORK PLAN

SUB-AREAS B/C AND BACKGROUND INVESTIGATION LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
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