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April 30, 2010

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BARKSDALE SITE-SPECFIC BACKGROUND LEVELS AND RESIDUAL CONTAMINANT LEVELS
CLARIFICATIONS TO DUPONT'S RESPONSE TO WDNR COMMENTS
REQUEST FOR TECHNICAL ASSISTANCE
Derivation of Site-Specific Residual Contaminant Levels for the Former DuPont Barksdale Works
Town of Barksdale, Bayfield County, Wisconsin
WDNR BRRTS Activity #02–04–000156 and 02–04–550402

Dear Mr. Saari:

This letter is a follow-up to our discussion on February 19, 2010 with you and Mr. Arestio Pelayo of the Wisconsin Department of Natural Resources (WDNR). During that meeting, we discussed the site-specific background values and agreed to summarize the background values as well as the site-specific residual contamination levels (SSRCLs) in a letter to clearly identify the values that are being proposed. The SSRCLs were previously submitted as Table 3-5 in the report entitled *Derivation of Site-Specific Residual Contaminant Levels for the Former DuPont Barksdale Works* (SSRCL Report) (DuPont CRG, October 24, 2008) and are included as an attachment to this letter in Table 1. Note that these values have not changed.

The site-specific background values for inorganic constituents were also presented in the SSRCL Report (Table 2-2). The background data set presented in the SSRCL Report was modified to include additional samples collected on property previously owned by DuPont, not used for manufacturing or manufacturing support activities, and contiguous with the former Barksdale Works site. In addition, other samples were excluded from the background data set that, although unlikely, potentially could have been affected by runoff from former manufacturing areas. The resulting Barksdale site-specific background data set was provided to you as an attachment to the December 11, 2009 transmittal responding to WDNR comments (DuPont CRG, December 11, 2009) and is included as an attachment to this letter in Table 2.

During our call on February 19, 2010 we discussed the former Barksdale Works background data set and agreed that the inorganic constituent concentrations are representative of background conditions since the samples were collected from areas that were not affected by DuPont's past manufacturing activities. During the call Mr. Pelayo suggested that we evaluate the site-specific background data set for arsenic to determine if results with J flagged values were upper bound values. In addition, Mr. Pelayo recommended using ProUCL[1] to calculate site-specific inorganic background concentrations.

We checked with the laboratory and confirmed that the J-qualified arsenic results are not upper bound values. The laboratory reported all target metals to its established method detection limits (MDLs), including any concentrations that had positive detections above the MDL, but were below the quantitation or reporting limit (typically set at the level of the lowest calibration standard). DuPont's internal data review process identified the following data usability issues which resulted in the assignment of the J qualifiers (as estimated concentrations):

- The 2005 arsenic results were generated using analytical method SW-846 6020 (ICP/MS), which has lower reporting limits than 6010 (ICP) analysis; however, the method can be prone to matrix interferences from other inorganic compounds commonly present in soil samples, such as chlorides and sulfates. Nearly all of the arsenic (and selenium and lead) detections were J qualified during the data review process due to substantial matrix interferences, resulting in low matrix spike recoveries. At the recommendation of the laboratory, all metals in soil samples collected for subsequent site investigations were analyzed using method 6010.
- The 2006 and 2007 arsenic results that were J qualified during the data review process were positive detections between the laboratory MDL and reporting limit. Since these detections were measurable but below calibration range of the instrument, they were qualified as estimated concentrations.

Thus, the arsenic data represent best estimates of the concentrations, rather than upper bounds, and were included in the dataset used to derive the background values using ProUCL, as discussed below.

We also evaluated the background data set using ProUCL statistical software. ProUCL is a program developed by USEPA and provides a variety of different approaches for determining representative background concentrations. Figure 1 presents the approach that was used to determine representative background concentrations using ProUCL version 4. The basis for this approach was to first determine the distribution type that best fits the data set for each constituent, and then to select the associated 99th percentile value. A summary of the ProUCL output and the resulting background values for Barksdale Works is presented in Table 2-2. In addition, we have included data distribution plots for each of the constituents. These histograms present the background data set distribution as well as the resulting 99th percentile value. As you recall the 99th percentile was the value that DuPont and WDNR agreed to use in deriving concentrations for inorganic constituents during our September 2, 2009 meeting.

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[1] U.S. Environmental Protection Agency. February 2009. ProUCL Version 4.00.04 User Guide (Draft). Office of Research and Development. EPA/600/R-07/038.

Summary

I believe that with the enclosed clarifications and supplemental information, that the SSRCL Report and the revised Table 2-2 presenting the updated inorganic background values are suitable for final review and approval by WDNR.

Sincerely,

Bradley S. Nave
Senior Site Director
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Attachments: Table 1 - Barksdale Site-Specific Recreational Residual Contaminant Levels
Table 2 - Barksdale Site-Specific Background Data Set
Table 2-2 - ProUCL-Based Site-Specific Background Concentrations
Figure 1 – Approach for Determining Representative Background Concentration in ProUCL
Attachment 1 – Barksdale Background Data - Graphical Summaries

cc: Mr. Paul Bretting – C.G. Bretting Manufacturing Co., Inc.
Mr. Cary Pooler – URS Corporation
Mr. Aristeo Pelayo – WDNR Madison RR/5
Mr. Henry Nehls-Lowe – Wisconsin Department of Health Services
Mr. Brad Grimsted – Pioneer Technologies

TABLES

Table 1
Barksdale Site-Specific Recreational Residual Contaminant Levels
Barksdale Works
BRRTS Nos. 02-04550402 and 02-0400156

Datagroup	CAS Number	Constituent	Recreational RCL[1] (mg/kg)
Inorganic	7440-36-0	Antimony	183
Inorganic	7440-38-2	Arsenic (inorganic)	2.5
Inorganic	7440-39-3	Barium	91,250
Inorganic	7440-41-7	Beryllium	913
Inorganic	7440-43-9F	Cadmium (food)	456
Inorganic	18540-29-9S	Chromium (VI) Solid	845
Inorganic	16065-83-1	Chromium III	684,375
Inorganic	7440-48-4	Cobalt	137
Inorganic	7440-50-8	Copper	18,250
Inorganic	7439-92-1	Lead[2]	1,500
Inorganic	7439-97-6	Mercury	137
Inorganic	7440-02-0	Nickel	9,125
Inorganic	7790-98-9	Perchlorate	319
Inorganic	7782-49-2	Selenium	2,281
Inorganic	7440-22-4	Silver	2,281
Inorganic	7440-28-0	Thallium	37
Inorganic	7440-31-5	Tin	273,750
Inorganic	7440-62-2	Vanadium	3,194
Inorganic	7440-66-6	Zinc	136,875
Inorganics	7440-43-9	Cadmium	456
Inorganics	7440-47-3	Chromium (as Cr III)	684,375
Inorganics	14808-79-8	Sulfate	--
NAX (Explosives)	19406-51-0	Amino-2,6-dinitrotoluene, 4-	913
NAX (Explosives)	119-32-4	Amino-2-nitrotoluene, 4-	--
NAX (Explosives)	35572-78-2	Amino-4,6-dinitrotoluene, 2-	913
NAX (Explosives)	99-55-8	Amino-4-nitrotoluene, 2-	99
NAX (Explosives)	603-83-8	Amino-6-nitrotoluene, 2-	--
NAX (Explosives)	62-53-3	Aniline	571
NAX (Explosives)	59229-75-3	Diamino-4-nitrotoluene, 2,6-	--
NAX (Explosives)	6629-29-4	Diamino-6-nitrotoluene, 2,4-	--
NAX (Explosives)	95-80-7	Diaminotoluene, 2,4-	1.0
NAX (Explosives)	823-40-5	Diaminotoluene, 2,6-	91,250
NAX (Explosives)	603-02-1	Dinitro-m-xylene, 2,4-	456
NAX (Explosives)	101-17-1	Dinitro-m-xylene, 2,5	456
NAX (Explosives)	616-72-8	Dinitro-m-xylene, 4,6-	456
NAX (Explosives)	DNX-M-56	Dinitro-m-xylene, 5,6-	456
NAX (Explosives)	DNX-O-34	Dinitro-o-xylene, 3,4-	456
NAX (Explosives)	DNX-O-35	Dinitro-o-xylene, 3,5-	456
NAX (Explosives)	58704-54-4	Dinitro-o-xylene, 3,6-	456
NAX (Explosives)	610-23-1	Dinitro-o-xylene, 4,5-	456
NAX (Explosives)	711-41-1	Dinitro-p-xylene, 2,3-	456
NAX (Explosives)	712-32-3	Dinitro-p-xylene, 2,5	456
NAX (Explosives)	DNX-P-26	Dinitro-p-xylene, 2,6-	456
NAX (Explosives)	121-14-2	Dinitrotoluene, 2,4-	913
NAX (Explosives)	606-20-2	Dinitrotoluene, 2,6-	456
NAX (Explosives)	99-65-0	Dintrobenzene, 1,3-	46
NAX (Explosives)	616-69-3	DNT-Total[3]	4.8
NAX (Explosives)	2691-41-0	HMX	22,813
NAX (Explosives)	55-63-0	Nitroglycerin	46
NAX (Explosives)	99-08-1	Nitrotoluene, m-	4,563
NAX (Explosives)	88-72-2	Nitrotoluene, o-	14
NAX (Explosives)	99-99-0	Nitrotoluene, p-	203
NAX (Explosives)	121-82-4	RDX	34

Table 1
Barksdale Site-Specific Recreational Residual Contaminant Levels
Barksdale Works
BRRTS Nos. 02-04550402 and 02-0400156

Datagroup	CAS Number	Constituent	Recreational RCL[1] (mg/kg)
NAX (Explosives)	99-35-4	Trinitrobenzene, 1,3,5-	13,688
NAX (Explosives)	118-96-7	Trinitrotoluene, 2,4,6-	108
Semi-Volatile	83-32-9	Acenaphthene	27,375
Semi-Volatile	120-12-7	Anthracene	136,875
Semi-Volatile	56-55-3	Benzo(a)anthracene	5.1
Semi-Volatile	205-99-2	Benzo(b)fluoranthene	5.1
Semi-Volatile	191-24-2	Benzo(g,h,i)perylene	51
Semi-Volatile	207-08-9	Benzo(k)fluoranthene	51
Semi-Volatile	50-32-8	Benzo[a]pyrene	0.51
Semi-Volatile	218-01-9	Chrysene	510
Semi-Volatile	206-44-0	Fluoranthene	18,250
Semi-Volatile	193-39-5	Indeno (1,2,3-Cd) Pyrene	5.1
Semi-Volatile	91-57-6	Methylnaphthalene, 2-	1,825
Semi-Volatile	91-20-3	Naphthalene	9,125
Semi-Volatile	117-84-0	N-Dioctyl Phthalate	9,125
Semi-Volatile	98-95-3	Nitrobenzene	228
Semi-Volatile	87-86-5	Pentachlorophenol	31
Semi-Volatile	85-01-8	Phenanthrene	510
Semi-Volatile	129-00-0	Pyrene	13,688
Volatile	75-35-4	1,1-Dichloroethene	22,813
Volatile	67-64-1	Acetone	410,625
Volatile	100-41-4	Ethylbenzene	45,625
Volatile	100-42-5	Styrene	91,250
Volatile	108-88-3	Toluene	36,500
Volatile	1330-20-7	Xylenes	91,250
Volatiles	75-05-8	Acetonitrile	1,000,000
Volatiles	71-43-2	Benzene	68
Volatiles	75-15-0	Carbon Disulfide	45,625
Volatiles	56-23-5	Carbon Tetrachloride	29
Volatiles	67-66-3	Chloroform	4,563
Volatiles	74-88-4	Iodomethane	--
Volatiles	74-83-9	Methyl Bromide	639
Volatiles	74-87-3	Methyl Chloride	287
Volatiles	78-93-3	Methyl Ethyl Ketone	273,750
Volatiles	75-09-2	Methylene Chloride	497
Volatiles	127-18-4	Tetrachloroethylene	4,563

Notes:

[1]Recreational RCL is determined by selecting the lowest concentration from among the individual RCLs determined for each pathway (NR 720.07(1)b1). See the SSRCL Report (DuPont CRG, October 24, 2008) for more information.

[2]Lead values are based on Wisconsin Guidance (Wisconsin Department of Natural Resources. 2001. Remediation and Redevelopment Program Guidance. Commonly Asked Questions About the Lead Soil Standards in Wisconsin. PUB-RR-653). The recreational RCL is based on a ratio of the exposure frequency for the recreation/non-industrial (365/60 * 250

[3]Sum of all DNT isomers should be compared to this value.

-- = No toxicity value with which to calculate an RCL or no background concentration calculated.

Table 2
Barksdale Site-Specific Background Data Set
Barksdale Works
BRRTS Nos. 02-04550402 and 02-0400156

Sample Number	Antimony	Q	Arsenic	Q	Barium	Q	Beryllium	Q	Cadmium	Q	Chromium	Q	Cobalt	Q	Copper	Q	Lead	Q	Mercury	Q	Nickel	Q	Selenium	Q	Silver	Q	Thallium	Q	Tin	Q	Vanadium	Q	Zinc	Q
BAR-S-SI07-UAT001(0-2)_10/3/2007	0.51	U	2.9		83.9		1.1		0.055	U	25.5		7.8		20.6		7.7		0.012	U	18.4		1.1	U	0.21	U	0.87	U	2.5	U	44.1		37.1	
BAR-S-SI07-UAT002(0-2)_10/3/2007	0.57	B	3.7		91.7		1.2		0.049	U	26.1		10.7		15.1		8.4		0.016	B	18.3		1	U	0.19	U	0.77	U	2.3	U	41.6		36.6	
BAR-S-SI07-UAT003(0-2)_10/3/2007	0.43	U	2.7		61.3		0.95		0.047	U	22.7		6.8		14.6		6		0.018	B	13.9		0.98	U	0.18	U	0.74	U	2.2	U	31.3		25.5	
BAR-S-SI07-UAT004(0-2)_10/3/2007	0.45	U	1.2		26.9		0.53	B	0.049	U	10.7		2		5.6		4.4		0.011	U	6		1	U	0.19	U	0.77	U	2.3	U	15.5		12.3	
BAR-S-SI07-UAT005(0-2)_10/3/2007	0.41	U	0.84	B	11		0.3	B	0.045	U	4.6		1.2		3.4		2.2		0.0097	U	3.3	B	0.94	U	0.17	U	0.71	U	2.1	U	15.5		6	
BAR-S-SI07-UAT006(0-2)_10/3/2007	0.43	U	0.86	B	15.4		0.22	B	0.046	U	4.5		1.5		3		1.9		0.01	U	3.5	B	0.97	U	0.18	U	0.73	U	2.1	U	9.7		12.6	
BAR-S-SI07-UAT007(0-2)_10/3/2007	0.53	B	3.2		69.4		1.2		0.052	U	28.3		8.3		16.6		7.4		0.011	U	17.6		1.1	U	0.2	U	0.83	U	2.4	U	39.6		35.1	
BAR-S-SI07-UAT008(0-2)_10/3/2007	0.5	B	1.3		24.5		0.43	B	0.047	U	8.1		2.8		4.5		2.8		0.01	U	6.2		0.98	U	0.18	U	0.74	U	2.2	U	15.1		13.4	
BAR-S-SI07-UAT009(0-2)_10/3/2007	0.6	J	1.6		33.5		0.49	J	0.048	U	11.4		3	L	5.4		4.2		0.01	U	7.9	L	1	U	0.19	U	0.76	U	2.2	U	20.8		15	
BAR-S-SI07-UAT010(0-2)_10/3/2007	0.61	J	3.6		138		0.96		0.048	U	18.3		5.3	L	16.3		7.7		0.01	U	14.7	L	1	U	0.19	U	0.76	U	2.2	J	40.7		28	
BAR-S-SI07-UAT011(0-2)_10/3/2007	0.47	J	1.8		37.7		0.53	J	0.046	U	12.3		4	L	6.5		4		0.01	U	9.6	L	0.98	U	0.18	U	0.74	U	2.2	U	19.7		20.3	
BAR-S-SI07-UAT012(0-2)_10/3/2007	0.44	U	1.2		26.5		0.27	J	0.047	U	7.1		1.9	L	4.3		2.7		0.01	U	5	L	0.99	U	0.18	U	0.75	U	2.2	U	18.8		15.5	
BAR-S-SI07-UAT013(0-2)_10/3/2007	0.66	J	3.5		83		1		0.05	U	26.6		7.4		13.8		6.9		0.012	J	19.7		1	U	0.19	U	0.79	U	2.3	U	31.6		31	
BAR-S-SI07-UAT014(0-2)_10/3/2007	0.46	U	1.6		35.2		0.52	J	0.049	U	9.5		3.3		6.6		4.8		0.011	U	6.6		1	U	0.19	U	0.78	U	4.2	J	21.3		16.5	
BAR-S-SI07-UAT015(0-2)_10/3/2007	0.43	U	0.95	J	20.9		0.29	J	0.047	U	6		1.4		3.3		3.3		0.01	U	4.6		0.98	U	0.18	U	0.74	U	2.2	U	16.2		8.5	
BAR-S-SI07-UAT016(0-2)_10/3/2007	0.43	U	1.4		29.6		0.45	J	0.047	U	11.4		2.6		8.1		5.5		0.01	U	7.4		0.98	U	0.18	U	0.74	U	2.2	U	24		12.1	
BAR-S-SI07-UAT017(0-2)_10/3/2007	0.44	U	3.7		81.2		1.1		0.048	U	26.2		8.4		16.8		8		0.018	J	18.2		1	U	0.19	U	0.76	U	6.3	J	36		28.4	
BAR-S-SI07-UAT018(0-2)_10/3/2007	0.47	J	2.1		44.8		0.64		0.048	U	15.6		3.6		8.8		5.3		0.017	J	10.2		1	U	0.19	U	0.76	U	4.6	J	25.6		18.7	
BAR-S-SI07-UAT019(0-2)_10/3/2007	0.49	U	3.6		85.1		1.3		0.053	U	32.2		7.5		14.8		8.1		0.012	U	22		1.1	U	0.21	U	0.84	U	2.5	U	38.5		34.7	
BAR-S-SI07-UAT020(0-2)_10/3/2007	0.43	U	0.81	J	16.3		0.29	J	0.046	U	6.1		1.6		3.4		2.9		0.01	U	4.6		0.97	U	0.18	U	0.74	U	2.1	U	12.6		10.8	
BAR-S-SI07-UAT021(0-2)_10/3/2007	0.44	U	0.86	J	35.6		0.35	J	0.047	U	10		1.7		6		3.6		0.01	U	5.7		0.99	U	0.18	U	0.75	U	2.2	U	12.2		8.4	
BAR-S-SI07-UAT022(0-2)_10/3/2007	0.43	U	1.2		23.5		0.39	J	0.046	U	8.8		2.7		4.8		3.7		0.01	U	6.9		0.97	U	0.18	U	0.74	U	2.2	U	14.7		12.4	
BAR-S-SI07-UAT023(0-2)_10/3/2007	0.42	U	1.5		26.6		0.44	J	0.046	U	10.1		2.7		6.5		2.9		0.0099	U	6.7		0.96	U	0.18	U	0.72	U	2.1	U	19.5		10.5	
BAR-S-SI07-UAT024(0-2)_10/3/2007	0.44	U	2		36.9		0.59		0.048	U	14.6		3.6		7.8		5.2		0.01	U	9.5		1	U	0.19	U	0.76	U	2.2	U	23.7		21.4	
BAR-S-SI07-UAT025(0-2)_10/3/2007	0.43	U	1.3		32.1		0.39	J	0.046	U	8.9		2.8	L	3.9		3.7		0.015	J	5.7	L	0.97	U	0.18	U	0.73	U	2.1	U	18.1		10.8	
BAR-S-SI07-UAT026(0-2)_10/3/2007	0.5	J	1.8		37		0.53	J	0.047	U	11.1		3.5	L	6.9		4.4		0.01	U	8.3	L	0.98	U	0.18	U	0.74	U	2.2	U	20.5		21	
BAR-S-SI07-UAT027(0-2)_10/4/2007	0.54	J	3.1		79.4		1.1		0.049	U	23.2		10	L	11.4		8.2		0.011	U	14.5	L	1	U	0.19	U	1.8		2.2	U	34.1		44.9	
BAR-S-SI07-UAT028(0-2)_10/4/2007	0.77	J	2		33		0.56	J	0.048	U	13.3		4.9	L	6.4		4.8		0.01	U	9.5	L	1	U	0.19	U	0.75	U	2.2	U	23.4		18.2	
BAR-S-SI07-UAT029(0-2)_10/4/2007	0.44	U	3		54.7		0.83		0.048	U	21.5		6.1	L	10.6		5.7		0.01	U	13.8	L	1	U	0.19	U	0.75	U	2.2	U	30.8		21.3	
BAR-S-SI07-UAT030(0-2)_10/4/2007	0.72	J	3.4		109		1.2		0.052	U	28.7		4.9	L	15.5		8.2		0.013	J	17.7	L	1.1	U	0.2	U	0.82	U	2.4	U	36.7		27.2	
BAR-S-SI07-UAT031(0-2)_10/4/2007	0.44	U	1.1	J	25.4		0.36	J	0.047	U	7.2		2.6	L	3.5		3.3		0.01	U	4.7	L	0.99	U	0.18	U	0.75	U	2.2	U	15		13.6	
BAR-S-SI07-UAT032(0-2)_10/4/2007	0.58	J	2.2		53.5		0.75		0.048	U	16.8		5.3	L	9.4		5.8		0.01	U	13.1	L	1	U	0.19	U	0.76	U	2.2	U	25.6		27.9	
BAR-S-SI07-UAT033(0-2)_10/3/2007	0.45	U	2.6		28.6		0.63		0.048	U	13.2		3	L	6.7		5.7		0.025	J	10.3	L	1	U	0.19	U	0.76	U	2.2	U	27.7		17.3	
BAR-S-SI07-UAT034(0-2)_10/3/2007_	0.44	U	1.55		28.8		0.46		0.048	U	9.55		3.3		4.3		5.55		0.01	U	6.35		1	U	0.19	U	0.75	U	2.2	U	22.2		12.3	
BAR-S-SSI05-SB141_7/12/2005	0.45	U	2.4	J	124		1		0.029	U	33.2		8.3		24.1		7	J	0.013	J	24.7		0.57	J	0.56	U	0.15		2.8	B	41.7		38.8	J
BAR-S-SSI05-SB142_7/12/2005	0.45	U	2.7	J	108		0.81		0.03	U	29.5		9		23.6		6.4	J	0.019	J	23		0.6	J	0.57	U	0.14		2.2	B	42.1		35	J
BAR-S-SSI05-SB266_7/9/2005	0.48	U	2.5	J	116	L	1.1		0.4	J	40.1	L	10.8		23.4		8.6	J	0.024	J	28		0.78	J	0.61	U	0.22		3.1	B	55	L	57.1	
BAR-S-SSI05-SB267_7/9/2005	0.48	U	2.2	J	90.8	L	0.98		0.39	J	31.9	L	8.9		17.8		7.3	J	0.01	J	22		0.71	J	0.61	U	0.21		3	B	44.3	L	73.9	
BAR-S-SSI05-SB268_7/9/2005	0.46	U	2.3	J	142	L	1.7		0.33	J	37.2	L	13.9		25.2		6.5	J	0.011	J	35.5		0.72	J	0.59	U	0.16		2.7	B	48.5	L	57.7	
BAR-S-SSI05-SB269_7/9/2005	0.47	U	2.2	J	121	L	1.3		0.25	J	34.5	L	8.7		19.6		6.8	J	0.01	J	24.8		0.61	J	0.59	U	0.16		2.6	B	42.7	L	40.8	
BAR-S-SSI05-SB270_7/13/2005	0.46	U	2	J	78.8	L	0.92		0.21	J	27	L	7.3		16.4		8.2	J	0.0098	J	18.6		0.51	J	0.59	U	0.16		2.3	B	37.8	L	38.8	
BAR-S-SSI05-SB341_7/22/2005	0.44	U	1.3	J	110		0.78		0.029	U	26.1		8.7	J	23.8		13.9	J	0.026	J	19.5		0.4	J	0.56	U	0.11	J	2.9	B	39		41.5	
BAR-S-SSI05-SB345_7/15/2005	0.49	U	1.5	J	62.8		0.37	J	0.032	U	19.6		5	J	11.2		8.3	J	0.021	J	13.7		0.46	J	0.62	U	0.11	J	2.2	B	25.2		26.6	
BAR-S-SSI05-SB346_7/15/2005	0.45	U	1.2	J	90		0.67		0.03	U	28		6.7	J	16.3		6.3	J	0.013	J	19.1		0.33	J	0.57	U	0.096	J	2.5	B	35.7		39.7	
BAR-S-SSI05-SB347_7/15/2005	0.44	U	1.3	J	50.5		0.36	J	0.029	U	16.9		5.4	J	10		5.8	J	0.013	J	12.1		0.41	J	0.56	U	0.089	J	2.2	B	28.9		27.3	
BAR-S-SSI05-SB348_7/15/2005	0.46	U	1.7	J	80.3		0.58	J	0.031	U	25.2		6.3	J	15.6		7.5	J	0.015	J	16		0.4	J	0.59	U	0.15		2.5	B	32.3		31	
BAR-S-SSI05-SB349_7/15/2005_DC	0.45	U	1.9		113		0.95		0.03	U	31.5		9.05		21.3		9.65		0.0145		23.55		0.505		0.57	U	0.195		3		41.8		36.75	
BAR-S-SSI05-SB350_7/24/2005	0.47	U	2	J	101		0.78		0.031	U	36.4		10.1	J	21.4		8.1	J	0.016	J	24.4		0.81	J	0.59	U	0.18		3.3	B	46.6		44.9	
BAR-S-SSI05-SB351_7/24/2005	0.47	U	1.9	J	111		0.86		0.031	U	39.6		23.5	J	24.3		8.4	J	0.02	J	26.9		0.53	J	0.59	U	0.16		3.7	B	48.2		49.2	
BAR-S-SSI05-SB352_7/24/2005	0.46	U	1.7	J	127		0.82		0.031	U	37.4		9.1	J	25.6		7.7	J	0.021	J	26.7		0.55	J	0.59	U	0.17		3.3	B	47.3		43.1	
BAR-S-SSI05-SB353_7/24/2005	0.46	U	1.9	J	109		0.76		0.031	U	24.1		8.7	J	17.4		9.1	J	0.022	J	22		0.3	J	0.59	U	0.2		2.1	B	35.9		31.6	
BAR-S-SSI05-SB354_7/24/2005	0.45	U	0.5	J	11.1		0.18	U	0.03	U	4.1		1.5	J	1.6	J	1.3	J	0.0056	U	2.6	J	0.17	B	0.57	U	0.016	J	1.5	B	11.7		7.1	
BAR-S-SSI05-SB356_7/25/2005	0.46	U	0.19	J	6.8		0.18	U	0.03	U	2.6		1	J	1.5	J	0.61	J	0.0057	U	2.3	J	0.12	B	0.58	U	0.0051	J	1.3	B	8.1		6.6	
BAR-S-SSI05-SB361_7/25/2005	0.45	U	0.76	J	8.7		0.18	U	0.03	U	4.5		0.94	J	1.7	J	1.4	J	0.0056	U	2.9	J	0.14	J	0.57	U	0.02	J	1.3	B	8.3		8.5	J
BAR-S-SSI05-SB362_7/25/2005	0.44	U	0.2	J	6.8		0.17	U	0.029	U	2.2		0.68	J	1.8	J	0.7	J	0.0054	U	1.9	J	0.08	J	0.56	U	0.0096	J	1.6	B	8.5		5.3	J
BAR-S-SSI05-SB363_7/25/2005	0.47	U	1	J	36.7		0.22	J	0.031	U	12.4		3.3		6		4.4	J	0.028	J	8.4		0.19	J	0.59	U	0.072	J	1.7	B	19.1		22.7	J

Table 2
Barksdale Site-Specific Background Data Set
Barksdale Works
BRRTS Nos. 02-04550402 and 02-0400156

Sample Number	Antimony	Q	Arsenic	Q	Barium	Q	Beryllium	Q	Cadmium	Q	Chromium	Q	Cobalt	Q	Copper	Q	Lead	Q	Mercury	Q	Nickel	Q	Selenium	Q	Silver	Q	Thallium	Q	Tin	Q	Vanadium	Q	Zinc	Q
BAR-S-SSI05-SB364_7/24/2005_DC	0.46	U	1.8		67.85		0.42		0.03	U	20.95		8.05		12.5		9.1		0.012		14.65		0.36		0.58	U	0.185		2.3		34.65		29.5	
BAR-S-SSI05-SB365_7/24/2005	0.46	U	2.1	J	93.6		0.7		0.03	U	31.5		7.3		19.8		8	J	0.013	J	20.6		0.45	J	0.58	U	0.17	J	3	B	43.9		33.2	J
BAR-S-SSI05-SB366_7/24/2005	0.46	U	2.2	J	94.4		0.73		0.03	U	28.9		9.7		18.7		9.8	J	0.0081	J	19.6		0.36	J	0.58	U	0.24	J	2.7	B	43.8		42.5	J
BAR-S-SSI05-SB367_7/24/2005	0.46	U	2.1	J	44.4		0.23	J	0.03	U	15.7		3.4		7.9		5.8	J	0.011	J	9.4		0.33	J	0.58	U	0.12	J	2.4	B	24.7		58.7	J
BAR-S-SSI05-SB368_7/24/2005	0.45	U	1.7	J	59.9		0.37	J	0.03	U	20.1		4.7		11		8.1	J	0.012	J	13.1		0.23	J	0.57	U	0.16	J	2.4	B	31		24.1	J
BAR-S-SSI05-SB372_7/23/2005	0.46	U	1.3	J	32.4		0.18	U	0.03	U	10.2		2.7		6		5.9	J	0.0056	U	6.9		0.29	J	0.58	U	0.13	J	1.9	B	17.6		15.4	J
BAR-S-SSI05-SB373_7/25/2005	0.45	U	1	J	35.6		0.18	U	0.03	U	11.8		3		7		4.6	J	0.0063	J	8.1		0.21	J	0.57	U	0.085	J	2	B	18.6		17.1	J
BAR-S-SSI05-SB374_7/25/2005	0.45	U	1.2	J	34.7		0.18	U	0.029	U	11.6		3.2		7		5.2	J	0.011	J	8		0.17	J	0.57	U	0.1	J	1.7	B	21.5		16.8	J
BAR-S-SSI05-SB375_7/25/2005	0.46	U	1.1	J	73.7		0.42	J	0.03	U	21.3		5.9		13.7		6.1	J	0.0056	U	15.2		0.21	J	0.58	U	0.089	J	2.5	B	32.2		28	J
BAR-S-SSI05-SB376_7/25/2005	0.47	U	2	J	94.7		0.65		0.071	J	24.2		9.6		15.5		7.9	J	0.01	J	17.1		0.34	J	0.6	U	0.19	J	2.7	B	39.2		47.7	J
BAR-S-SSI05-SB377_7/25/2005	0.47	U	2.2	J	77.8		0.7		0.031	U	21.8		13.5		10.5		8.2	J	0.011	J	13.5		0.52	J	0.6	U	0.19	J	2.7	B	48.4		113	J
BAR-S-SSI05-SB378_7/24/2005	0.46	U	2.1	J	87.6		0.59	J	0.03	U	26.8		8.2		18.3		8.3	J	0.015	J	18.5		0.43	J	0.58	U	0.19	J	3	B	37		33.5	J
BAR-S-SSI05-SB379_7/24/2005	0.46	U	1.6	J	86.8		0.63		0.03	U	27.1		8.2		16		6.9	J	0.0057	U	19		0.65	J	0.58	U	0.17	J	2.4	B	39.6		29.9	J
BAR-S-SSI05-SB380_7/24/2005	0.46	U	1.3	J	52.3		0.39	J	0.03	U	17.8		5.4		11.2		5.1	J	0.0067	J	12.7		0.26	J	0.58	U	0.086	J	2	B	33.5		21.4	J
BAR-S-SSI05-SB381_7/24/2005	0.47	U	2.3	J	93.8		0.72		0.031	U	30.5		9.6		19.3		7.9	J	0.0088	J	20.6		0.53	J	0.6	U	0.2	J	2.8	B	42.1		39	J
BAR-S-SSI05-SB382_7/24/2005	0.46	U	2.3	J	92.5		0.64		0.03	U	35.1		9.2		19.7		9.2	J	0.0063	J	23.6		0.38	J	0.58	U	0.19	J	2.8	B	44.7		47.9	J
BAR-S-SSI05-SB383_7/25/2005_DC	0.47	U	1.95		97.75		0.76		0.031	U	29.05		10.05		20.15		9.5		0.0155		21.3		0.395		0.59	U	0.22		3		43.15		37.15	
BAR-S-SSI05-SB384_7/25/2005	0.46	U	1.8	J	67.9		0.46	J	0.03	U	26.7		5.3		13.4		7	J	0.006	J	15.8		0.35	J	0.58	U	0.15	J	3	B	29.6		26.2	J
BAR-S-SSI05-SB385_7/25/2005	0.45	U	2.1	J	79.9		0.69		0.03	U	24.3		7.9		15.2		9.4	J	0.016	J	16.7		0.36	J	0.57	U	0.22	J	2.6	B	35.7		31.5	J
BAR-S-SSI05-SB386_7/25/2005	0.46	U	1.9	J	94.2		0.76		0.044	J	27.2		7.7		18.4		12.7	J	0.012	J	19.1		0.51	J	0.58	U	0.22	J	3	B	36.1		39.1	J
BAR-S-SSI05-SB387_7/25/2005	0.47	U	1.4	J	87		0.62		0.031	U	28.7		7.2		16.6		10	J	0.014	J	18.6		0.44	J	0.6	U	0.15	J	2.6	B	41		36.1	J
BAR-S-SSI05-SB388_7/25/2005	0.46	U	1.6	J	86.8		0.7		0.03	U	27.3		7.5		15.7		8.5	J	0.0067	J	19.4		0.58	J	0.58	U	0.21	J	2.5	B	34.7		37.4	J
BAR-S-SSI05-SB389_7/25/2005	0.47	U	1.8	J	103		0.88		0.031	U	30.8		9.7		19.8		9.8	J	0.015	J	25.4		0.47	J	0.59	U	0.23	J	2.9	B	41.3		36.9	J
BAR-S-SSI05-SB390_7/25/2005	0.46	U	1.1	J	39.7		0.28	J	0.031	U	14.5		4.2		7.8		5.8	J	0.012	J	10		0.28	J	0.59	U	0.11	J	1.9	B	27.1		21.7	J
BAR-S-SSI05-SB391_7/25/2005	0.47	U	1.4	J	46		0.34	J	0.031	U	20.5		5.6		9.3		6.6	J	0.012	J	13.1		0.4	J	0.59	U	0.15	J	2.7	B	34		26	J
BAR-S-SSI05-SB392_7/25/2005	0.46	U	1.7	J	96.4		0.85		0.03	U	31.8		8.3		18.1		7.4	J	0.013	J	21.9		0.59	J	0.59	U	0.2	J	2.8	B	43.8		37.7	J
BAR-S-SSI05-SB393_7/23/2005	0.47	U	1.2	J	43.5		0.32	J	0.031	U	15.4		5.5		16.2		6.5	J	0.0058	U	12.4		0.37	J	0.59	U	0.12	J	2.4	B	30.2		32.8	J
BAR-S-SSI05-SB394_7/26/2005	0.45	U	1.6	J	113		0.85		0.05	J	30.2		10.7		21.3		11.8	J	0.012	J	30.9		0.67	J	0.56	U	0.26	J	3.1	B	43.3		36.4	J
BAR-S-SSI05-SB395_7/26/2005	0.46	U	1.7	J	137		0.91		0.1	J	33.5		13.9		24.1		9.9	J	0.0057	U	27.4		0.4	J	0.58	U	0.21	J	3.2	B	48.3		62.7	J
BAR-S-SSI05-SB396_7/26/2005	0.47	U	1.7	J	121		0.93		0.049	J	33.5		10.1		21.2		11.9	J	0.011	J	26.3		0.38	J	0.59	U	0.26	J	3	B	43.9		42.7	J
BAR-S-SSI05-SB397_7/26/2005	0.45	U	1.9	J	124		0.77		0.058	J	31.6		10.2		22.5		9.3	J	0.0056	U	24.6		0.72	J	0.57	U	0.23	J	3.2	B	44.4		41.7	J
BAR-S-SSI05-SB398_7/26/2005	0.45	U	1.9	J	92.6		0.65		0.03	U	29.4		8.2		16.6		10.9	J	0.0086	J	20.6		0.33	J	0.57	U	0.22	J	3.1	B	40.5		35.5	J
BAR-S-UAA001(0-2)_8/19/2006	0.44	U	1.1		27.3		0.28	J	0.047	U	6.2		2.2		4		5.4		0.013	J	4.5	J	0.99	U	0.18	U	0.75	U	2.2	U	11.2		12.8	
BAR-S-UAA002(0-2)_8/19/2006	0.44	U	1.8		56.5		0.7		0.048	U	13.7		8.4		8		9.1		0.021	J	8.2		1	U	0.19	U	1.1	J	2.2	U	26.4		25.8	
BAR-S-UAA003(0-2)_8/19/2006	0.45	U	2		62.3		0.69		0.049	U	16.6		11.3		9.2		9.4		0.035	J	11.2		1	U	0.19	U	1.2	J	2.3	U	32.7		27.9	
BAR-S-UAA004(0-2)_8/19/2006	0.5	U	2.4		66.2		0.73		0.054	U	21.1		11.3		10.3		9		0.026	J	12.5		1.1	U	0.21	U	0.91	J	2.5	U	40.3		32.3	
BAR-S-UAA005(0-2)_8/19/2006	0.45	U	1.3		47.8		0.61		0.048	U	15.6		11.2		8.9		6.6		0.0061	J	10.1		1	U	0.19	U	0.81	J	2.2	U	24.5		22.9	
BAR-S-UAA006(0-2)_8/19/2006_DC	0.44	U	2.6		71.25		0.805		0.048	U	23.9		15.1		11.15		7.9		0.0165		14.25		1	U	0.19	U	0.96		2.2	U	43.2		36.15	
BAR-S-UAA007(0-2)_8/19/2006	0.48	U	3.8		94.2		1.1		0.052	U	28.7		20.1		13.8		11.5		0.022	J	16.1		1.1	U	0.2	U	0.92	J	2.4	U	60.5		43.1	
BAR-S-UAA008(0-2)_8/19/2006	0.45	U	1.3		36.9		0.41	J	0.049	U	9.7		10		4.8		5.5		0.018	J	5.1		1	U	0.19	U	1.2	J	2.3	U	19.9		17.7	
BAR-S-UAA009(0-2)_8/19/2006	0.44	U	0.86	J	36		0.38	J	0.047	U	12.9		4.1		5.5		3.8		0.0032	U	7.4		0.99	U	0.18	U	0.75	U	2.2	U	18.4		18.4	
BAR-S-UAO002(0-2)_8/4/2006	NA		2.6		NA		NA		NA		NA		NA		NA		9.9	J	NA		NA		NA		NA		NA		NA		NA		NA	
BAR-S-UAO003(0-2)_8/6/2006	NA		2.1		NA		NA		NA		NA		NA		NA		7.2	J	NA		NA		NA		NA		NA		NA		NA		NA	
BAR-S-UAO004(0-2)_8/6/2006	NA		2		NA		NA		NA		NA		NA		NA		8.7	J	NA		NA		NA		NA		NA		NA		NA		NA	
BAR-S-UAO006(0-2)_8/6/2006	NA		2.8		NA		NA		NA		NA		NA		NA		8.1	J	NA		NA		NA		NA		NA		NA		NA		NA	
BAR-S-UAO008(0-1)_9/8/2006	NA		1.5		NA		NA		NA		NA		NA		NA		7.1	J	NA		NA		NA		NA		NA		NA		NA		NA	
BAR-S-UAO009(0-1)_9/8/2006_DC	NA		1.7		NA		NA		NA		NA		NA		NA		15.4		NA		NA		NA		NA		NA		NA		NA		NA	
Number of Samples	97		103		97		97		97		97		97		97		103		97		97		97		97		97		97		97		97	
Min	0.41		0.19		6.8		0.17		0.029		2.2		0.68		1.5		0.61		0.0032		1.9		0.08		0.17		0.0051		1.3		8.1		5.3	
Max	0.77		3.8		142		1.7		0.4		40.1		24		26		15		0.035		36		1.1		0.62		1.8		6.3		60.5		113	

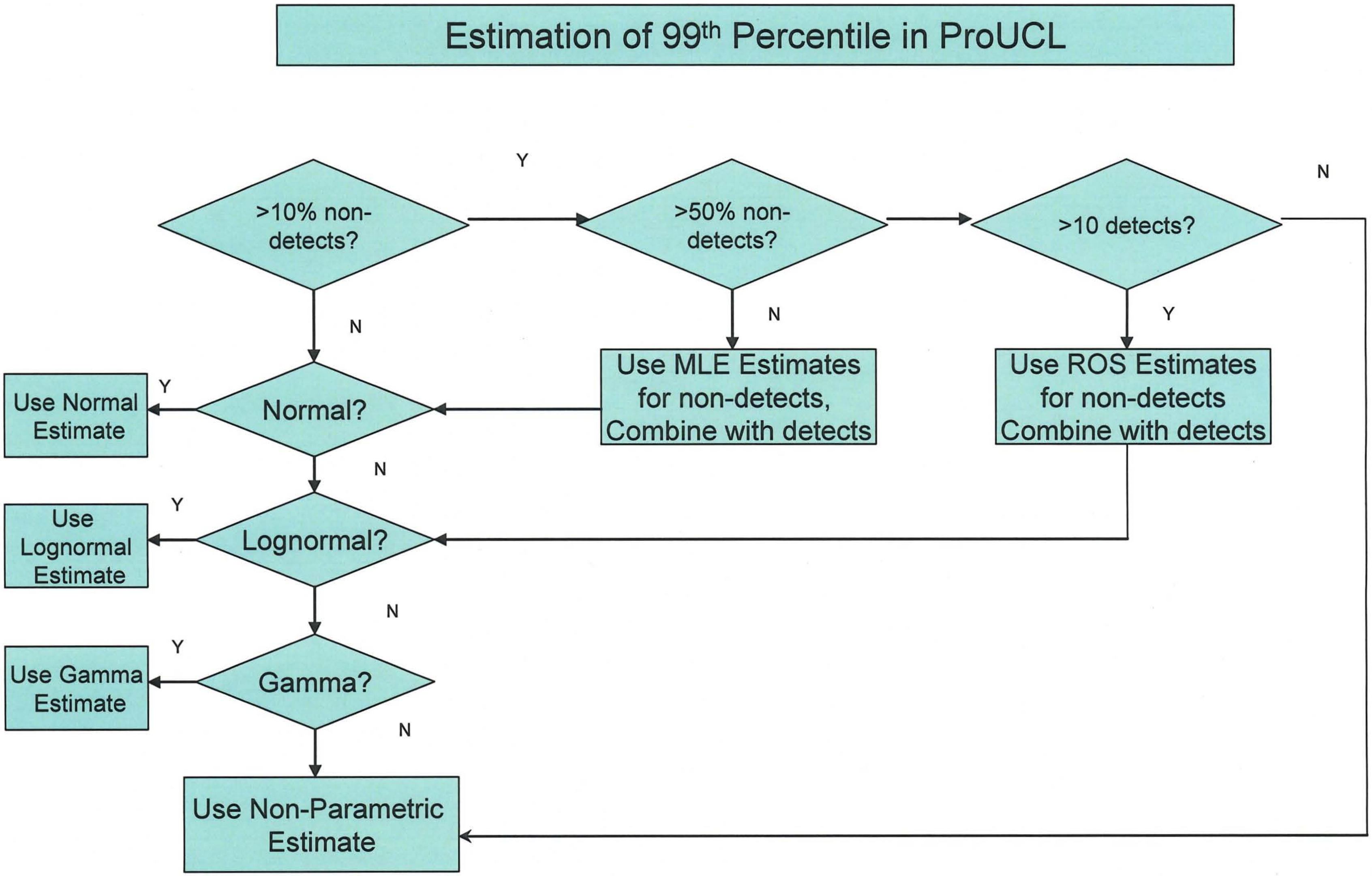
Notes:
NA = not analyzed
U = Not detected at the associated reporting limit.
J = Analyte present. Reported value may not be accurate or precise.
B = Not detected substantially above the level reported in lab or field blanks.
L= Detected but, serial dilution analysis indicated the presenc of physical and/or chemical intereferences.

Table 2-2
ProUCL-Based Site-Specfic Background Concentrations
Barksdale Works
BRRTS Nos. 02-04550402 and 02-0400156

Datagroup	Constituent	CAS Number	Number of Samples	Number of Detects	Recreational RCL (mg/kg)	ProUCL-based Backgound Concentrations (mg/kg)	ProUCL Distribution Type
Inorganic	Antimony	7440-36-0	97	11	183	0.77	Non-parametric
Inorganic	Arsenic	7440-38-2	103	103	2.5	4.3	Gamma Distribution
Inorganic	Barium	7440-39-3	97	97	91,250	142	Non-parametric
Inorganic	Beryllium	7440-41-7	97	90	913	1.4	Non-parametric
Inorganic	Cadmium	7440-43-9	97	11	456	0.4	Non-parametric
Inorganic	Chromium	16065-83-1	97	97	684,375	40.1	Non-parametric
Inorganic	Cobalt	7440-48-4	97	97	137	23.5	Non-parametric
Inorganic	Copper	7440-50-8	97	97	18,250	25.6	Non-parametric
Inorganic	Lead	7439-92-1	103	103	1,500	13.3	Normal Distribution
Inorganic	Mercury	7439-97-6	97	60	137	0.035	Non-parametric
Inorganic	Nickel	7440-02-0	97	97	9,125	35.5	Non-parametric
Inorganic	Selenium	7782-49-2	97	54	2,281	0.82	Non-parametric (Kaplan-Meier)
Inorganic	Silver	7440-22-4	97	0	2,281	--	
Inorganic	Thallium	7440-28-0	97	62	37	1.8	Non-parametric (Kaplan-Meier)
Inorganic	Tin	7440-31-5	97	58	273,750	4.1	Non-parametric (Kaplan-Meier)
Inorganic	Vanadium	7440-62-2	97	97	3,194	59.3	Normal Distribution
Inorganic	Zinc	7440-66-6	97	97	136,875	67.4	Normal Distribution

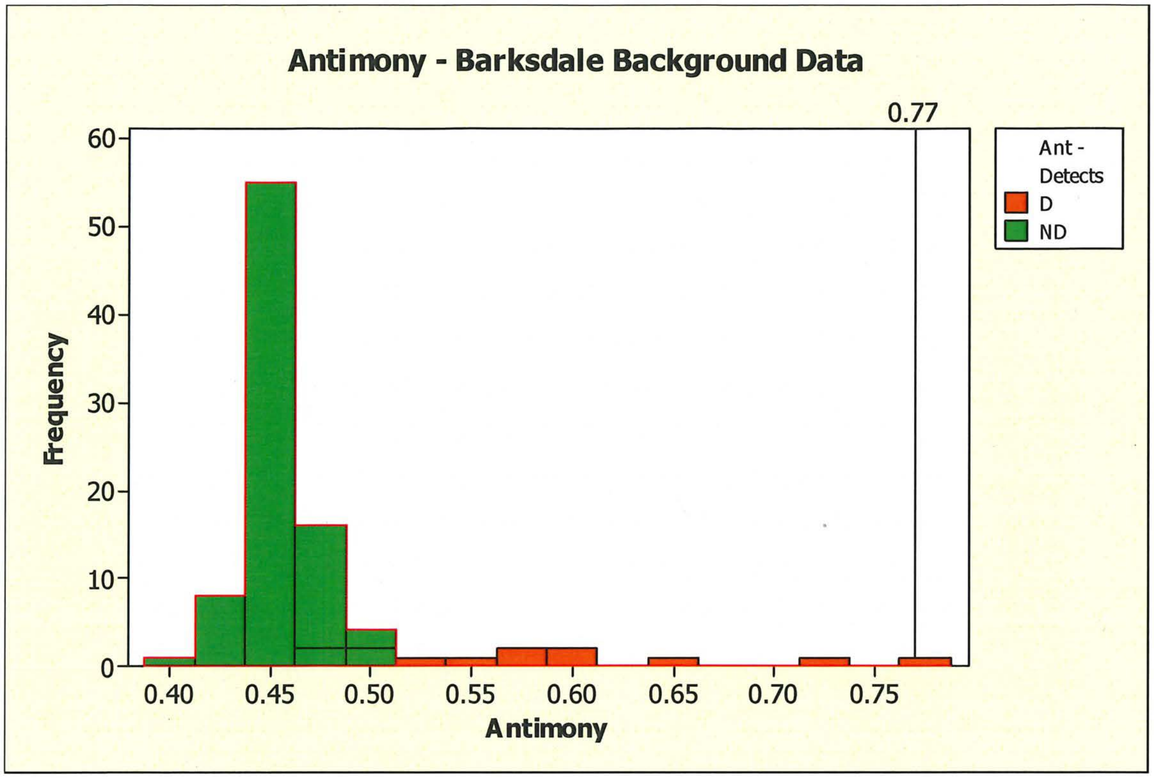
FIGURE

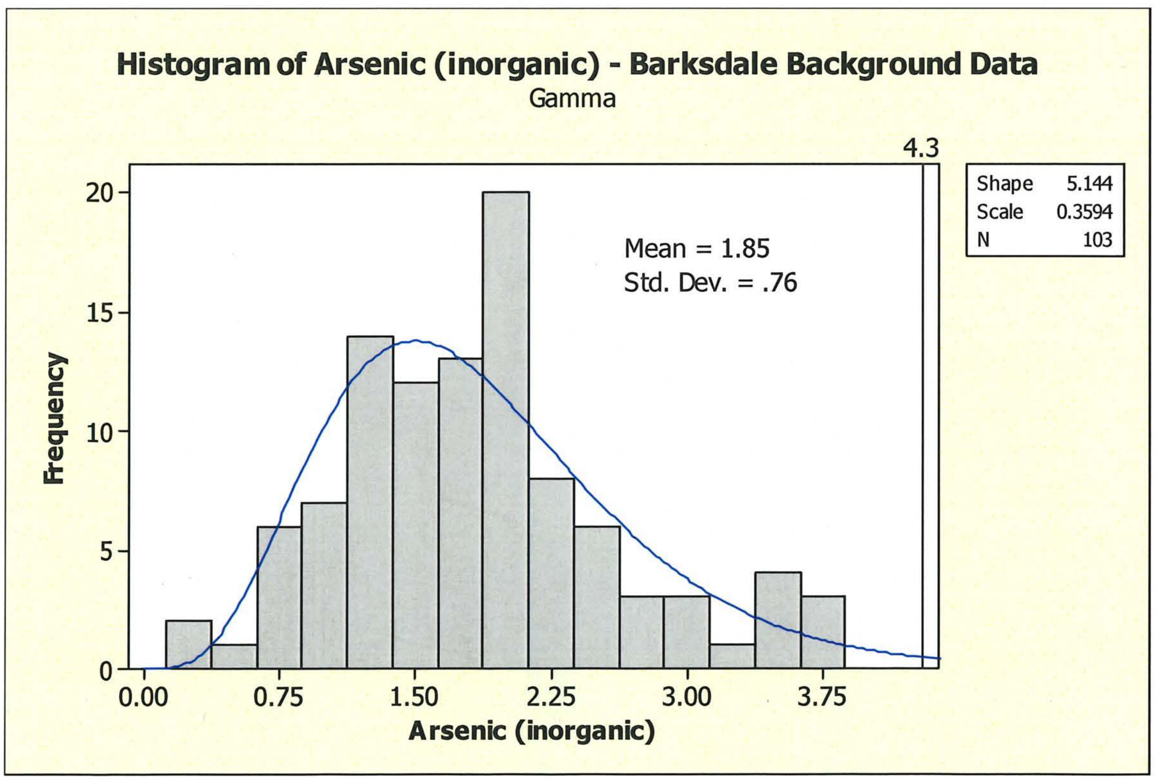
Figure 1 – Approach for Determining Representative Background Concentration in ProUCL

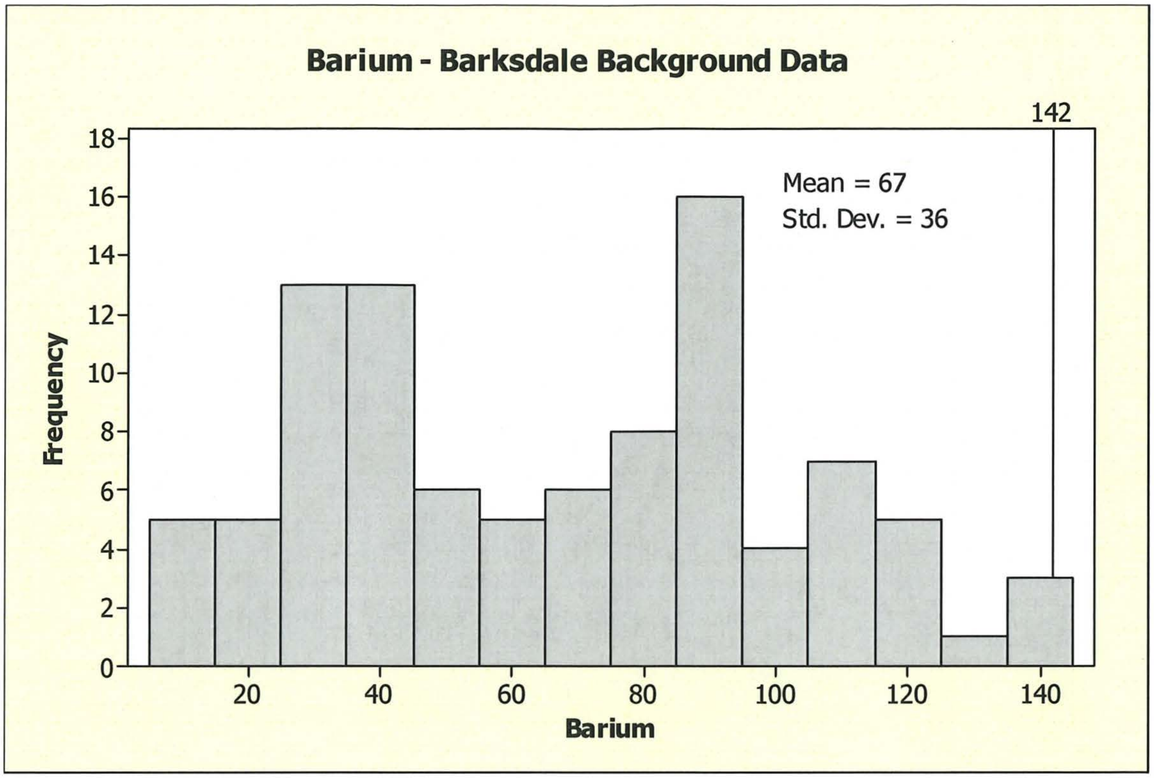


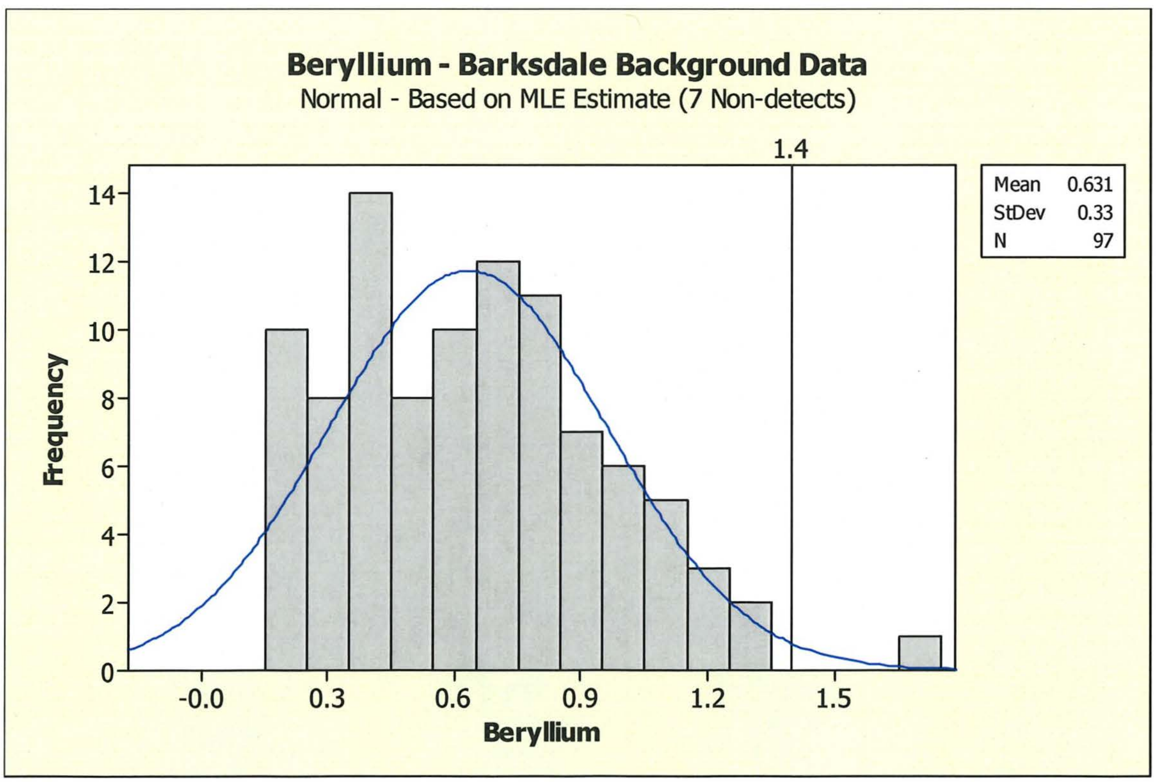
Notes: MLE – Max Likelihood (Cohens' Method)   ROS – Regression on Order Statistic (Helsel's Method)

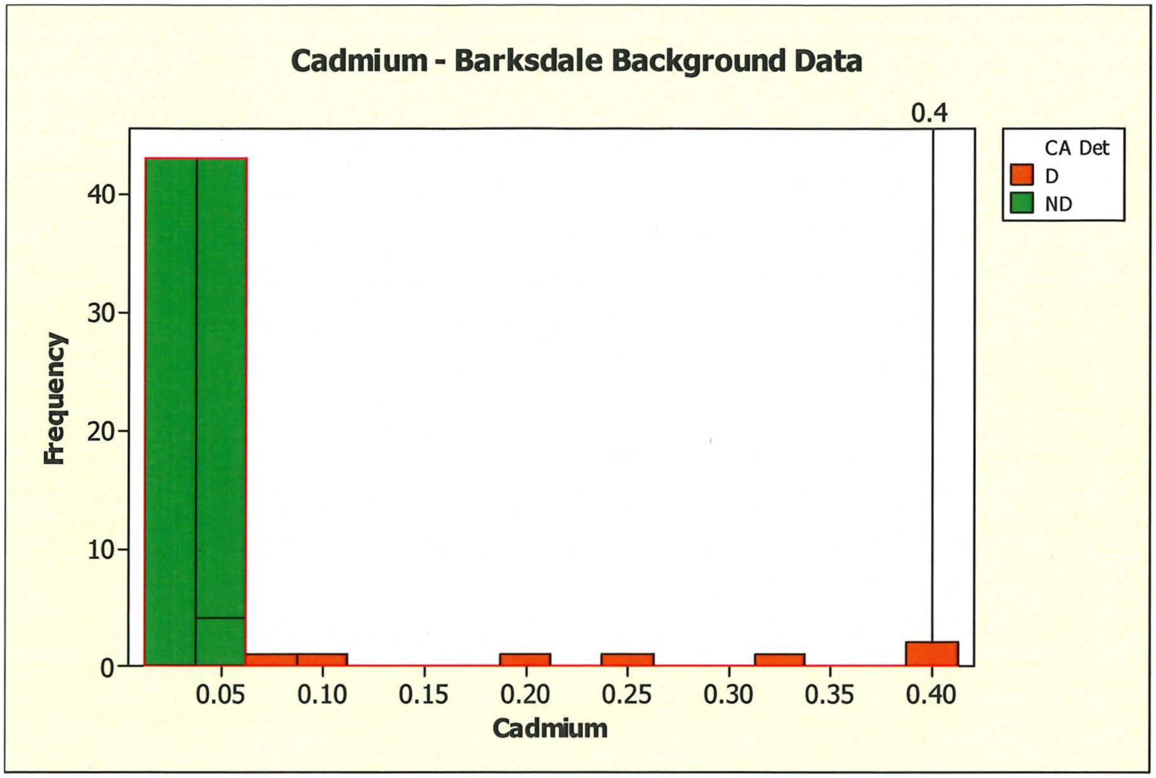
ATTACHMENT 1

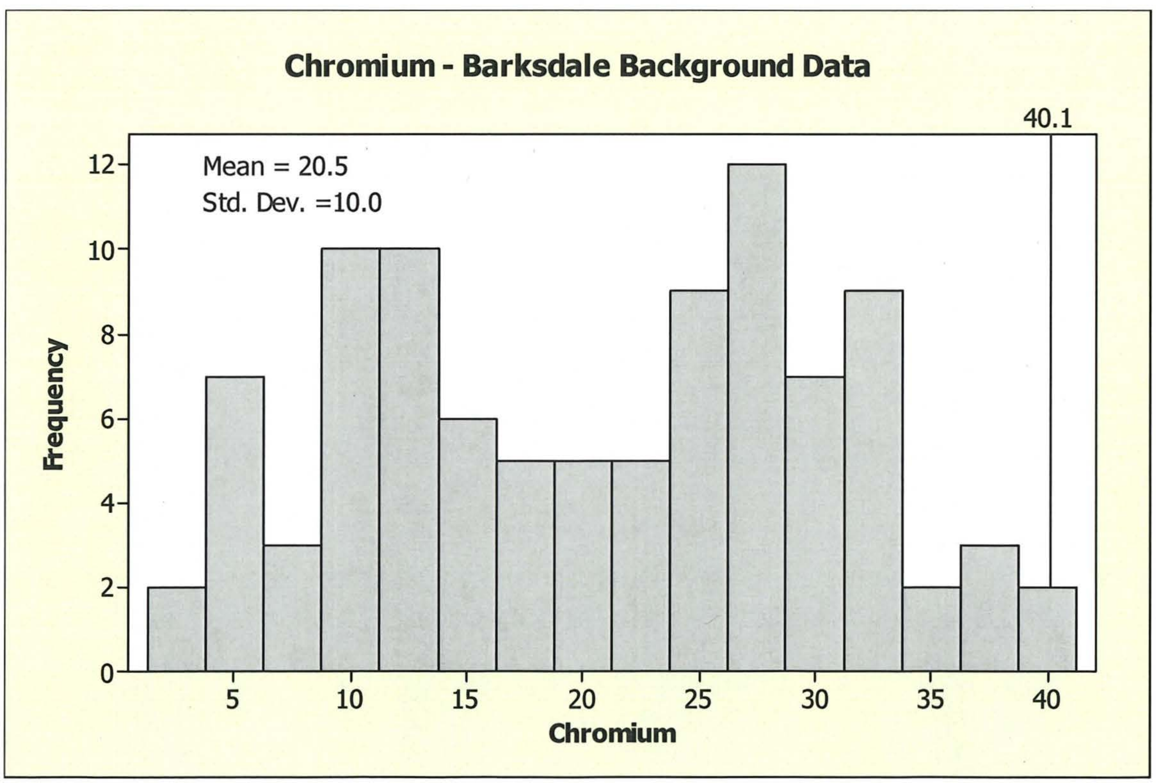

Antimony - Barksdale Background Data
0.77
Ant - Detects
D
ND
Frequency
0
10
20
30
40
50
60
0.40
0.45
0.50
0.55
0.60
0.65
0.70
0.75
Antimony


Histogram of Arsenic (inorganic) - Barksdale Background Data
Gamma
4.3
Shape 5.144
Scale 0.3594
N 103
Mean = 1.85
Std. Dev. = .76
Frequency
0
5
10
15
20
0.00
0.75
1.50
2.25
3.00
3.75
Arsenic (inorganic)

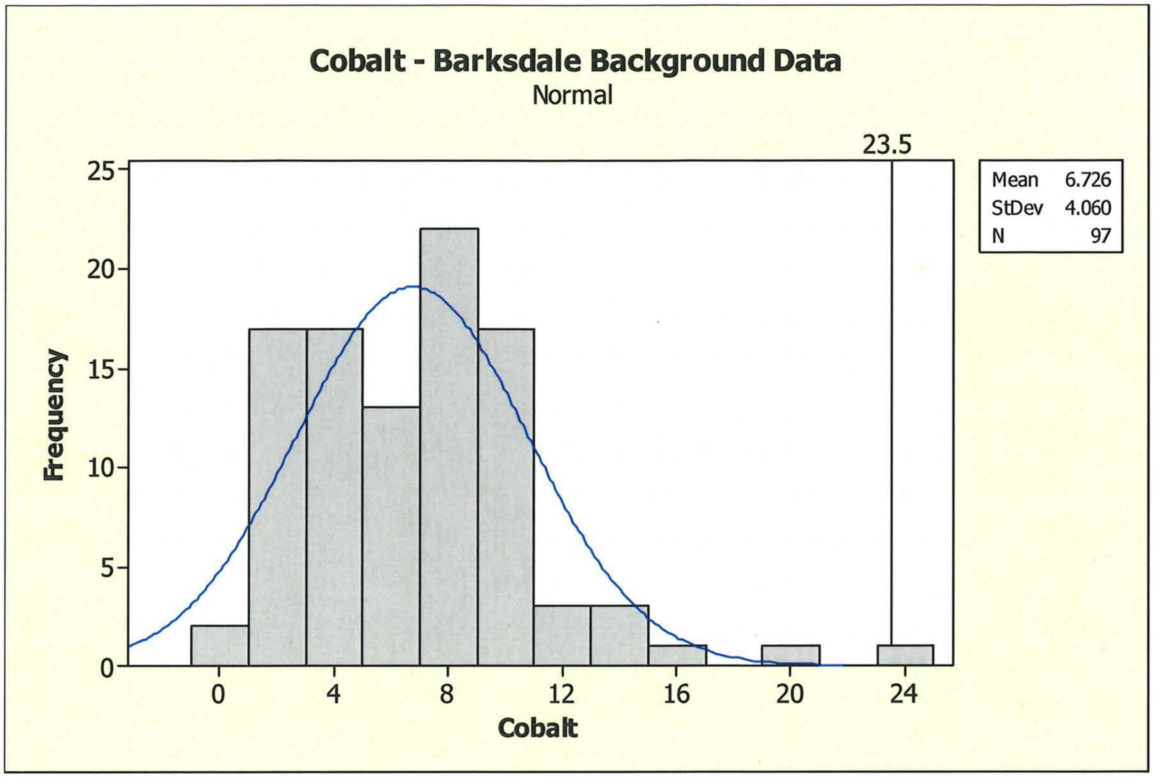

Barium - Barksdale Background Data
142
Mean = 67
Std. Dev. = 36
Frequency
0
2
4
6
8
10
12
14
16
18
20
40
60
80
100
120
140
Barium

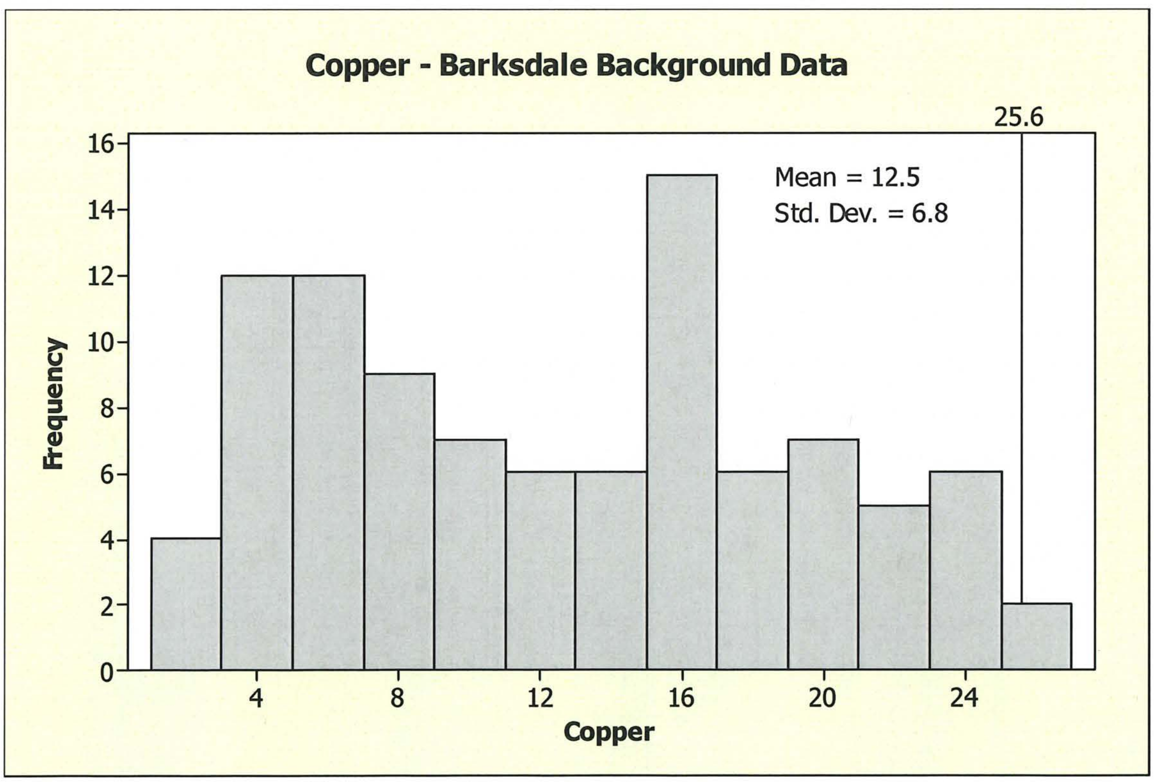

Beryllium - Barksdale Background Data
Normal - Based on MLE Estimate (7 Non-detects)
1.4
Mean 0.631
StDev 0.33
N 97
Frequency
0
2
4
6
8
10
12
14
-0.0
0.3
0.6
0.9
1.2
1.5
Beryllium


Cadmium - Barksdale Background Data
0.4
CA Det
D
ND
Frequency
0
10
20
30
40
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
Cadmium

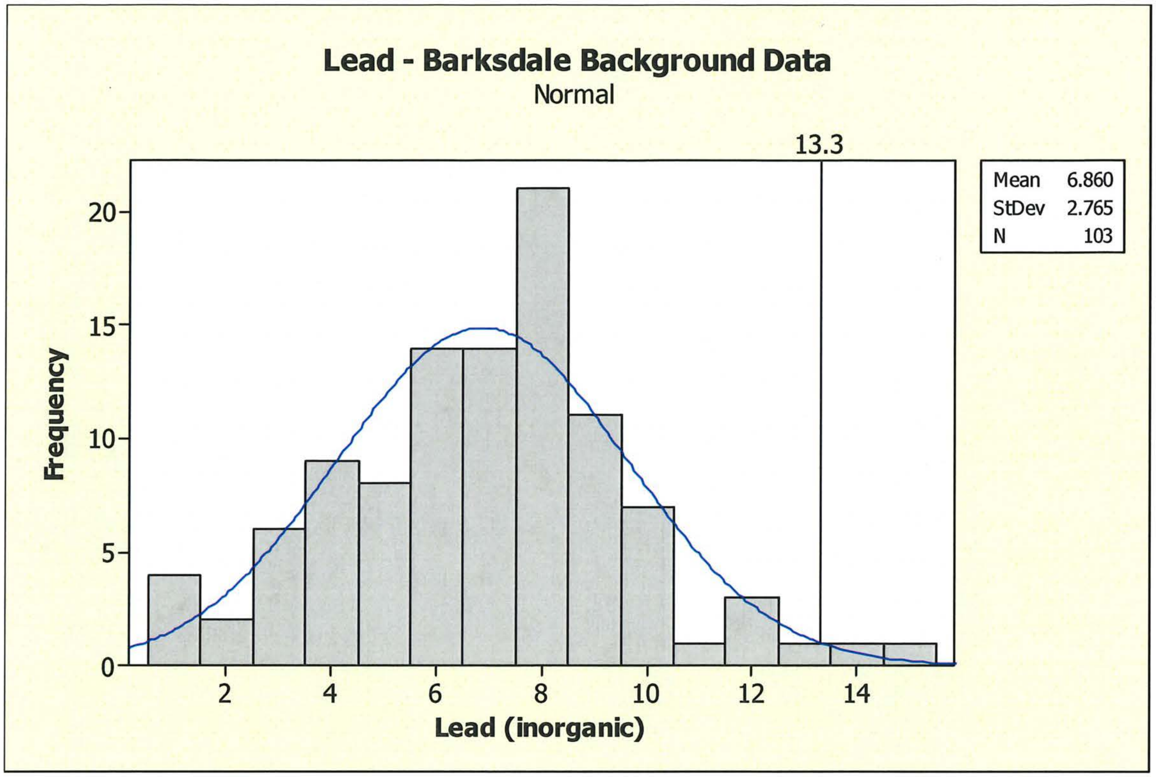

Chromium - Barksdale Background Data
40.1
Mean = 20.5
Std. Dev. =10.0
Frequency
0
2
4
6
8
10
12
5
10
15
20
25
30
35
40
Chromium

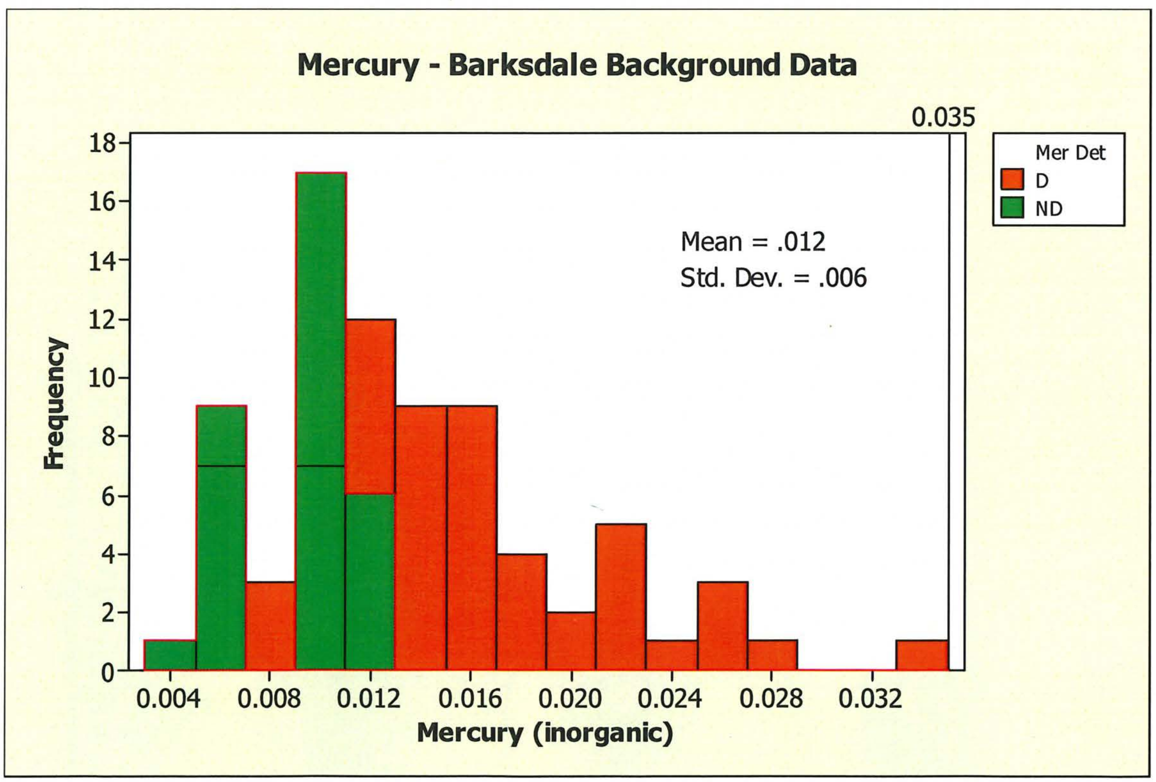
Attachment 1 – Barksdale Background Data - Graphical Summaries

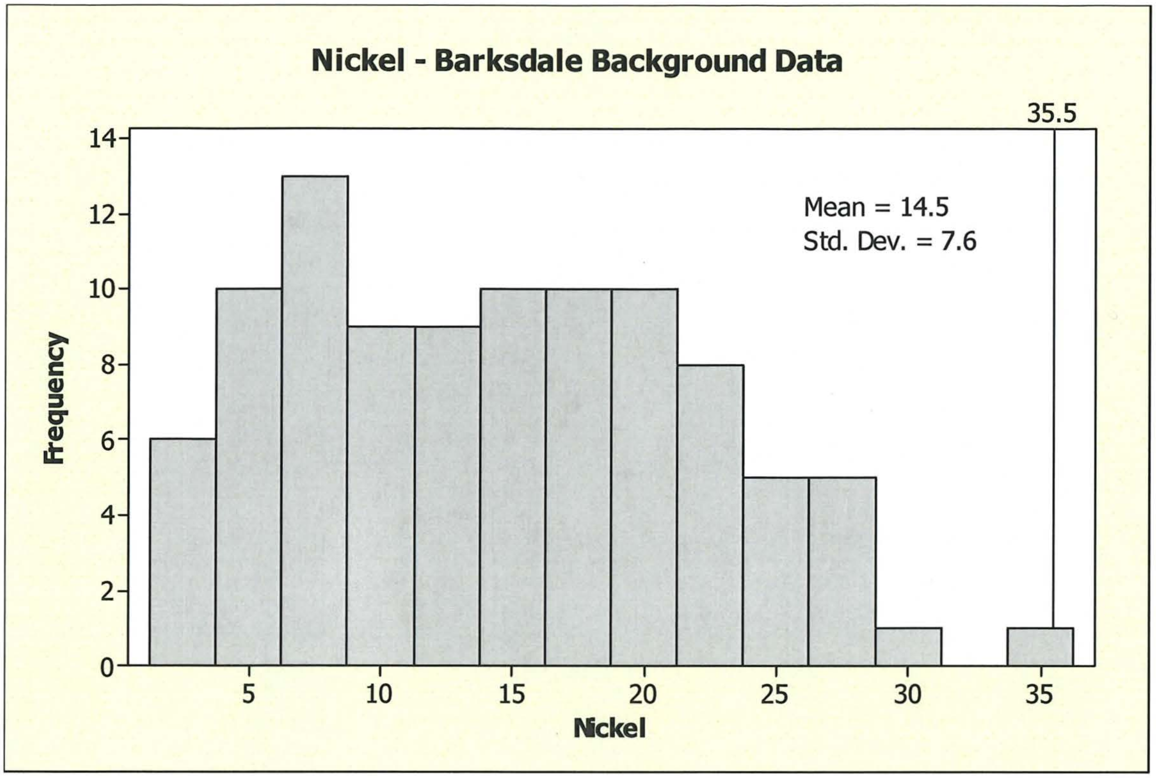


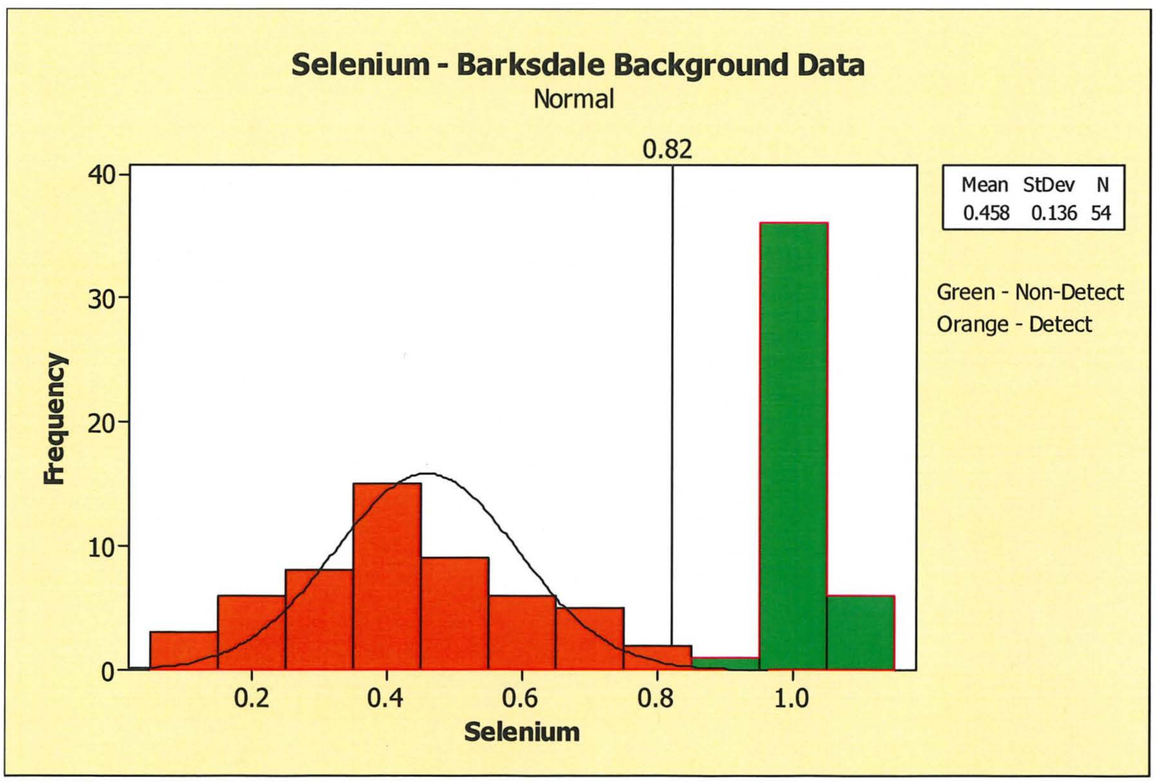


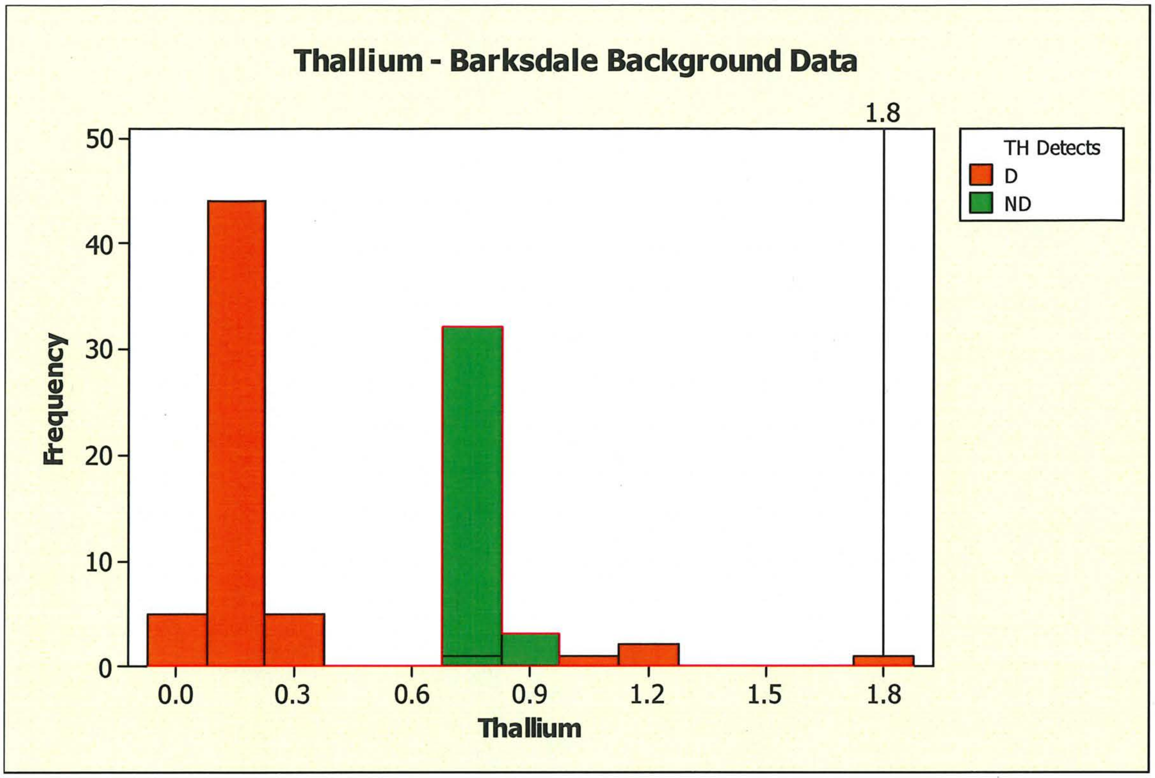
Attachment 1 – Barksdale Background Data - Graphical Summaries

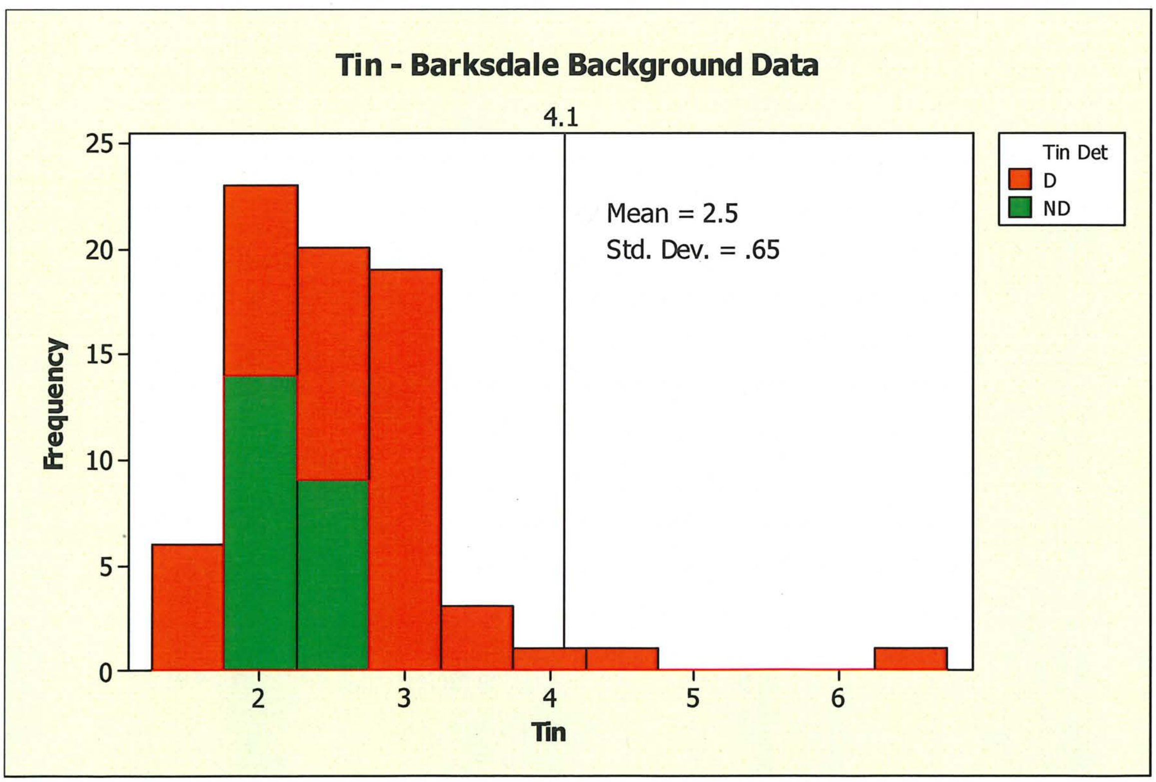


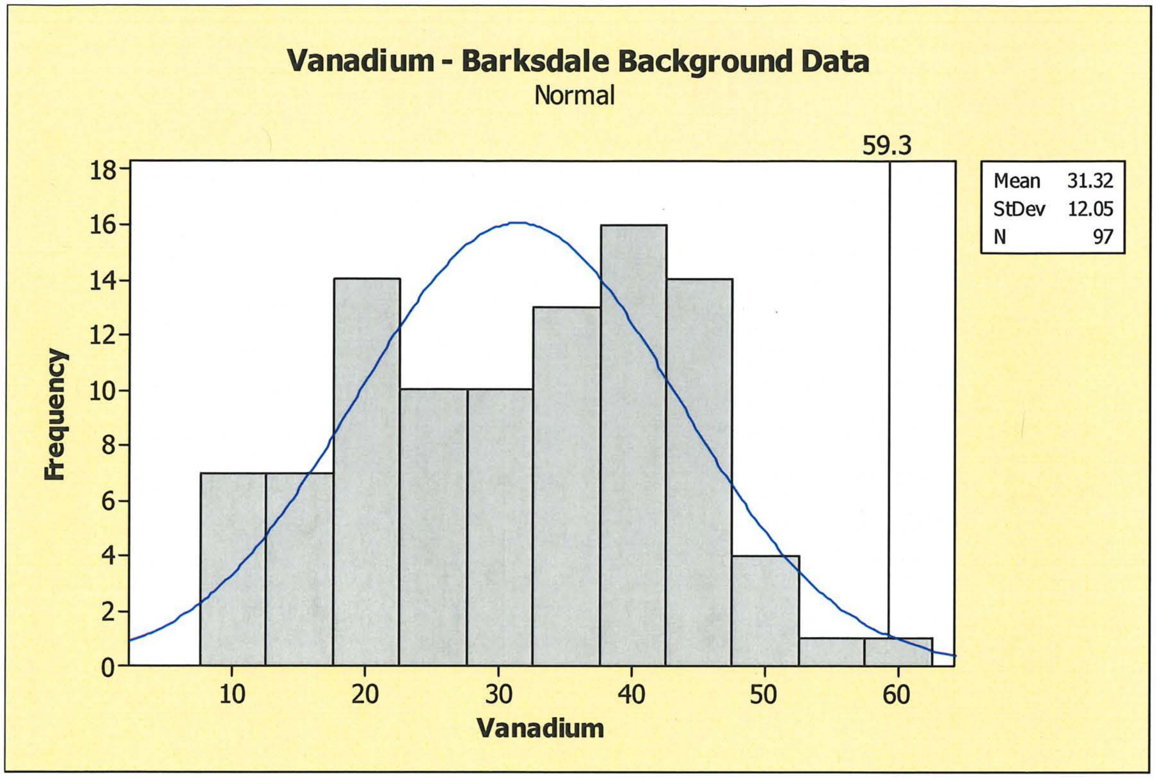


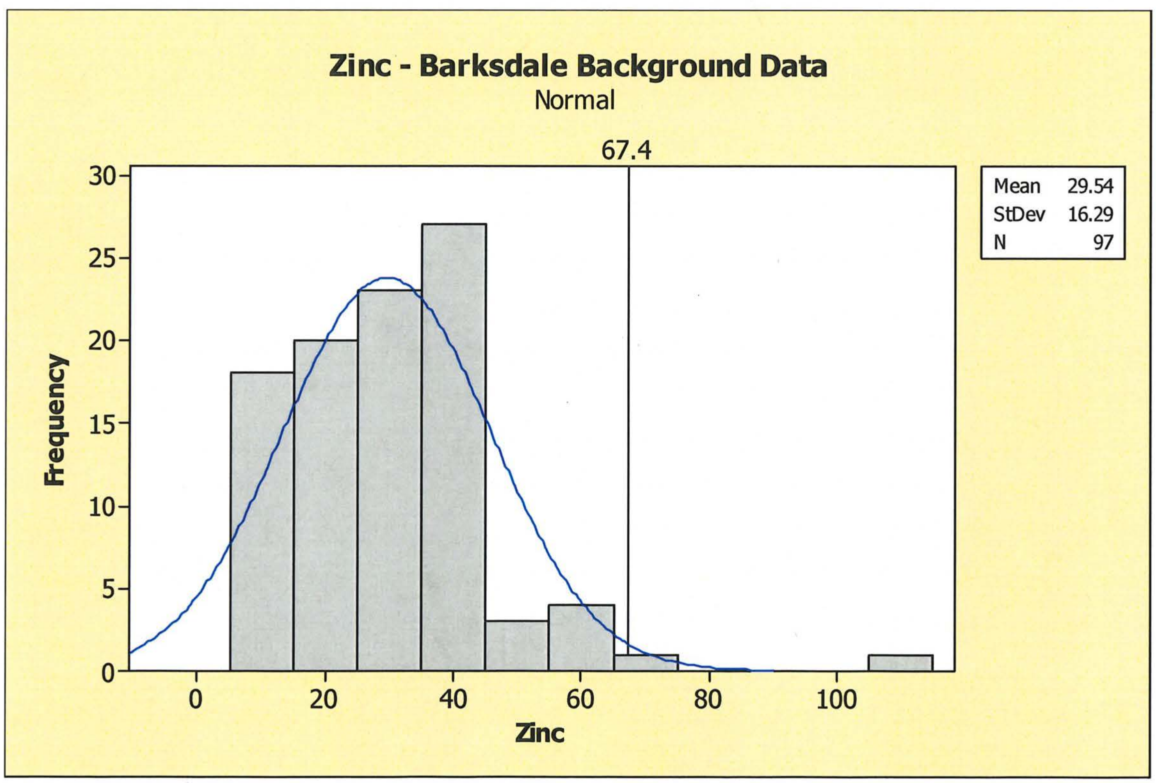

Nickel - Barksdale Background Data
35.5
Mean = 14.5
Std. Dev. = 7.6
Frequency
0
2
4
6
8
10
12
14
5
10
15
20
25
30
35
Nickel


Selenium - Barksdale Background Data
Normal
0.82
Mean StDev N
0.458 0.136 54
Green - Non-Detect
Orange - Detect
Frequency
0
10
20
30
40
0.2
0.4
0.6
0.8
1.0
Selenium


Thallium - Barksdale Background Data
1.8
TH Detects
D
ND
Frequency
0
10
20
30
40
50
0.0
0.3
0.6
0.9
1.2
1.5
1.8
Thallium


Tin - Barksdale Background Data
4.1
Mean = 2.5
Std. Dev. = .65
Tin Det
D
ND
Frequency
0
5
10
15
20
25
2
3
4
5
6
Tin


Vanadium - Barksdale Background Data
Normal
59.3
Mean 31.32
StDev 12.05
N 97
Frequency
0
2
4
6
8
10
12
14
16
18
10
20
30
40
50
60
Vanadium


Zinc - Barksdale Background Data
Normal
67.4
Mean 29.54
StDev 16.29
N 97
Frequency
0
5
10
15
20
25
30
0
20
40
60
80
100
Zinc