

From: Deni Chambers, Northgate

Date: December 11, 2009

To: Keith Bailey, Susan Crowley, Tom Reed - Tronox

RE: Scope for Additional Sampling - Phase B Investigation, Area II

OBJECTIVE

Evaluate the vertical extent of site-related constituents that exceed Basic Comparison Levels (BLCs) in the shallow soils (up to two feet below ground surface [bgs]) to provide information for remediation planning and supplement post-excavation confirmation sampling.

SCOPE OF WORK

Soil sampling and analysis will be conducted at Area II Phase B locations (31 locations) where dioxins, hexachlorobenzene, polychlorinated biphenyls (PCBs), metals, hexavalent chromium, organochlorine pesticides, and/or perchlorate exceed BCLs in samples collected at 0.5 feet bgs, and where deeper samples indicate non-detectable concentrations of those same chemicals and metals. In addition, locations where total petroleum hydrocarbons exceed 100 milligrams per kilogram (mg/kg) will also be sampled. A summary of previous borings with the respective compounds where BCLs were exceeded, as well as the analyses to be performed on the proposed additional co-located samples, is presented in Table 1. Table 2 summarizes analytical results for the above-listed compounds for samples previously collected from Area II at the 31 locations. Figure 1 shows approximate locations of the proposed 31 borings.

Sampling Methodology:

- Borings will be advanced using a hollow-stem auger drill rig with continuous sampling performed using a split-spoon sampler equipped with brass or stainless steel liners.

- Samples will be collected as follows:
 - In all 31 locations, samples will be collected every six inches from one foot to two feet bgs. Samples collected from depth intervals of 12 to 18 inches and 18 to 24 inches bgs will be analyzed for their respective site-related constituents, as indicated in Table 1.
 - Sampling methodology will follow BMI SOPs.

Enclosures: Table 1 – Area II Proposed Additional Shallow Soil Sampling Based on BCL Exceedances

Table 2 – Area II Shallow Soil Samples Analytical Results (June through September 2009)

Figure 1 – Area II Additional Sampling Locations



**Table 1
Area II Proposed Additional Shallow Soil Sampling Based on BCL Exceedances**

Boring ID	Comment	EPA 8270C		EPA 8015B	EPA 8082	EPA 8290	EPA 7199	EPA 6020				EPA 8081 (OCP)				EPA 314.0
		HCB	Benzo(a)Pyrene	TPH	Aroclor 1260	Dioxin TTEQ	Hex Cr	Cr	Pb	Mn	Mg	4,4-DDE	4-4-DDT	Aldrin	Alpha-BHC	Perchlorate
SA32		2														
SA40		2														
SA41		2	2			2										
SA44				2												
SA45				2												
SA49		2				2										2
SA51						2										2
SA58						2										
SA60		2				2										
SA63						2										
SA66	B-ditch	2		2								2	2			
SA86		2		2		2						2	2			2
SA92						2										
SA102							2	2								
SA104						2										2
SA106		2		2		2	2	2			2					
SA105				TPH at 20'		2										
SA107		2				2										
SA114		2		2		2	2	2			2					
SA128									2					2		
SA129	B-ditch	2		2		2	2	2	2			2	2		2	
SA150				TPH at 30'		2										
SA154				2												
SA155		2	2			2										
SA165	B-ditch	2	2	2	2	2										
SA167						2										
SA172										2						
SA175		2				2										
SA187		2	2			2				2						
SA196		2				2										
SA200						2										
SA42				TPH 0.5 to 38'												
SA94		HCB at 10'														
SA109				TPH at 25'												
	Proposed Analyses	32	8	18	2	44	8	8	4	4	4	6	6	2	2	8
QA/QC Samples:																
no lab charge no lab charge	Field Dupes (10%)	4	1	2	1	5	1	1	1	1	1	1	1	1	1	1
	EBs (5%)	2	1	1	1	3	1	1	1	1	1	1	1	1	1	1
	MS/MSD (5%)	2	1	1	1	3	1	1	1	1	1	1	1	1	1	1
	Breakage/Other	2	1	1	1	3	1	1	1	1	1	1	1	1	1	1
	Costing Total	38	10	21	4	52	10	10	6	6	6	8	8	4	4	10
Bottle Order for Labs		48	14	26	8	66	14	14	10	10	10	12	12	8	8	14

Table 2
Area II Shallow Soil Sample Analytical Results

SA63-0.5B	06/17/2009	0.5	2						5854	2.42	39.7	77.8	11100	649					18.2
SA63-10B	07/30/2009	10	11.5							< 0.19	6.94	6.6	8830	227					
SA63-23B	07/30/2009	23	24.5							14.75	49.3	7.8	42000	292					
SA66-0.5B	09/21/2009	0.5	2	4.2	< 0.015	490	84	< 3.3		< 0.19	5.2	334	8590	268	< 9.2	20	< 4.6	< 4.6	
SA66-10B	09/21/2009	10	11.5	0.31	< 0.00072	< 33	< 33	< 0.17		< 0.20	9.92	17.7	10700	449	< 0.92	0.96	< 0.47	< 0.47	
SA66-28B	09/21/2009	28	29.5	0.15	< 0.00095	50	< 44			< 0.26	18.3	12	24900	281					
SA86-0.5B	06/18/2009	0.5	2	3.1	< 0.0071	190	57	< 1.7	5990	7.57	111	222	12000	1280	< 9.1	220	< 4.6	< 4.6	3950
SA86-10B	08/12/2009	10	11.5	0.3	< 0.00074	< 34	< 34	< 0.034		< 0.20	10.2	7.7	22000	363	< 0.0019	0.011	< 0.00094	< 0.00094	
SA86-28B	08/12/2009	28	29.5	0.058	< 0.00084	< 39	< 39	< 0.039		5.15	28	2.4	22000	172	< 0.0022	< 0.0022	< 0.0011	< 0.0011	
SA92-0.5B	06/17/2009	0.5	2	0.062	< 0.00068	< 31	< 31	< 0.031	1323	0.27	9.56	267	9820	1340	< 0.018	0.035	< 0.0087	< 0.0087	7.5
SA92-10B	08/10/2009	10	11.5	0.0051	< 0.00072	< 33	< 33	< 0.033		< 0.20	8.39	8.6	9980	317	< 0.0019	0.0029	< 0.00093	< 0.00093	
SA92-20B	08/10/2009	20	21.5	< 0.00087	< 0.00070	< 32	< 32			< 0.19	8.23	7.1	8960	247	< 0.0018	< 0.0018	< 0.00090	< 0.00090	
SA92-31B	08/10/2009	31	32.5	< 0.00095	< 0.00076	< 35	< 35	< 0.035		0.49	23.3	4.8	17800	134	< 0.0020	< 0.0020	< 0.00098	< 0.00098	