APPENDIX NOT INCLUDED

Appendix 1: Complete Lead Results Table

9956295

Long Sample ID	Short Sample ID	Depth	Reading No	Time	Duration	Units	Pb Mean	n	STDEV	Bag 95% t-UCL	Area	Type2	Latitude	Longitude	Geo Description	Col Date	Col Time
containment sludge	EBA containment sludge	NA	7	10/27/2017 8:32	30	ppm	95.44	4	24.23	123.95	EBA	Other	35.8417091	-96.3853514	Black silty organic material	-	-
EBA D12 0-6	EBA DU12	0 to 6	408	11/3/2017 9:25	15	ppm	102.40	4	7.34	111.03	EBA	DU	-	-	Brown silty fine SAND, some clay, trace gravel	11/1/2017	1108
EBA DU 10C 0-6	EBA DU10C	0 to 6	379	11/2/2017 17:55	15	ppm	368.78	4	21.80	394.44	EBA	DU	-	-	Brown fine SAND, some silt, little clay, little gravel	11/1/2017	1010
EBA DU 1B 0-6	EBA DU1B	0 to 6	354	10/30/2017 15:28	15	ppm	161.22	8	17.16	172.72	EBA	DU	-	-	Medium brown fine to medium SAND, some gravel and silt	-	-
EBA DU 1C 0-6	EBA DU1C	0 to 6	362	10/30/2017 15:39	15	ppm	166.15	7	8.92	172.70	EBA	DU	-	-	Dark brown fine SAND, some silt, some clay, little gravel	10/31/2017	1605
EBA DU1 6-24	EBA DU1	6 to 24	604	11/4/2017 17:09	15	ppm	35.34	4	4.73	40.91	EBA	DU	-	-	Light brown silty fine SAND, trace clay, trace gravel	11/3/2017	1642
EBA DU-10A 0-6	EBA DU10A	0 to 6	231	11/2/2017 9:53	30	ppm	327.98	6	8.93	335.33	EBA	DU	-	-	Dark brown fine SAND, some silt, some clay, little gravel	10/31/2017	1605
EBA DU-10A 6-24	EBA DU10A	6 to 24	325	11/2/2017 16:24	15	ppm	129.25	4	4.30	134.30	EBA	DU	-	-	-	-	-
EBA DU10B 6-24	EBA DU10B	6 to 24	454	11/3/2017 10:40	15	ppm	121.65	6	34.20	149.78	EBA	DU	-	-	Medium brown silty SAND	-	-
EBA DU-10B 6-24 <120	EBA DU10B	6 to 24	698	11/6/2017 12:24	15	ppm	129.84	6	8.74	137.04	EBA	DU	-	-	Medium brown silty SAND	-	-
EBA DU-10B 6-24 <80	EBA DU10B	6 to 24	704	11/6/2017 12:35	15	ppm	99.83	6	7.34	105.87	EBA	DU	-	-	Medium brown silty SAND	-	-
EBA DU-10B 0-6	EBA DU10B	0 to 6	237	11/2/2017 9:59	15	ppm	355.51	8	18.28	367.76	EBA	DU	-	-	Medium brown fine to medium SAND, some gravel and silt	-	-
EBA DU-10C 6-24	EBA DU10C	6 to 24	348	11/2/2017 16:45	15	ppm	139.40	9	20.47	152.09	EBA	DU	-	-	-	-	-
EBA DU-11 0-6	EBA DU11	0 to 6	329	11/2/2017 16:28	15	ppm	151.85	8	15.91	162.50	EBA	DU	-	-	Light brown fine SAND, some silt, trace clay	11/1/2017	1046
EBA DU-13 0-6	EBA DU13	0 to 6	267	11/2/2017 10:52	15	ppm	161.59	6	11.89	171.37	EBA	DU	-	-	Dark brown fine SAND, some silt, some clay, some gravel	11/1/2017	1130
EBA DU14 0-6	EBA DU14	0 to 6	518	11/4/2017 8:46	15	ppm	178.05	7	17.29	190.75	EBA	DU	-	-	Dark brown fine sandy SILT, some clay, some gravel	11/3/2017	1126
EBA DU15 0-6	EBA DU15	0 to 6	662	11/6/2017 10:44	15	ppm	150.87	7	11.58	159.38	EBA	DU	-	-	Light brown SILT, little sand, some clay	11/3/2017	1143
EBA DU16	EBA DU16	0 to 6	598	11/4/2017 17:02	15	ppm	385.78	6	25.31	406.61	EBA	DU	-	-	Brown medium SAND, trace silt, some gravel	-	-
EBA DU-17 0-6	EBA DU17	0 to 6	759	11/6/2017 16:26	15	ppm	400.92	6	34.35	429.18	EBA	DU	-	-	Dark brown fine to coarse SAND, trace silt and gravel	-	-
EBA DU-1A 0-6	EBA DU1A	0 to 6	350	10/30/2017 15:22	15	ppm	203.25	4	12.44	217.89	EBA	DU	-	-	Reddish brown fine to medium SAND, some silt, trace gravel	10/28/2017	1120
EBA DU2 6-24	EBA DU2	6 to 24	608	11/4/2017 17:16	15	ppm	46.52	4	3.21	50.29	EBA	DU	-	-	Light brown, gravelly fine to coarse well sorted SAND	-	-
EBA DU2A 0-6	EBA DU2A	0 to 6	414	10/30/2017 17:17	15	ppm	151.31	6	3.54	154.22	EBA	DU	-	-	Brown fine to medium SAND, some silt, trace gravel	-	-
EBA DU2B 0-6	EBA DU2B	0 to 6	375	10/30/2017 16:00	15	ppm	152.11	7	20.73	167.33	EBA	DU	-	-	-	-	-
EBA DU2C 0-6	EBA DU2C	0 to 6	391	10/30/2017 16:25	15	ppm	155.41	4	14.56	172.54	EBA	DU	-	-	-	-	-
EBA DU-3 0-6	EBA DU3	0 to 6	674	10/31/2017 15:53	15	ppm	325.52	5	28.89	353.07	EBA	DU	-	-	Dark brown fine SAND, some silt, little clay, little gravel	10/31/2017	1057
EBA DU3 6-24	EBA DU3	6 to 24	365	11/2/2017 17:30	15	ppm	206.83	10	38.09	228.91	EBA	DU	-	-	Dark brown to black medium gravelly SAND Slight petroleum odor	10/31/2017	1057
EBA DU4 0-6	EBA DU4	0 to 6	450	11/3/2017 10:34	15	ppm	186.54	4	15.20	204.43	EBA	DU	-	-	Dark brown silty fine SAND, little clay, little gravel	10/31/2017	1139
EBA DU4 6-24	EBA DU4	6 to 24	634	11/6/2017 8:54	15	ppm	67.62	4	3.15	71.33	EBA	DU	-	-	Reddish brown sandy CLAY trace gravel	-	-
EBA DU5 0-6	EBA DU5	0 to 6	429	10/30/2017 17:33	15	ppm	782.24	6	523.03	1212.51	EBA	DU	-	-	Medium brown fine to coarse SAND, trace silt, some gravel	-	-
EBA DU-5 0-6 <120	EBA DU5 <120	0 to 6	732	11/6/2017 14:46	15	ppm	874.20	6	42.31	909.01	EBA	DU	-	-	Medium brown fine to coarse SAND, trace silt, some gravel	-	-
EBA DU-5 0-6 <80	EBA DU5 <80	0 to 6	738	11/6/2017 14:53	15	ppm	708.05	6	23.21	727.14	EBA	DU	-	-	Medium brown fine to coarse SAND, trace silt, some gravel	-	-
EBA DU6 0-6	EBA DU6	0 to 6	357	11/2/2017 16:53	15	ppm	257.69	4	10.41	269.94	EBA	DU	-	-	Dark brown fine SAND w/ gravel	10/31/2017	0940
EBA DU-6 (6-24)	EBA DU6	6 to 24	626	11/6/2017 8:28	15	ppm	56.15	8	41.06	83.65	EBA	SU	-	-	Reddish brown fine medium SAND, trace silt	-	-
EBA DU-7 0-6	EBA DU7	0 to 6	142	11/1/2017 15:20	15	ppm	180.75	10	13.97	188.85	EBA	DU	-	-	Dark brown to black medium SAND, some silt, some black vesicular gravel (cinders)	-	-
EBA DU-7 blk coke chunks	EBA DU7 blk cke chunks	0 to 3	690	11/6/2017 12:08	15	ppm	73.38	4	32.97	112.18	EBA	OTHER	-	-	-	-	-
EBA DU-7 blk coke crushed	EBA DU7blk cke crushed	0 to 3	694	11/6/2017 12:17	15	ppm	108.13	4	14.93	125.69	EBA	OTHER	-	-	-	-	-
EBA DU8 0-6	EBA DU8	0 to 6	402	11/3/2017 9:18	15	ppm	319.49	6	55.14	364.85	EBA	DU	-	-	Dark brown clayey SAND, some silt	10/31/2017	1221
EBA DU-9 0-6	EBA DU9	0 to 6	624	10/31/2017 14:45	15	ppm	1202.56	5	188.79	1382.54	EBA	DU	-	-	Brown fine sandy SILT, trace clay, some gravel	10/31/2017	1203
EBA N Transect surface	EBA N Transect	0 to 6	235	10/28/2017 13:56	15	ppm	378.32	11	47.70	404.39	EBA	Transect	-	-	Dark brown fine SAND, little silt and clay, trace fine gravel	10/28/2017	1220
EBA PSA1 0-6	EBA PSA1	0 to 6	258	10/26/2017 16:03	15	ppm	850.92	8	118.11	930.03	EBA	PSA	35.84174464	-96.385192950	Dark brown fine SAND, some silt and clay	10/26/2017	1135
EBA PSA1 6-24	EBA PSA1	6 to 24	273	10/26/2017 16:57	15	ppm	422.51	6	28.11	445.63	EBA	PSA	35.841744644	-96.385192950	Light brown fine sandy SILT, some clay, trace gravel	10/26/2017	1135
EBA PSA1 core	EBA PSA1 core		13	10/27/2017 9:09	15	ppm	915.56	10	162.36	1009.68	EBA	PSA	-	-	-	-	-
EBA PSA1 core2	EBA PSA1 core2		25	10/27/2017 9:20	15	ppm	66.20	11	57.98	97.88	EBA	PSA	-	-	-	-	-
EBA PSA1 core3	EBA PSA1 core3		37	10/27/2017 9:30	15	ppm	125.77	6	81.79	193.05	EBA	PSA	-	-	-	-	-
EBA PSA1 core4	EBA PSA1 core4		43	10/27/2017 9:41	15	ppm	97.72	12	171.80	186.79	EBA	PSA	-	-	-	-	-
EBA PSA1 core5	EBA PSA1 core5		56	10/27/2017 9:58	15	ppm	95.00	10	69.80	135.46	EBA	PSA	-	-	-	-	-
EBA PSA1 core6	EBA PSA1 core6		67	10/27/2017 10:14	15	ppm	135.37	11	70.65	173.98	EBA	PSA	-	-	-	-	-
EBA PSA2 side 0-6	EBA PSA2 side	0 to 6	203	10/26/2017 14:08	15	ppm	215.79	6	13.37	226.79	EBA	PSA	-	-	Dark brown silty fine SAND, some clay, trace gravel	10/26/2017	1030
EBA PSA2 side 6-24	EBA PSA2 side	6 to 24	266	10/26/2017 16:30	15	ppm	93.50	6	7.87	99.98	EBA	PSA	-	-	Brown fine SAND and SILT, trace clay, trace gravel	10/26/2017	1030
EBA South Transect 0-6	EBA S Transect	0 to 6	262	10/28/2017 16:28	15	ppm	299.46	6	11.50	308.92	EBA	Transect	-	-	Dark brown fine SAND, some silt, some clay, some gravel	10/28/2017	1150
EBA SU1 6-24	EBA SU1	6 to 24	283	10/30/2017 9:52	15	ppm	18.31	6	4.50	22.02	EBA	SU	35.841735157	-96.385393118	-	-	-
EBA SU1 0-6	EBA SU1	0 to 6	256	10/28/2017 16:07	15	ppm	396.59	6	41.86	431.03	EBA	SU	35.841735157	-96.385393118	Dark brown fine SAND and SILT, trace clay, little gravel	10/28/2017	1010
EBA SU2 6-24	EBA SU2	6 to 24	299	10/30/2017 10:39	15	ppm	72.36	7	10.52	80.09	EBA	SU	35.841771784	-96.385425323	Light brown silty SAND, trace gravel	10/28/2017	1120
EBA SUT 1,1 0-6	EBA SUT1,1	0 to 6	250	11/2/2017 10:11	15	ppm	368.70	4	16.48	388.09	EBA	SU	35.841954265	-96.385065167	Dark brown medium to coarse SAND, some gravel	-	-
EBA SUT 1,1 6-24	EBA SUT1,1	6 to 24	30	11/7/2017 8:45	15	ppm	123.59	9	23.19	137.96	EBA	SU	35.841954265	-96.385065167	Dark brown fine to medium SAND, trace gravel and silt	-	-
EBA SUT 1,2 0-6	EBA SUT1,2	0 to 6	119	11/1/2017 14:58	15	ppm	385.04	4	20.58	409.25	EBA	SU	35.842001535	-96.385028400	-	-	-
EBA SUT 1,3 0-6	EBA SUT1,3	0 to 6	424	11/3/2017 9:54	15	ppm	399.84	4	18.04	421.07	EBA	SU	35.842035610	-96.384987565	Dark brown medium SAND with trace gravel Slight petroleum odor	-	-
EBA SUT 1,3 6-24	EBA SUT1,3	6 to 24	337	11/2/2017 16:35	15	ppm	162.83	10	71.56	204.31	EBA	SU	35.842035610	-96.384987565	Dark brown medium to coarse gravelly SAND Slight petroleum odor	-	-
EBA SUT 1,4 0-6	EBA SUT1,4	0 to 6	258	11/2/2017 10:20	15	ppm	362.54	4	20.61	386.79	EBA	SU	35.842079592	-96.384946628	Dark brown to black medium to coarse SAND, trace silt and gravel	-	-
EBA SUT 1,5 0-6	EBA SUT1,5	0 to 6	262	11/2/2017 10:23	15	ppm	462.33	4	79.27	555.61	EBA	SU	35.842117382	-96.384905481	Dark brown fine SAND, some silt, trace clay, trace gravel	11/1/2017	1225
EBA-SU2 0-6	EBA SU2	0 to 6	340	10/30/2017 15:00	15	ppm	454.72	6	188.91	610.13	EBA	SU	35.841771784	-96.385425323	-	-	-
EBA-SUS100	EBA SUS100	0 to 6	395	10/30/2017 16:32	15	ppm	90.54	4	3.59	94.76	EBA	SU	-	-	-	-	-
EBA-SUS101	EBA SUS101	0 to 6	369	10/30/2017 15:52	15	ppm	80.93	6	12.13	90.91	EBA	SU	-	-	-	-	-
EBA-SUS102	EBA SUS102	0 to 6	400	10/30/2017 16:48	15	ppm	87.36	5	9.47	96.39	EBA	SU	-	-	-	-	-
LSA Berm 0-6	LSA Berm	0 to 6	226	10/26/2017 14:50	15	ppm	62.45	6	3.41	65.25	LSA	SU	35.840124564	-96.384250401	Dark brown find SAND, trace silt and clay	-	1130
LSA DU 5-6B 0-6	LSA DU5-6B	0 to 6	529	11/4/2017 9:12	15	ppm	157.93	6	5.87	162.76	LSA	DU	-	-	Brown fine SAND, little silt and clay	11/2/2017	1458
LSA DUT 5-6B 0-6 <120	LSA DUT 5-6B <120	0 to 6	744	11/6/2017 14:59	15	ppm	188.49	6	4.81	192.45	LSA	DU	-	-	Brown fine SAND, little silt and clay	11/2/2017	1458
LSA DUT 5-6B 0-6 <80	LSA DUT5-6B <80	0 to 6	710	11/6/2017 12:44	15	ppm	148.20	6	3.44	151.02	LSA	DU	-	-	Brown fine SAND, little silt and clay	11/2/2017	1458
LSA DUT 8-9A 0-6	LSA DUT8-9A	0 to 6	657	11/6/2017 10:38	15	ppm	289.28	5	15.80	304.35	LSA	DU	-	-	Brown fine SAND	11/4/2017	1345
LSA DUT 8-9B 0-6	LSA DUT8-9B	0 to 6	669	11/6/2017 10:51	15	ppm	305.49	6	32.56	332.28	LSA	DU	-	-	Brown fine SAND, little silt and clay	11/4/2017	1352
LSA DUT 8-9C	LSA DUT8-9C	0 to 6	652	11/6/2017 10:33	15	ppm	463.76	4	70.41	546.61	LSA	DU	-	-	Brown fine SAND, some SILT	11/4/2017	1358
LSA DUT4-5 0-6	LSA DUT4-5	0 to 6	488	11/3/2017 14:18	15	ppm	79.12	6	10.46	87.72	LSA	DU	-	-	Brown fine SAND, little silt and clay	11/2/2017	1547
LSA DUT5-6A 0-6	LSA DUT5-6A	0 to 6	564	11/4/2017 14:11	15	ppm	224.16	7	18.04	237.41	LSA	DU	-	-	Brown fine SAND, little silt and clay	11/2/2017	1458
LSA DUT5-6C 0-6	LSA DUT5-6C	0 to 6	571	11/4/2017 14:24	15	ppm	173.15	7	14.31	183.66	LSA	DU	-	-	Brown fine SAND, little silt and clay	11/2/2017	1520
LSA DUT6-7 0-6	LSA DUT6-7	0 to 6	554	11/4/2017 13:58	15	ppm	172.66	10	12.78	180.06	LSA	DU	-	-	Brown fine SAND, little silt, trace clay	11/2/2017	1530
LSA SU 9,3 0-6	LSA SUT9,3	0 to 6	663	10/31/2017 15:36	15	ppm	462.89	6	53.74	507.10	LSA	SU	35.840065356	-96.384721108	Brown fine SAND, some silt, little clay	10/31/2017	1035
LSA SU7 16-1,2 0-6	LSA SUT16-1,2	0 to 6	254	11/2/2017 10:15	15	ppm	692.72	4	23.61	720.50	LSA	SU	35.841702476	-96.384419198	Dark brown silty fine SAND, trace clay	11/1/2017	1543
LSA SUFHI 1 0-6	LSA SUFHI,1	0 to 6	138	10/27/2017 15:52	15	ppm	11824.65	6	656.29	12364.54	LSA	SU	35.840411216	-96.384785177	-	-	-
LSA SUFHI 1 6-24	LSA SUFHI,1	6 to 24	178	10/28/2017 9:08	30	ppm	11408.68	4	704.41	12237.54	LSA	SU	35.840411216	-96.384785177	-	-	-
LSA SUFHI 2 0-6	LSA SUFHI,2	0 to 6	182	10/28/2017 9:17	15	ppm	170142.18	4	10693.19	182724.67	LSA	SU	35.840671233	-96.384784880	-	-	-
LSA SUFHI 2 6-24	LSA SUFHI,2	6 to 24	207	10/28/2017 12:02	15	ppm	17763.22	4	1776.57	19853.67	LSA	SU	35.840671233	-96.384784880	-	-	-
LSA SUHI,1 4-8	LSA SUHI,1	4 to 8	318	10/30/2017 11:24	15	ppm	8626.79	4	51.16	8686.99	LSA	Core	35.840411216	-96.384785177	-	-	-
LSA SUHI,1 0-4	LSA SUHI,1	0 to 4	314	10/30/2017 11:17	15	ppm	8304.08	4	671.46	9094.17	LSA	Core	35.840411216	-96.384785177	-	-	-
LSA SUHI,1 12-16	LSA SUHI,1	12 to 16	603	10/31/2017 14:20	15	ppm	6270.63	5	508.93	6755.83	LSA	Core	35.840411216	-96.384785177	-	-	-
LSA SUHI,1 20-24	LSA SUHI,1	20 to 24	469	10/31/2017 9:31	15	ppm	1641.00	6	118.53	1738.50	LSA	Core	35.840411216	-96.384785177	-	-	-
LSA SUHI,1 8-12	LSA SUHI,1	8 to 12	306	10/30/2017 10:57	15	ppm	51908.06	4	6779.76	59885.68	LSA	Core	35.840411216	-96.384785177	-	-	-
LSA SUHI,2 0-4	LSA SUHI,2	0 to 4	310	10/30/2017 11:06	15	ppm	178481.51	4	5087.03	184467.32	LSA	Core	35.840671233	-96.384784880	-	-	-
LSA SUHI,2 12-16	LSA SUHI,2	12 to 16	619	10/31/2017 14:37	15	ppm	2762.19	5	160.62	2915.33	LSA	Core	35.840671233	-96.384784880	-	-	-
LSA SUHI,2 16-20	LSA SUHI,2	16 to 20	614	10/31/2017 14:32	15	ppm	1208.00	5	37.31	1243.57	LSA	Core	35.840671233	-96.384784880	-	-	-
LSA SUT 08,02 0-6	LSA SUT8,2	0 to 6	454	10/31/2017 9:08	15	ppm	155.53	4	10.04	167.34	LSA	SU	35.839735468	-96.384385303	-	-	-
LSA SUT 1,2 0-6	LSA SUT1,2	0 to 6	99	10/27/2017 12:03	15	ppm	375.95	8	45.23	406.25	LSA	SU	35.841281568	-96.384413232	Black fine SAND, some silt and clay, some fine gravel	11/1/2017	1158
LSA SUT 1,3 0-6	LSA SUT1,3	0 to 6	200	10/28/2017 10:04	15	ppm	198.00	7	15.67	209.51	LSA	SU	35.841141857	-96.384576132	Dark brown fine SAND, some silt and clay	-	1518
LSA SUT 1,4 0-6	LSA SUT1,4	0 to 6	251	10/28/2017 15:44	15	ppm	3118.84	5	381.86	3482.90	LSA	SU	35.841782445	-96.383781342	-	-	-

Long Sample ID	Short Sample ID	Depth	Reading No	Time	Duration	Units	Pb Mean	n	STDEV	Bag 95% t-UCL	Area	Type2	Latitude	Longitude	Geo Description	Col Date	Col Time
LSA SUT 1,O5 0-6	LSA SUT1,5	0 to 6	570	10/31/2017 11:56	15	ppm	527.21	6	48.03	566.72	LSA	SU	35.841578481	-96.383995235	Dark brown fine SAND and SILT, gravel	10/30/2017	1600
LSA SUT 1,O6 0-6	LSA SUT1,6	0 to 6	586	10/31/2017 12:15	15	ppm	555.19	5	54.90	607.53	LSA	SU	35.841409298	-96.384197116	Dark brown fine SAND, some silt and clay	10/30/2017	1650
LSA SUT 1,O7 0-6	LSA SUT1,7	0 to 6	634	10/31/2017 15:00	15	ppm	234.16	5	8.92	242.67	LSA	SU	35.841219929	-96.384451523	Dark brown fine SAND, some silt, some clay, some gravel	10/30/2017	1635
LSA SUT 10,2 0-6	LSA SUT10,2	0 to 6	161	10/27/2017 17:09	15	ppm	69.50	6	6.15	74.56	LSA	SU	35.840110266	-96.384920105	Brown fine SAND w/ some silt and clay, gravel	10/26/2017	1550
LSA SUT 10,O2B 0-6	LSA SUT10,2B	0 to 6	689	10/31/2017 16:33	15	ppm	57.49	5	4.58	61.86	LSA	SU B	-	-	Brown fine SAND w/ some silt and clay	10/30/2017	1753
LSA SUT 11,03A 0-6	LSA SUT11,3	0 to 6	375	11/2/2017 17:47	15	ppm	1016.58	4	66.35	1094.65	LSA	SU	35.840137765	-96.385264614	Dark brown fine SAND, some silt and clay	11/1/2017	1506
LSA SUT 11,2 6-24	LSA SUT11,2	6 to 24	638	11/6/2017 9:00	15	ppm	2812.27	10	196.92	2926.42	LSA	SU	35.840159650	-96.384896007	-	-	-
LSA SUT 11,2 0-6	LSA SUT11,2	0 to 6	132	10/27/2017 15:34	15	ppm	212.11	6	12.92	222.74	LSA	SU	35.840159650	-96.384896007	Brown fine sandy SILT	10/26/2017	1556
LSA SUT 11,3B 0-6	LSA SUT11,3B	0 to 6	428	11/3/2017 10:00	15	ppm	43574.58	6	3921.48	46800.55	LSA	SU B	35.840139014	-96.385266161	Dark brown fine SAND, some silt and clay	11/1/2017	1512
LSA SUT 11,O2B 0-6	LSA SUT11,2B	0 to 6	475	10/31/2017 9:38	15	ppm	301.80	7	41.27	332.11	LSA	SU B	35.84108845	-96.38415816	Dark brown fine SAND, some silt, little clay	10/30/2017	1748
LSA SUT 12,1 0-6	LSA SUT12,1	0 to 6	232	10/26/2017 15:04	15	ppm	56.18	6	11.36	65.52	LSA	SU	35.840341798	-96.385514840	Dark brown silty fine SAND, trace gravel	10/25/2017	1453
LSA SUT 12,I2 0-6	LSA SUT12,2	0 to 6	458	10/31/2017 9:14	15	ppm	82.11	5	9.85	91.50	LSA	SU	35.840287467	-96.385193883	Dark brown fine SAND, some silt, some clay	10/30/2017	?
LSA SUT 12,I2B 0-6	LSA SUT12,2B	0 to 6	438	11/3/2017 10:17	15	ppm	57.95	4	1.88	60.17	LSA	SU B	-	-	Dark brown fine SAND, some silt and clay	11/3/2017	0917
LSA SUT 13,4 0-6	LSA SUT13,4	0 to 6	144	10/27/2017 16:16	15	ppm	421.15	8	38.76	447.11	LSA	SU	35.840610412	-96.385443844	Brown silty find SAND, fragment of glass, some clay	10/26/2017	1539
LSA SUT 13,5 0-6	LSA SUT13,5	0 to 6	246	10/28/2017 14:44	15	ppm	245.71	5	9.94	255.19	LSA	SU	35.840776636	-96.386083767	Dark brown fine SAND, some silt, trace clay	10/28/2017	1427
LSA SUT 13,6 0-6	LSA SUT13,6	0 to 6	694	10/31/2017 16:42	15	ppm	83.30	6	12.14	93.29	LSA	SU	35.840929484	-96.386153639	Dark brown fine SAND, some silt and clay, gravel	10/31/2017	0940
LSA SUT 14,04 0-6	LSA SUT14,4	0 to 6	321	11/2/2017 16:15	15	ppm	69.43	4	4.61	74.86	LSA	SU	35.841207697	-96.385938696	Brown silty fine SAND, some clay, some gravel	11/1/2017	1615
LSA SUT 14,2 0-6	LSA SUT14,2	0 to 6	152	10/27/2017 16:49	15	ppm	733.13	9	92.44	790.43	LSA	SU	35.840817799	-96.385146410	Light brown SILT, trace fine sand, little clay	10/27/2017	1609
LSA SUT 14,2 0-4	LSA SUT14,2	0 to 4	579	11/4/2017 15:33	15	ppm	1500.05	6	160.70	1632.25	LSA	Core	35.840817799	-96.385146410	Light reddish brown fine SAND and SILT, trace gravel	10/31/2017	-
LSA SUT 14,2 12-16	LSA SUT14,2	12 to 16	81	11/1/2017 12:26	15	ppm	28.84	8	5.51	32.53	LSA	Core	35.840817799	-96.385146410	Reddish brown fine SAND and SILT, trace gravel	10/31/2017	-
LSA SUT 14,2 16-20	LSA SUT14,2	16 to 20	87	11/1/2017 12:33	15	ppm	24.72	6	9.19	32.28	LSA	Core	35.840817799	-96.385146410	Light reddish brown gravelly SAND and SILT	10/31/2017	-
LSA SUT 14,2 20-24	LSA SUT14,2	20 to 24	165	11/1/2017 15:45	15	ppm	161.71	9	16.50	171.93	LSA	Core	35.840817799	-96.385146410	Reddish brown gravelly fine to medium SAND and SILT	10/31/2017	-
LSA SUT 14,2 4-8	LSA SUT14,2	4 to 8	123	11/1/2017 15:03	15	ppm	286.27	6	54.31	330.95	LSA	Core	35.840817799	-96.385146410	Reddish brown fine SAND and SILT, trace gravel	10/31/2017	-
LSA SUT 14,2 8-12	LSA SUT14,2	8 to 12	129	11/1/2017 15:08	15	ppm	161.60	9	36.93	184.49	LSA	Core	35.8406893	################	Dark reddish brown fine SAND and SILT	10/31/2017	-
LSA SUT 14,2.5 0-6	LSA SUT14,2	0 to 6	286	11/2/2017 11:28	15	ppm	1391.65	4	103.53	1513.47	LSA	SU	35.84069045	-96.38496883	Light brown SILT, trace fine sand, little clay	10/27/2017	1609
LSA SUT 14,3 0-6	LSA SUT14,3	0 to 6	639	10/31/2017 15:06	15	ppm	181.16	9	17.12	191.78	LSA	SU	35.841104808	-96.385732618	Brown fine SAND, some silt and clkay, some gravel	10/31/2017	0955
LSA SUT 14,5 6-24	LSA SUT14,5	6 to 24	590	11/4/2017 16:48	15	ppm	418.75	4	28.26	452.00	LSA	SU	35.840717183	-96.385033826	-	-	-
LSA SUT 15,2 0-6	LSA SUT15,2	0 to 6	107	10/27/2017 12:55	15	ppm	1118.70	6	83.18	1187.13	LSA	SU	35.840942758	-96.385074710	Dark brown fine SAND, some silt ansd clay, trace fine gravel	10/26/2017	1519
LSA SUT 15,3 0-6	LSA SUT15,3	0 to 6	608	10/31/2017 14:25	15	ppm	400.41	6	19.57	416.51	LSA	SU	35.841213518	-96.385281039	Dark brown fine silty SAND, some clay	10/31/2017	1020
LSA SUT 15,4 0-6	LSA SUT15,4	0 to 6	383	11/2/2017 18:02	15	ppm	427.54	7	92.35	495.36	LSA	SU	35.841460799	-96.385687536	Dark brown silty fine SAND	11/1/2017	1629
LSA SUT 16,04 0-6	LSA SUT16,4	0 to 6	315	11/2/2017 16:09	15	ppm	35.94	6	4.80	39.89	LSA	SU	35.84139421	-96.38496047	Brown fine SAND, some clay, little silt	11/2/2017	1020
LSA SUT 16,2 0-6	LSA SUT16,2	0 to 6	80	10/27/2017 11:12	15	ppm	257.89	6	20.02	274.36	LSA	SU	35.841213760	-96.384875053	Dark brown silty fine SAND, trace gravel	10/26/2017	1453
LSA SUT 16,3 0-4	LSA SUT16,3	0 to 4	542	10/31/2017 11:20	15	ppm	856.55	7	358.60	1119.93	LSA	Core	35.840970690	-96.384728332	Medium brown medium SAND trace gravel and silt	-	-
LSA SUT 16,3 12-16	LSA SUT16,3	12 to 16	560	10/31/2017 11:44	15	ppm	27.23	4	9.11	37.95	LSA	Core	35.840970690	-96.384728332	Tan medium SAND	-	-
LSA SUT 16,3 4-8	LSA SUT16,3	4 to 8	549	10/31/2017 11:30	15	ppm	470.01	6	115.63	565.13	LSA	Core	35.840970690	-96.384728332	Medium brown medium SAND trace silt	-	-
LSA SUT 16,3 8-12	LSA SUT16,3	8 to 12	555	10/31/2017 11:38	15	ppm	29.97	5	4.93	34.67	LSA	Core	35.840970690	-96.384728332	Light reddish brown medium SAND	-	-
LSA SUT 16,3 0-6	LSA SUT16,3	0 to 6	196	10/28/2017 9:53	15	ppm	1157.25	4	44.57	1209.69	LSA	SU	35.840970690	-96.384728332	Brown silty fine SAND, little clay, trace gravel	-	1537
LSA SUT 16,3 16-20	LSA SUT16,3	16 to 20	64	11/1/2017 10:43	15	ppm	21.76	6	3.27	24.45	LSA	Core	35.840970690	-96.384728332	Light greenish tan silty CLAY (possible concrete)	-	-
LSA SUT 16,3 20-24	LSA SUT16,3	20 to 24	93	11/1/2017 12:40	15	ppm	22.67	6	4.87	26.67	LSA	Core	35.840970690	-96.384728332	Pinkish tan silty fine SAND	-	-
LSA SUT 16-1,3 0-6	LSA SUT16-1,3	0 to 6	245	11/2/2017 10:07	15	ppm	1970.64	4	93.13	2080.22	LSA	SU	35.841652519	-96.384159169	Dark brown silty fine SAND, some gravel	11/1/2017	1533
LSA SUT 2,2 0-6	LSA SUT2,2	0 to 6	86	10/27/2017 11:26	15	ppm	147.12	7	7.82	152.86	LSA	SU	35.841088445	-96.384158160	Dark brown fine SAND, some silt and some clay	10/26/2017	1500
LSA SUT 2,2B 0-6	LSA SUT2,2B	0 to 6	576	10/31/2017 12:04	15	ppm	180.80	10	9.71	186.42	LSA	SU B	-	-	Brown fine SAND, some silt and clay	10/30/2017	1549
LSA SUT 2,3 20-24	LSA SUT2,3	20 to 24	518	10/31/2017 10:40	15	ppm	259.95	6	22.26	278.26	LSA	Core	35.840897755	-96.384469157	Dark brown fine to medium SAND, some silt and clay	-	-
LSA SUT 2,3 0-4	LSA SUT2,3	0 to 4	487	10/31/2017 9:57	15	ppm	1252.66	7	177.31	1382.88	LSA	Core	35.840897755	-96.384469157	Medium brown fine to medium SAND	-	-
LSA SUT 2,3 12-16	LSA SUT2,3	12 to 16	506	10/31/2017 10:25	15	ppm	308.93	6	71.71	367.92	LSA	Core	35.840897755	-96.384469157	Dark brown medium SAND	-	-
LSA SUT 2,3 16-20	LSA SUT2,3	16 to 20	512	10/31/2017 10:32	15	ppm	205.50	6	10.69	214.30	LSA	Core	35.840897755	-96.384469157	Dark brown medium to coarse SAND	-	-
LSA SUT 2,3 4-8	LSA SUT2,3	4 to 8	494	10/31/2017 10:08	15	ppm	1057.78	6	84.98	1127.69	LSA	Core	35.840897755	-96.384469157	Medium brown fine to medium SAND	-	-
LSA SUT 2,3 8-12	LSA SUT2,3	8 to 12	500	10/31/2017 10:16	15	ppm	604.40	6	80.91	670.96	LSA	Core	35.840897755	-96.384469157	Medium brown medium SAND	-	-
LSA SUT 2-3,03A 0-6	LSA SUT2-3,3	0 to 6	594	11/4/2017 16:56	15	ppm	1726.21	4	125.94	1874.41	LSA	SU	35.840962828	-96.383989822	Brown fine SAND, some silt and clay	11/3/2017	1006
LSA SUT 2-3,O2 0-6	LSA SUT2-3,2	0 to 6	290	11/2/2017 11:56	15	ppm	352.82	6	30.20	377.66	LSA	SU	35.840934480	-96.384068454	Brown fine SAND, little silt	11/1/2017	1721
LSA SUT 3,03 0-6	LSA SUT3,3	0 to 6	311	11/2/2017 15:56	15	ppm	226.61	4	8.72	236.87	LSA	SU	35.840790304	-96.384144445	Light brown fine SAND, some silt, little clay	11/1/2017	1659
LSA SUT 3,2 0-6	LSA SUT3,2	0 to 6	93	10/27/2017 11:48	15	ppm	4087.47	6	379.98	4400.05	LSA	SU	35.840672491	-96.384356858	Dark brown fine SAND and SILT, gravel	10/26/2017	1510
LSA SUT 4,1 0-6	LSA SUT4,1	0 to 6	210	10/26/2017 14:23	15	ppm	124.65	8	12.17	132.80	LSA	SU	35.840647756	-96.384090528	Light brown fine SAND, little silt and clay	10/25/2017	1210
LSA SUT 4,1B	LSA SUT4,1B	0 to 6	15	11/1/2017 9:21	15	ppm	162.61	5	18.29	180.04	LSA	SU B	-	-	Light brown fine SAND, little silt	10/31/2017	1713
LSA SUT 4,2 0-4	LSA SUT4,2	0 to 4	524	10/31/2017 10:49	15	ppm	8424.49	6	788.02	9072.74	LSA	Core	35.840610703	-96.384290963	Black fine silty SAND with organic material	-	-
LSA SUT 4,2 12-16	LSA SUT4,2	12 to 16	536	10/31/2017 11:12	15	ppm	3650.75	6	1018.07	4488.25	LSA	Core	35.840610703	-96.384290963	Medium brown medium to coarse SAND	-	-
LSA SUT 4,2 4-8	LSA SUT4,2	4 to 8	564	10/31/2017 11:49	15	ppm	5296.24	6	342.99	5578.40	LSA	Core	35.840610703	-96.384290963	Medium brown medium SAND and SILT	-	-
LSA SUT 4,2 8-12	LSA SUT4,2	8 to 12	530	10/31/2017 11:04	15	ppm	5626.17	6	1050.63	6490.46	LSA	Core	35.840610703	-96.384290963	Light brown fine to medium SAND	-	-
LSA SUT 4,2 0-6	LSA SUT4,2	0 to 6	231	10/28/2017 13:43	15	ppm	4916.50	4	304.54	5274.84	LSA	SU	35.840610703	-96.384290963	Brown fine SAND	10/26/2017	1550
LSA SUT 4,2 16-20	LSA SUT4,2	16 to 20	48	11/1/2017 10:12	15	ppm	6226.46	5	571.36	6771.19	LSA	Core	35.840610703	-96.384290963	Medium brown fine to medium SAND	-	-
LSA SUT 4,2 20-24	LSA SUT4,2	20 to 24	113	11/1/2017 14:52	15	ppm	5071.61	6	848.17	5769.36	LSA	Core	35.840610703	-96.384290963	Dark brown fine to medium SAND	-	-
LSA SUT 4,I3 0-6	LSA SUT4,3	0 to 6	684	10/31/2017 16:26	15	ppm	3382.53	5	335.63	3702.52	LSA	SU	35.840628793	-96.384273782	Brown fine SAND, some silt, some gravel	11/2/2017	0952
LSA SUT 4,I3 6-24	LSA SUT4,3	6 to 24	498	11/3/2017 16:57	15	ppm	276.28	6	69.76	333.67	LSA	SU	35.840628793	-96.384273782	-	-	-
LSA SUT 5,1 0-6	LSA SUT5,1	0 to 6	218	10/26/2017 14:36	15	ppm	143.70	8	9.61	150.13	LSA	SU	35.840457805	-96.383954200	Brown fine SAND, some silt and clay	10/25/2017	0950
LSA SUT 5,1B	LSA SUT5,1B	0 to 6	20	11/1/2017 9:29	15	ppm	121.84	6	10.23	130.26	LSA	SU B	-	-	Brown fine SAND, some silt and clay	10/31/2017	1705
LSA SUT 5,2 0-6	LSA SUT5,2	0 to 6	186	10/28/2017 9:27	15	ppm	296.63	6	43.75	332.61	LSA	SU	35.840439515	-96.384288476	Light brown fine SAND, some silt and clay	10/26/2017	1700
LSA SUT 5,3 0-6	LSA SUT5,3	0 to 6	293	10/30/2017 10:28	15	ppm	46.22	6	6.63	51.67	LSA	SU	35.840511019	-96.383677210	Brown fine SAND, some silt	10/28/2017	1619
LSA SUT 6,1 0-6	LSA SUT6,1	0 to 6	238	10/26/2017 15:20	15	ppm	118.63	7	10.59	126.41	LSA	SU	35.840221502	-96.384010196	Brown fine SAND, some silt and clay	10/25/2017	0955
LSA SUT 6,1B	LSA SUT6,1B	0 to 6	26	11/1/2017 9:41	15	ppm	150.97	5	7.20	157.84	LSA	SU B	-	-	Dark brown fine SAND, some silt and clay	10/31/2017	1723
LSA SUT 6,2 0-6	LSA SUT6,2	0 to 6	289	10/30/2017 10:14	15	ppm	59.82	4	6.79	67.81	LSA	SU	35.840171961	-96.383660197	Brown SAND and SILT, trace clay	10/28/2017	1610
LSA SUT 6-7,1A 0-6	LSA SUT6-7,1	0 to 6	153	11/1/2017 15:34	15	ppm	120.39	4	14.90	137.93	LSA	SU	35.840149531	-96.384059019	Brown fine SAND, some silt and clay	11/1/2017	1510
LSA SUT 6-7,1B 0-6	LSA SUT6-7,1B	0 to 6	157	11/1/2017 15:38	15	ppm	132.16	8	22.32	147.12	LSA	SU B	-	-	Brown clayey fine SAND, some silt, trace gravel	11/1/2017	1520
LSA SUT 7,03 0-6	LSA SUT7,3	0 to 6	463	10/31/2017 9:20	15	ppm	1054.97	6	61.92	1105.91	LSA	SU	35.84003069	-96.38430869	Dark brown fine SAND, little silt and clay	10/30/2017	?
LSA SUT 7,1 6-24	LSA SUT7,1	6 to 24	648	11/6/2017 10:29	15	ppm	774.08	4	47.40	829.85	LSA	SU	35.840093797	-96.384365094	Light brown fine SAND, little silt and clay	11/2/2017	1135
LSA SUT 7,1 0-6	LSA SUT7,1	0 to 6	253	10/26/2017 15:51	15	ppm	1562.44	5	94.49	1652.53	LSA	SU	35.840093797	-96.384365094	Light brown fine SAND, little silt and clay	10/26/2017	-
LSA SUT 7,2 0-6	LSA SUT7,2	0 to 6	192	10/28/2017 9:44	15	ppm	1555.77	4	115.47	1691.64	LSA	SU	35.840139039	-96.384453139	Light brown fine SAND, trace silt and clay	10/26/2017	1620
LSA SUT 7,4 20-24	LSA SUT7,4	20 to 24	174	11/1/2017 15:55	15	ppm	4436.38	4	213.20	4687.25	LSA	Core	35.840247231	-96.384533966	Fine to coarse SAND trace silt	-	-
LSA SUT 7,4 4-8	LSA SUT7,4	4 to 8	198	11/1/2017 17:06	15	ppm	152981.10	4	6979.26	161193.46	LSA	Core	35.840247231	-96.384533966	Light brown medium to fine SAND, acrid odor	-	-
LSA SUT 7,4 16-20	LSA SUT7,4	16 to 20	206	11/1/2017 17:20	15	ppm	20702.36	4	3094.24	24343.30	LSA	Core	35.840247231	-96.384533966	Dark gray fine SAND and SILT acrid odor	-	-
LSA SUT 7,4 8-12	LSA SUT7,4	8 to 12	278	11/2/2017 11:02	15	ppm	87595.46	4	6278.13	94982.83	LSA	Core	35.840247231	-96.384533966	Medium brown fine SAND and SILT strong acrid odor	-	-
LSA SUT 8,02B 0-6	LSA SUT8,2B	0 to 6	434	11/3/2017 10:10	15	ppm	97.31	4	6.10	104.49	LSA	SU B	-	-	Light brown fine SAND, little silt and clay	11/3/2017	0925
LSA SUT 8,1 0-6	LSA SUT8,1	0 to 6	245	10/26/2017 15:34	15	ppm	339.55	8	22.87	354.87	LSA	SU	35.839926727	-96.384359914	Brown fine SAND, some silt and clay	10/25/2017	1100
LSA SUT 9,2 0-6	LSA SUT9,2	0 to 6	125	10/27/2017 15:17	15	ppm	6006.17	6	157.31	6135.58	LSA	SU	35.839857199	-96.384735820	Light brown fine SAND and SILT	10/26/2017	1605
LSA SUT 9,2 S 0-4	LSA SUT9,2S	0 to 4	138	11/1/2017 15:16	15	ppm	652.24	4	15.95	671.01	LSA	Core	35.839818229	-96.384703091	Light brown, fine SAND and SILT	10/30/2017	-
LSA SUT 9,2 S 16-20	LSA SUT9,2S	16 to 20	202	11/1/2017 17:13	15	ppm	247.50	4	6.73	255.41	LSA	Core	35.839818229	-96.384703091	Light brown fine SAND and SILT	10/30/2017	-
LSA SUT 9,2 S 20-24	LSA SUT9,2S	20 to 24	182	11/1/2017 16:09	15	ppm	130.24	4	7.34	138.87	LSA	Core	35.839818229	-96.384703091	Light brown fine SAND and SILT	10/30/2017	-
LSA SUT 9,2 SOUTH 4-8	LSA SUT9,2S	4 to 8	8	11/1/2017 8:57	15	ppm	500.35	6	12.65	510.75	LSA	Core	35.839818229	-96.384703091	Light brown, silt and fine SAND	10/30/2017	-
LSA SUT 9,2 W 4-8	LSA SUT9,2W	4 to 8	178	11/1/2017 16:06	15	ppm	32.29	4	5.71	39.01	LSA	Core	35.839831443	-96.384769123	Light brown fine SAND	10/30/2017	-
LSA SUT 9,2N 0-4	LSA SUT9,2N	0 to 4	585	11/4/2017 15:40	15	ppm	3501.83	5	133.06	3628.69	LSA	Core	35.839896965	-96.384769898	Dark brown fine SAND silt	10/30/2017	-
LSA SUT 9,2N 12-16	LSA SUT9,2N	12 to 16	53	11/1/2017 10:18	15	ppm	3454.08	6	428.11	3806.26	LSA	Core	35.839896965	-96.384769898	Medium brown silty SAND	10/30/2017	-
LSA SUT 9,2N 16-20	LSA SUT9,2N	16 to 20	282	11/2/2017 11:08	15	ppm	271.86	4	16.75	291.57	LSA	Core	35.839896965	-96.384769898	Light brown sandy SILT	10/30/2017	-
LSA SUT 9,2N 20-24	LSA SUT9,2N	20 to 24	186	11/1/2017 16:13	15	ppm	196.13	10	40.21	219.44	LSA	Core	35.839896965	-96.384769898	Light brown sandy SILT	10/30/2017	-
LSA SUT 9,2N 4-8	LSA SUT9,2N	4 to 8	75	11/1/2017 12:20	15	ppm	4805.75	6	293.33	5047.05	LSA	Core	35.839896965	-96.384769898	Medium brown fine SAND and SILT	10/30/2017	-

Long Sample ID	Short Sample ID	Depth	Reading No	Time	Duration	Units	Pb Mean	n	STDEV	Bag 95% t-UCL	Area	Type2	Latitude	Longitude	Geo Description	Col Date	Col Time
LSA SUT 9,2N 8-12	LSA SUT9,2N	8 to 12	43	11/1/2017 10:05	15	ppm	4732.53	5	303.54	5021.93	LSA	Core	35.839896965	-96.384769898	Medium brown fine to medium SAND and SILT	10/30/2017	-
LSA SUT 9,2S 12-16	LSA SUT9,2S	12 to 16	36	11/1/2017 9:56	15	ppm	220.07	7	15.74	231.63	LSA	Core	35.839818229	-96.384703091	Medium brown fine SAND	10/30/2017	-
LSA SUT 9,2S 8-12	LSA SUT9,2S	8 to 12	59	11/1/2017 10:25	15	ppm	118.79	5	9.30	127.66	LSA	Core	35.839818229	-96.384703091	Light brown, fine SAND and SILT	10/30/2017	-
LSA SUT 9,2W 16-20	LSA SUT9,2W	16 to 20	658	10/31/2017 15:29	15	ppm	13.46	5	2.21	15.57	LSA	Core	35.839831443	-96.384769123	Light brown fine silty SAND	10/30/2017	-
LSA SUT 9,2W 20-24	LSA SUT9,2W	20 to 24	629	10/31/2017 14:54	15	ppm	6.77	5	2.04	8.72	LSA	Core	35.839831443	-96.384769123	Light brown fine silty SAND	10/30/2017	-
LSA SUT 9,2W 0-4	LSA SUT9,2W	0 to 4	31	11/1/2017 9:49	15	ppm	3669.18	5	264.68	3921.53	LSA	Core	35.839831443	-96.384769123	Light brown fine SAND	10/30/2017	-
LSA SUT 9,2W 12-16	LSA SUT9,2W	12 to 16	653	10/31/2017 15:22	15	ppm	9.55	5	0.76	10.28	LSA	Core	35.839831443	-96.384769123	Light reddish brown silty fine SAND	10/30/2017	-
LSA SUT 9,2W 8-12	LSA SUT9,2W	8 to 12	648	10/31/2017 15:15	15	ppm	22.29	5	3.15	25.29	LSA	Core	35.839831443	-96.384769123	Light brown fine SAND and SILT	10/30/2017	-
LSA SUT O8,O2 0-6	LSA SUT8,2	0 to 6	482	10/31/2017 9:47	15	ppm	155.10	5	26.02	179.91	LSA	SU	35.839735468	-96.384385303	Brown fine SAND, some silt, little clay	10/30/2017	1704
LSA SUT11,4A 0-6	LSA SUT11,4	0 to 6	525	11/4/2017 8:54	15	ppm	52.21	4	5.51	58.69	LSA	SU	35.840139557	-96.385141952	?	11/3/2017	1010
LSA SUT11,4B 0-6	LSA SUT11,4B	0 to 6	494	11/3/2017 16:35	15	ppm	118.05	4	27.65	150.58	LSA	SU B	-	-	-	-	-
LSA SUT16,5 (6-24)	LSA SUT16,5	6 to 24	469	11/3/2017 11:16	15	ppm	733.80	4	120.23	875.27	LSA	SU	35.84097771	-96.38472366	-	-	-
LSA SUT16-1,1 0-6	LSA SUT16-1,1	0 to 6	416	11/3/2017 9:43	15	ppm	551.06	4	18.15	572.41	LSA	SU	35.841551884	-96.384540072	Dark brown silty fine SAND, few gravel	11/1/2017	1533
LSA SUT-2 3,1 0-6	LSA SUT2-3,1	0 to 6	669	10/31/2017 15:42	15	ppm	326.67	5	10.53	336.71	LSA	SU	35.840925567	-96.384211023	Brown fine SAND, some silt and clay	-	-
LSA SUT2,1 6-24	LSA SUT2,1	6 to 24	412	11/3/2017 9:35	15	ppm	103.84	4	2.96	107.32	LSA	SU	35.841063079	-96.384214345	-	-	-
LSA SUT2-3,03B 0-6	LSA SUT2-3,3B	0 to 6	540	11/4/2017 9:27	15	ppm	1318.54	6	149.37	1441.41	SU	SU B	35.840962828	-96.383989822	Dark brown fine SAND, some silt and some clay	11/3/2017	1009
LSA SUT3,O4A 0-6	LSA SUT3,4	0 to 6	546	11/4/2017 13:48	15	ppm	56.45	4	5.37	62.77	LSA	SU	35.8408389	-96.3840259	Brown fine SAND, some silt and clay	11/3/2017	1026
LSA SUT3,O4B 0-6	LSA SUT3,4B	0 to 6	550	11/4/2017 13:51	15	ppm	58.13	4	2.00	60.49	LSA	SU B	-	-	Brown fine SAND, some SILT	11/3/2017	1030
LSA SUT7,4 12-16	LSA SUT7,4	12 to 16	420	11/3/2017 9:49	15	ppm	25238.81	4	1041.10	26463.85	LSA	Core	35.840247231	-96.384533966	Black medium to fine SAND, strong acrid odor	-	-
LSA SUT8-9,1 0-6	LSA SUT8-9,1	0 to 6	465	11/3/2017 11:00	15	ppm	336.28	4	46.43	390.91	LSA	SU	35.839813953	-96.384628408	Brown fine SAND and CLAY, some silt	11/3/2017	0930
LSA SUT9,1B 0-6	LSA SUT9,1B	0 to 6	484	11/3/2017 14:08	15	ppm	87.83	4	4.13	92.69	LSA	SU B	-	-	Brown fine SAND and SILT	11/3/2017	0916
LSA T11 TEST 1 0-3	LSA T11TEST1	0 to 3	446	11/3/2017 10:28	15	ppm	185.87	4	11.79	199.74	LSA	other	-	-	-	-	-
LSA T11 TEST 2 0-3	LSA T11TEST2	0 to 3	442	11/3/2017 10:23	15	ppm	178.74	4	21.38	203.89	LSA	other	-	-	-	-	-
lsa test1-SU1A	LSA Test1 SU1A	0 to 6	1241	10/24/2017 12:21	16.23	ppm	3140.59	12	2717.47	4549.40	LSA	SU	35.840480836	-96.385000443	Light brown clayey fine SAND, little silt	10/24/2017	1215
lsa test1-SU1A deep	LSA test1SU1Adeep	6 to 24	1265	10/24/2017 12:52	15.71	ppm	296.36	13	114.50	352.96	LSA	SU	35.840480836	-96.385000443	Brown fine SAND, some clay, little silt	10/24/2017	1215
lsa test1-SU1B	LSA test1SU1B	0 to 6	1253	10/24/2017 12:34	0.19	ppm	3279.02	12	979.75	3786.95	LSA	SU B	35.840472536	-96.385005227	Light brown clayey fine SAND, little silt	10/24/2017	1540
LSA-SUHI,1 16-20	LSA SUHI,1	16 to 20	439	10/30/2017 18:23	15	ppm	316.25	4	6.19	323.53	LSA	Core	35.840411216	-96.384785177	-	-	-
LSA-SUHI,2 4-8	LSA SUHI,2	4 to 8	420	10/30/2017 17:25	15	ppm	4124.72	8	441.62	4420.53	LSA	Core	35.840671233	-96.384784880	-	-	-
LSA-SUHI,2 8-12	LSA SUHI,2	8 to 12	405	10/30/2017 16:59	15	ppm	1047.79	9	127.24	1126.66	LSA	Core	35.840671233	-96.384784880	-	-	-
LSA-SUHI,2 20-24	LSA SUHI,2	20 to 24	382	10/30/2017 16:15	15	ppm	6319.59	9	2169.63	7664.43	LSA	Core	35.840671233	-96.384784880	-	-	-
LSA-SUT 1,1	LSA SUT1,1	0 to 6	132	10/26/2017 10:07	15	ppm	227.07	9	22.23	240.85	LSA	SU	35.841189795	-96.384477298	Brown fine SAND, some silt and clay	10/25/2017	1607
LSA-SUT 10,1 0-6	LSA SUT10,1	0 to 6	181	10/26/2017 11:59	15	ppm	49.44	8	1.53	50.46	LSA	SU	35.839979737	-96.384948529	Brown fine SAND, some silt and clay	10/25/2017	1515
LSA-SUT 11,1 0-6	LSA SUT11,1	0 to 6	168	10/26/2017 11:24	15	ppm	63.61	6	12.63	74.01	LSA	SU	35.840122146	-96.385053674	Dark brown fine SAND, little silt and clay	10/25/2017	1510
LSA-SUT 14,1 0-6	LSA SUT14,1	0 to 6	189	10/26/2017 12:21	15	ppm	846.35	4	71.77	930.80	LSA	SU	35.840750053	-96.385075908	Light brown fine SAND, some silt	10/25/2017	1545
LSA-SUT 15,1	LSA SUT15,1	0 to 6	121	10/26/2017 9:42	15	ppm	299.34	11	19.69	310.10	LSA	SU	35.840887748	-96.384973439	Dark brown silty fine SAND, trace clay	10/25/2017	1440
LSA-SUT 16,1 0-6	LSA SUT16,1	0 to 6	174	10/26/2017 11:35	15	ppm	191.65	6	9.46	199.42	LSA	SU	35.841110853	-96.384821862	Reddish-brown fine SAND, some silt, trace clay, trace fine gravel	-	1415
LSA-SUT 2,1 0-6	LSA SUT2,1	0 to 6	141	10/26/2017 10:24	15	ppm	208.10	10	32.17	226.75	LSA	SU	35.841063079	-96.384214345	Brown fine SAND w/ some silt and clay	11/2/2017	0955
LSA-SUT 3,1 0-6	LSA SUT3,1	0 to 6	159	10/26/2017 11:02	15	ppm	135.65	9	14.17	144.44	LSA	SU	35.840661918	-96.384224621	Brown fine SAND, some silt and clay	10/25/2017	1625
LSA-SUT 7,4 0-4	LSA SUT7,4	0 to 4	435	10/30/2017 18:16	15	ppm	61812.92	4	5436.41	68209.84	LSA	Core	35.840247231	-96.384533966	Grayish brown silty SAND	-	-
LSA-SUT 9,1 0-6	LSA SUT9,1	0 to 6	151	10/26/2017 10:38	15	ppm	64.56	8	6.81	69.12	LSA	SU	35.839768456	-96.384767497	Brown fine SAND, little silt and clay	10/25/2017	1525
LSA-Test1-SU1B deep	LSA Test1 SU1B	6 to 24	1281	10/24/2017 15:15	17.73	ppm	880.37	16	164.28	952.37	LSA	SU B	35.840472536	-96.385005227	Brown clayey fine SAND, little silt, trace gravel	10/24/2017	1240
LSA-Test1-SU2A shallow	LSA Test1 SU2A	0 to 6	1298	10/24/2017 15:30	20.03	ppm	230.25	12	30.33	245.97	LSA	SU	35.840598985	-96.385345552	Brown fine SAND, some clay, little silt	10/24/2017	1525
LSA-Test1-SU2Bshallow	LSA Test1 SU2B	0 to 6	1310	10/24/2017 15:40	16.44	ppm	248.34	14	82.52	287.39	LSA	SU B	35.840602030	-96.385349446	Dark brown fine SAND and CLAY, some silt	10/24/2017	1410
LSA-Test1-SU3B deep	LSA Test1 SU3B	6 to 24	1343	10/24/2017 16:58	15.61	ppm	295.33	20	303.26	412.59	LSA	SU B	35.840561592	-96.385241351	Dark brown fine sandy CLAY, trace silt	10/24/2017	1655
LSA-Test-SU3-A (0-6)	LSA Test1 SU3A	0 to 6	17	10/25/2017 14:16	15.99	ppm	985.88	11	291.28	1145.06	LSA	SU	35.840571729	-96.385239389	Dark brown CLAY, some fine sand and silt	10/24/2017	1447
LSA-Test-SU3-A (6-24)	LSA Test1 SU3A	6 to 24	28	10/25/2017 15:19	16.84	ppm	204.84	41	233.01	266.11	LSA	SU	35.840571729	-96.385239389	Dark brown fine sandy CLAY, some silt	10/24/2017	1515
LSA-Test-SU3-B (0-6)	LSA Test1 SU3B	0 to 6	8	10/25/2017 13:48	15.87	ppm	386.83	9	53.83	420.20	LSA	SU B	35.840561592	-96.385241351	Dark brown fine sandy CLAY, some silt	10/24/2017	1454
RST 1 0-3 inch	RST1	0 to 3	684	11/6/2017 12:01	15	ppm	641.65	6	69.10	698.49	RST	RST	-	-	Brown fine SAND, some silt, trace clay, some gravel	11/6/2017	1000
RST 4 0-3	RST4	0 to 3	39	11/7/2017 8:55	15	ppm	194.05	7	17.73	207.07	RST	RST	-	-	Medium brown fine to coarse SAND, some gravel	-	-
RST 8 0-3	RST8	0 to 3	25	11/7/2017 8:39	15	ppm	32.58	5	1.02	33.55	RST	RST	-	-	Light brown fine SAND	-	-
RST 9 0-3	RST9	0 to 3	88	11/7/2017 9:38	15	ppm	27.76	7	3.99	30.69	RST	RST	-	-	Light brown very fine to fine SAND, some silt	-	-
RST-2 0-3	RST2	0 to 3	783	11/6/2017 17:29	15	ppm	673.36	6	22.92	692.22	RST	RST	-	-	Medium brown fine to coarse SAND, some silt, some gravel	-	-
RST-3 0-3	RST3	0 to 3	771	11/6/2017 17:19	15	ppm	273.41	6	24.34	293.44	RST	RST	-	-	Medium brown fine to coarse SAND, some gravel	-	-
RST-5 0-3	RST5	0 to 3	777	11/6/2017 17:24	15	ppm	437.96	6	74.66	499.38	RST	RST	-	-	Medium brown fine SAND, some gravel	-	-
RST-6 0-3	RST6	0 to 3	765	11/6/2017 17:15	15	ppm	408.78	6	40.19	441.84	RST	RST	-	-	Light brown fine to coarse SAND, trace gravel	-	-
RST-7 0-3	RST7	0 to 3	789	11/6/2017 17:36	15	ppm	1651.63	6	86.97	1723.17	RST	RST	-	-	Light brown medium to find SAND, trace gravel	-	-

Appendix 2: Site Photographs

Wilcox Sites Photo Log

Lead Sweetening Area

Photo 1: Panoramic photo of LSA looking east. LSA SUFHI 1 visible to the right of the group of trees in the center of the photo.

Photo 2: Area north of the LSA. Photo looking east towards LSA SUT16-1,3 and LSA SUT1,5.

Photo 3: Area northeast of the LSA. Photo looking north, northeast with LSA SUT 3,4 A/B on a berm in the foreground and the former cooling water/make up water pond area in the background.

Photo 4: Area east of the LSA. Photo looking south across pond towards berm sample from LSA DUT 5-6.

Photo 5: Area south of LSA. Photo looking southeast with former tank bottom visible on the left, LSA SUT 8-9,1 on the right and the berm in the background. Photo taken in the former TK tank area.

Photo 6: Area southwest of the LSA. Photo looking southwest with TK tank in the background and LSA SUT 11,3 A/B in the foreground. The berm between the two tank areas visible in the center of the photo.

Photo 7: Area west of the LSA. Photo looking north from RST 5 towards former Distillation Process Area #2.

Ethyl Blending Area

Photo 8: South side of EBA buildings and structures. Photo looking north towards DUs 5, 10, and 6 and the southern "ramp" samples. DU 8 is located between the two buildings.

Photo 9: Area south of the EBA. Photo looking north from RST 5 towards distillation process area #2. Circle showing a building or structure associated with the process area.

Photo 10: East side of the EBA. Photo looking west towards DUs 1,11 and 2.

Photo 11: North side of the EBA. Photo looking southwest from the northeast side of the EBA with EBA DU 2 in the foreground and EBA DUs 1 and 11 in the background.

Photo 12: North side of the EBA. Photo looking west from EBA DU 3 towards EBA DUs 4 and 12.

Photo 13: Area north of the EBA. Photo from EBA SUT 1,4 looking east towards buildings/structures associated with former distillation process area #1.

Photo 14: Area north of the EBA. Photo looking south towards EBA buildings from the north entry road. The former distillation process area #1 is located on the left side of the photo.

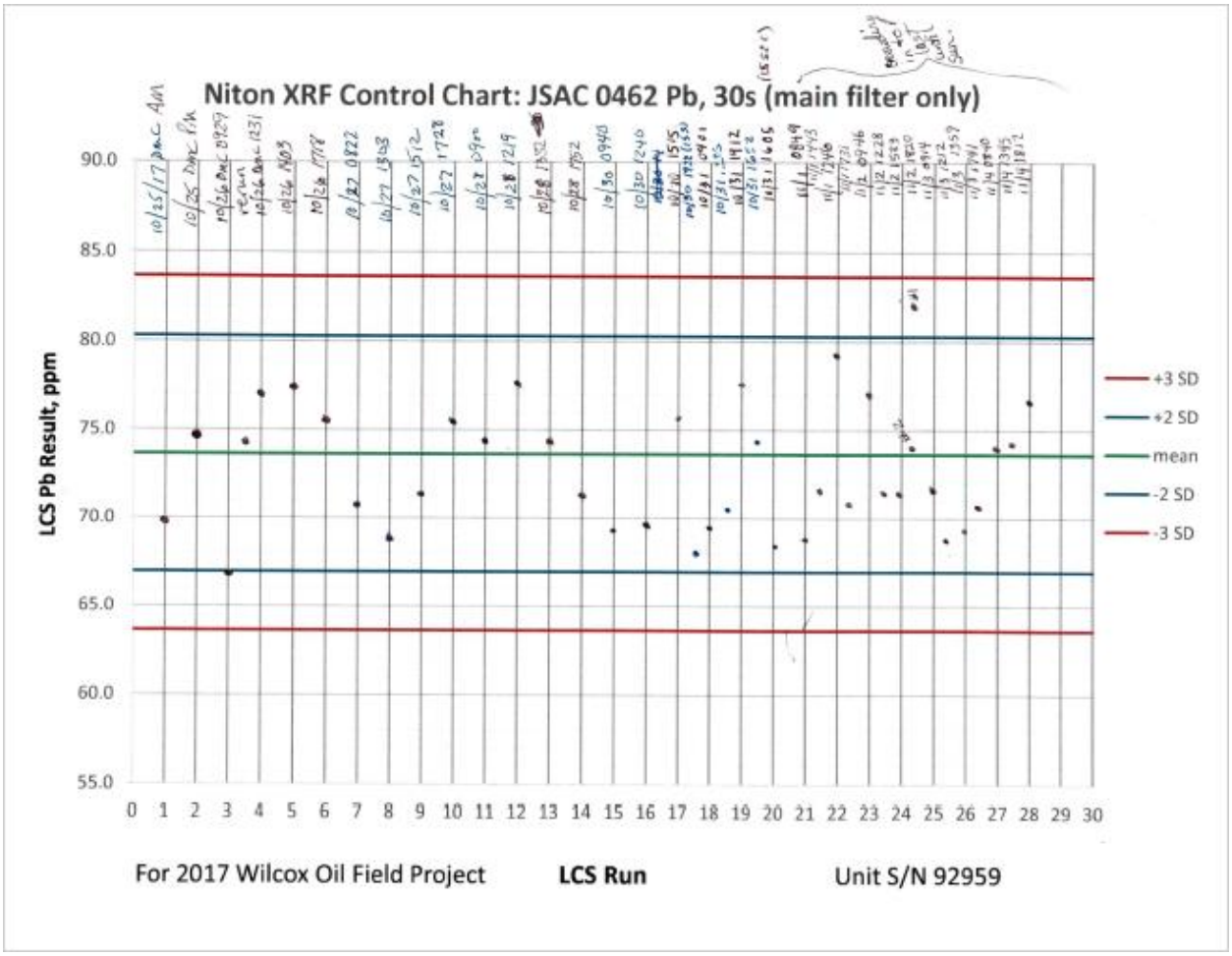
Appendix 3: Supplemental Quality Control Analysis

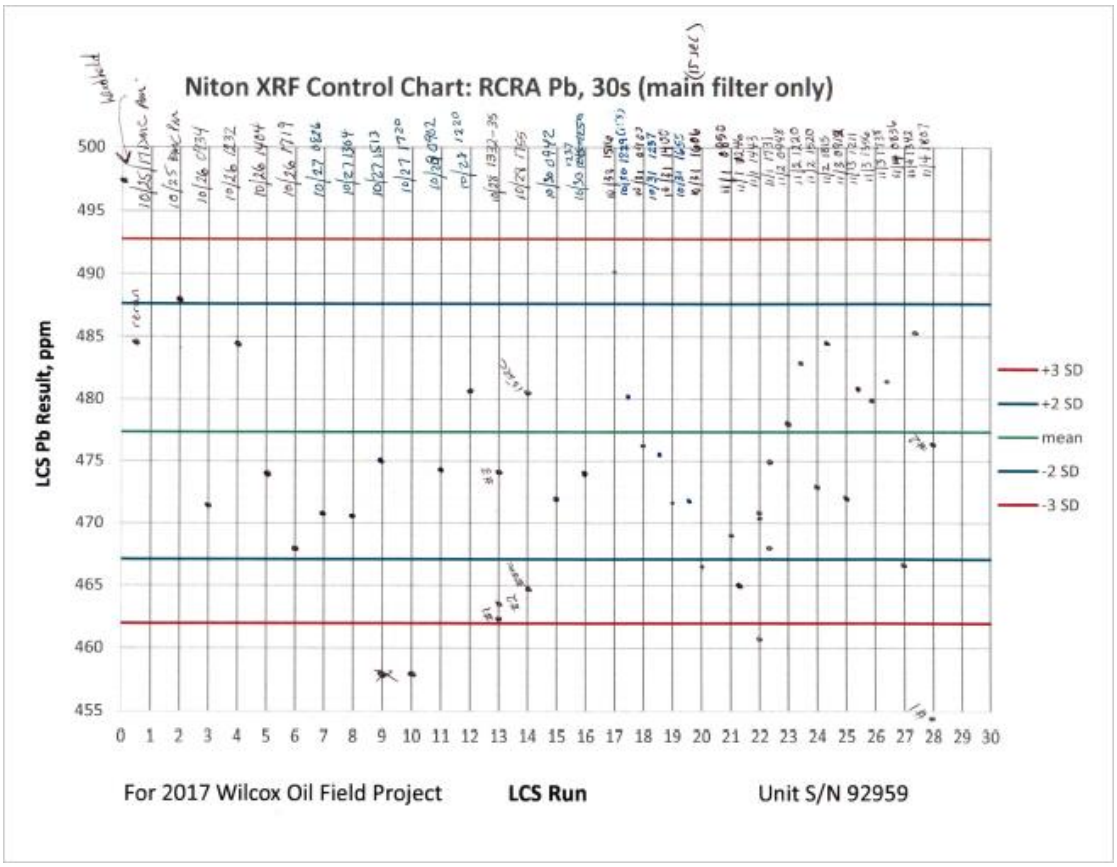
Quality Assurance Reporting for the Wilcox Oil Pb Delineation project

- A deficiency in operator performance occurred in that the XRF instrument was not standardized for a period of 2.5 days (11/2/17 PM thru 11/4/17). However, there was no issue with the LCS QC during this period, so the effect, if any, on the accuracy of the sample results was negligible.
    - Standardization of the instrument refers to the process the instrument should go through at start-up to ensure that energy channels are assigned properly in the detector.

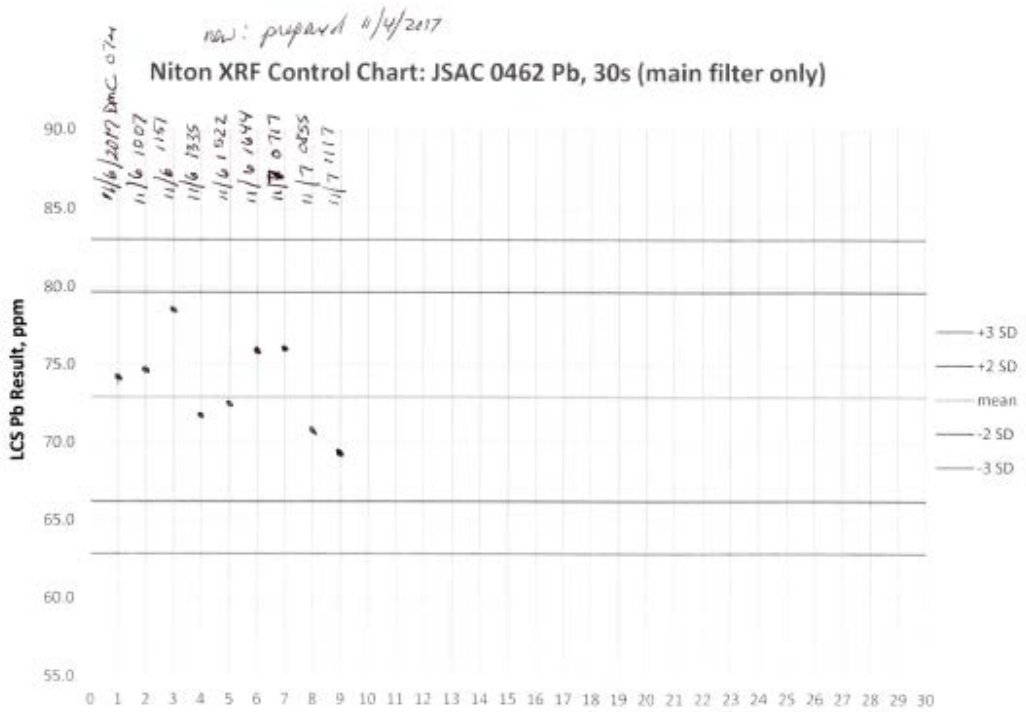
LCS control charts:

- ✓ 3 levels of LCSs were used for the Wilcox project, JSAC 0462 (certified conc = 73 ppm); RCRA (nominal conc = 500 ppm); and NIST 2711a (certified conc = 1370 ppm)
- ✓ Control charts were constructed using the most recent 30-sec data available. Because there was a lack of access to the XRF prior to the project, the initial data set was only 12-15 readings, about half of the number desired for control chart construction.
- ✓ The completed control charts for the 10/25/17 to 11/4/17 time period are shown below.

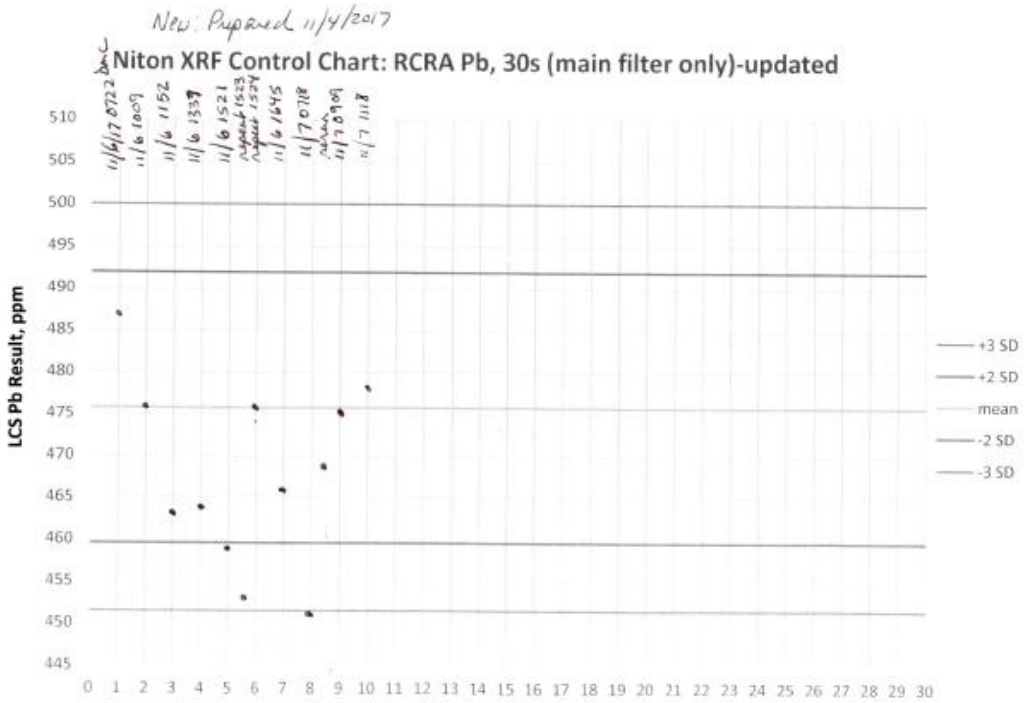




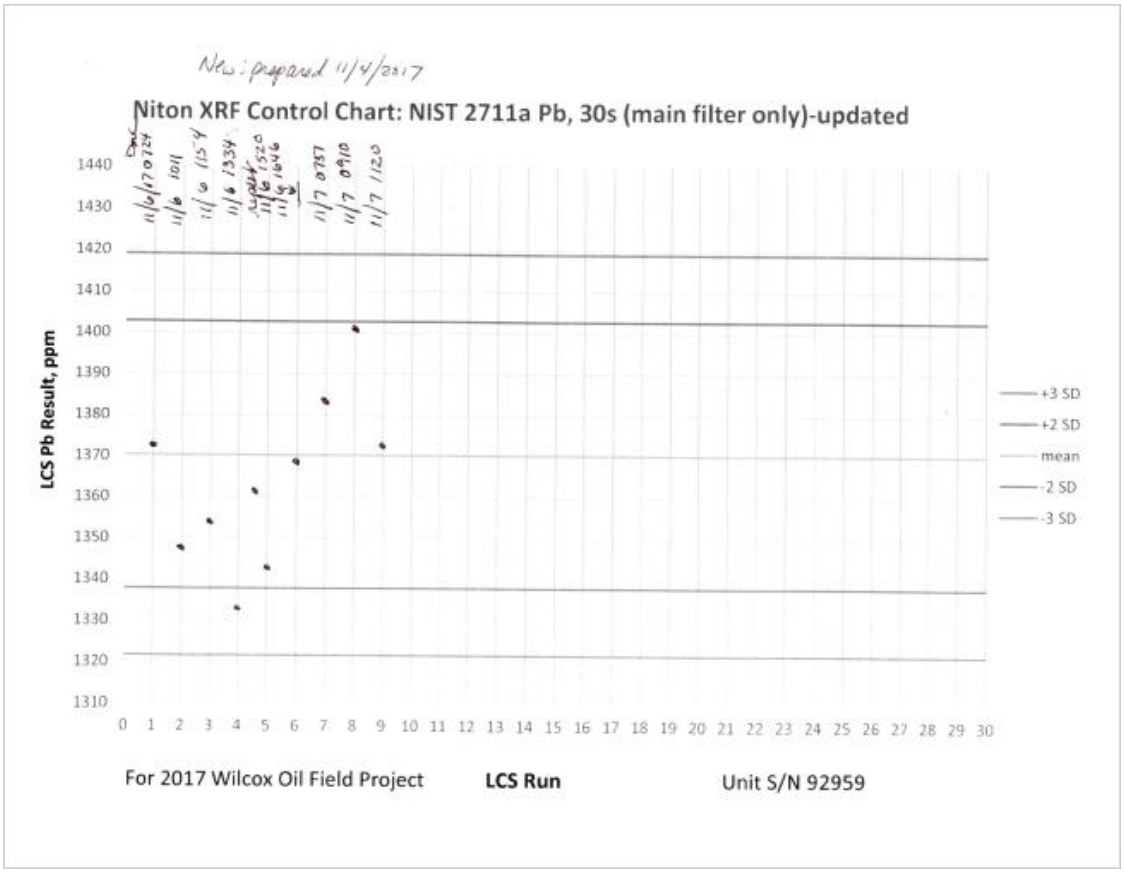
✓ The performance with the new LCS control charts for the last 2 days of the project is shown below:



For 2017 Wilcox Oil Field Project **LCS Run** Unit S/N 92959



For 2017 Wilcox Oil Field Project **LCS Run** Unit S/N 92959



The performance with the low and high LCSs was still satisfactory, but performance of the RCRA LCS continued to be erratic.

- ✓ TROUBLE-SHOOTING: Review of the past data for the RCRA's SD shows the SD to have slightly increased since acquisition of the cup in 2014, while other CRMs have been stable.
  - This RCRA cup was repacked about 2 years ago due to the appearance of what looked like tiny spots of dark fungal growth under the film. It may be that this is occurring again, and is compromising the integrity of the material.
  - This conclusion was tested by troubleshooting that was done during the Wilcox project. Two series of 30-sec repeat back-to-back readings on the RCRA cup were taken on 11/7/17:
    - one series with the cup moved between each reading, and
    - the other series with no movement of the cup between readings (called "spot replicate" readings).
  - The readings in the "no-move"/"spot replicate" series had a SD = 6.64 (1.4 %RSD, n = 11); the "moved" series had SD = 8.16 (1.7%RSD, n = 10). However, neither an F-test (test for different SDs), or a t-test (for difference between means) were statistically significant (two-tailed p = 0.530 and 0.274, respectively).
  - Another series of back-to-back, no-move shots (n = 12 each) seemed to show data consistent with the presence of higher vs. lower spots on the RCRA cup

surface (means = 473, and 464, however, the t-test was not significant (2-tailed p = 0.183), possibly due to the high SD in the data sets.

- ✓ CORRECTIVE ACTION: data will be collected on the RCRA cup to monitor it, but it will not be selected for use as an LCS in future projects.

Sample-related QC to ensure analytical precision and accuracy

- The confidence interval/UCL on the sample bag's mean is a direct consequence of the degree of within-sample variability found in the bag replicate data.

- The usual minimum procedure for analyzing a bag in the Wilcox Oil project was:
  - Place the bag on its side on the XRF stage and take 1 XRF reading
  - Slide bag to move to another spot and take the 2nd reading
  - Flip bag to the other side and take 3rd reading
  - Slide bag to move to another spot on the 2nd side and take 4th reading
  - Remix the bag, place on stage and take 5th reading
  - Move bag and take 6th reading
- If the initial bag replicate data showed excessive variability in Pb concentrations, more readings were taken on alternate sides of the bag and/or with additional remixing.
- Periodic "**spot replicate**" readings were taken on site samples to compare analytical matrix precision to subsampling precision
  - "Spot replicates" are readings that are taken back-to-back without moving the bag.
  - The precision of these measurements checks for matrix effects that could cause erratic interaction of the X-rays with soil components such that target analyte(s) results could be affected.
  - Six site samples were evaluated with spot replicates.
  - A summary of these two types of sample-related precision (spot replicates and bag replicates) are given in the table below, along with the sample mean for each. Spot replicate variability is expected to be much lower than that of bag replicates unless matrix interferences are present.

QC Sample ID	Particle Size	Sample Mean	Spot Replicate Precision (as %RSD)	Bag Replicate Precision (as %RSD)
1	<10-mesh	279	1.7	5.5
2	Bulk	70	1.9	10.9
3	Bulk	49	1.9	3.4
4	Bulk	401	1.7	13.8
5	Bulk	4570	0.8	17.6
6	<10-mesh	30	2.9	20.0
Average %RSD	**---**	**---**	**1.9**	**13.3**

QC to ensure sample representativeness and manage decision uncertainty

- Decision units (DUs) were planned as confirmation of narrow rectangular segments that would compose the 200-ppm Pb boundaries around the **LSA contaminated area**, after SU data indicated the likely location of that border. Square DUs were used to characterize contamination around **the EBA buildings**.

- In order to manage decision uncertainty stemming from data variability, decisions about whether individual DUs exceed an action level are made based on the DU's 95% upper confidence limit (UCL). The calculation of this UCL was based on replicate field samples. *Since the UCL calculation was made at a higher data level (i.e., field sample replicates), the mean of replicate bag XRF readings(not the bag UCL) was used as the "sample result."*
- QC for DU field sampling involved using triplicate 30-point ISM samples to assess field sample precision and representativeness.
- The correct UCL (t-UCL or Chebyshev) must be selected for a DU based on the degree of variability in the <u>underlying increment population</u> (not the variability between field replicates samples). A specially designed spreadsheet calculator must be used to make this calculation from replicate DU samples.
  - ✓ The t-UCL is used if the RSD for the underlying increment population is <150%.
  - ✓ The Chebyshev UCL is used if the underlying population RSD is between 150% and 300%.
  - ✓ A screen shot of this calculator is shown on the last page of this section.
- **LSA DUs:** SU samples showed that high soil Pb concentrations extended beyond the LSA and into other areas of the former refinery (or to physical boundaries such as cliffs and streams) on almost all sides of the LSA. Only two boundary DU segments were attempted in the LSA area, and their data is shown below.
  - ✓ The UCLs of both LSA DUs exceeded 200 ppm Pb, confirming the larger extent of high Pb levels than what was expected at the start of the project. A relatively high degree of field heterogeneity also persisted throughout the LSA.
  - ✓ The t-UCL is the correct UCL for LSA DU 5-6 (0-6) since the variability calculated for the underlying increment population has an RSD of 119%, which is less than the 150% cut-off.
  - ✓ The Chebyshev UCL is the correct UCL to use for LSA DU 8-9 (0-6) since the underlying population variability (184% RSD) was between 150 and 300%.

Data and Statistics	LSA DU 5-6 (0-6)	LSA DU 8-9 (0-6)
DU sample results	224, 158, 173 ppm	289, 306, 464 ppm
Triplicate DU mean	185 ppm	353 ppm
Variability among triplicate set	18.7% RSD	27.3% RSD
RSD for underlying increment population	120%	183%
95% t-UCL for triplicate set (df = 2, n = 3)	**t-UCL = 244 ppm**	515 ppm
95% Chebyshev UCL for triplicate set (n = 3)	272 ppm	**Chebyshev UCL = 596 ppm**

- **EBA DUs:** The EBA area had 22 square-shaped DUs collected around the EBA buildings. Step-out DUs were used when inner DUs exceeded 200 ppm. Decision uncertainty about whether a DU exceeds the 200-ppm threshold was managed using either an actual, or a predicted, UCL on the DU mean.
  - ✓ **Predicted UCLs** were calculated for DUs having only a single ISM field sample (a "singlet DU"), using statistical inputs from other DUs . This strategy was used to maintain statistical decision confidence while reducing the unsustainable workload that would have resulted if all EBA DUs had triplicate ISM field samples collected.
  - ✓ The strategy used to develop, check and implement UCL prediction for EBA DUs having only a single ISM sample ("singlet DUs") is described below.

- The first two EBA DUs collected [EBA DUs 1 (0-6) and EBA DU 2 (0-6)] both had triplicate ISM field samples, from which statistics were calculated.
- The averaged variability (as pooled RSD) from those two DUs was used in the UCL equation to predict UCLs for singlet DUs.

Calculation of average RSD (across 2 DUs) for the EBA			
Enter the conc's from triplicated DUs:		EBA DU 1 (0-6)	EBA DU 2 (0-6)
	DU-Rep1	203.3	151.3
	DU-Rep2	161.2	152.1
	DU-Rep3	166.1	155.4
DU mean conc from triplicates =		176.9	152.9
DU triplicate SD =		23.0	2.2
DU triplicate RSD =		0.130	0.014
DU triplicates %RSD =		13.0%	1.4%
DU 95% t-UCL from triplicates =		215.6	156.6
relative variance for DU =		0.0169	0.0002
averaged relative variance for two DUs =		0.0085	
average %RSD across 2 different DUs =		**9.25%**	**= pooled RSD**

- ✓ The next two EBA DUs collected served as QC for the UCL prediction process. These were called "check DUs" [EBA DU 10 (0-6) and EBA DU 10 (6-24)]. Check DUs also had triplicate ISM samples so that actual UCLs could be calculated and "checked" against UCLs predicted for them based on the pooled variability derived from the first two DUs.

Check DUs			
		EBA DU 10 (0-6)	EBA DU 10 (6-24)
	DU-Rep1	328.0	129.3
	DU-Rep2	355.5	121.6
	DU-Rep3	368.8	147.1
DU mean conc from triplicates =		350.8	132.7
DU triplicate SD =		20.8	13.1
DU triplicate RSD =		0.059	0.098
DU triplicates %RSD =		5.9%	9.8%
DU 95% t-UCL from triplicates =		385.8	154.7
relative variance for DU =		0.0035	0.0097
averaged relative variance for two DUs =		0.0066	
average %RSD across 2 different DUs =		**8.12%**	

- ✓ Note that the pooled %RSD for the two check DUs (8.12%) was close to the pooled %RSD from the initial set of DUs (9.25%).
- ✓ The table below shows the comparisons between the predicted and actual UCLs for the two "check DUs." Note that a UCL is predicted from each sample result in the triplicate set for a check DU; each predicted UCL is compared with the actual UCL from the triplicate set using RSD as a measure of difference. The differences between the predicted and the actual were all less than 10% RSD.
- ✓ At the 200-ppm threshold of interest, the range of ±10% RSD around a 200 ppm UCL = 174 to 230 ppm. This is an acceptable degree of decision uncertainty.

Predicted UCL value calculation for single DU-IS samples for EBA check samples						
		Check DU	Pred 95% t-UCL			Diff between Pred & actual UCLs
Enter the following value for single DUs:	DU ID	ISM Sample Result	[df = 5; n = 1]			as RSD
Check DU (using 1st Rep result)	DU10 (0-6)	328.0	**389.1**	**actual t-UCL from DU10 (0-6) trip set =**	385.8	0.6%
Check DU (using 2nd Rep result)	DU10 (0-6)	355.5	**421.7**			6.6%
Check DU (using 3rd Rep result)	DU10 (0-6)	368.8	**437.5**			9.5%
Check DU (using 1st Rep result)	DU10 (6-24)	129.3	**153.3**	**actual t-UCL from DU10 (6-24) trip set =**	154.7	0.6%
Check DU (using 2nd Rep result)	DU10 (6-24)	121.6	**144.3**			4.7%
Check DU (using 3rd Rep result)	DU10 (6-24)	147.1	**174.5**			9.0%

- ✓ t-UCLs were used as the type of UCL for the predicted EBA UCLs because
  - ➢ #1: The Central Limit Theorem generally holds for ISM samples as long as the variability in the underlying increment population is not too high; and
  - ➢ #2: A check of the underlying increment population for all 4 triplet EBA DUs showed between-increment %RSDs in the range of 9 to 81% (see screen shot below from "Calculator to Adjust for Between-Increment Variability Bias When Determining ISM UCLs"). Since none was higher than 150%, the t-UCL is appropriate for predicting UCLs for singlet DUs in the EBA, since all DUs have the same number of increments and about the same square-foot area and depth intervals.
- ✓ Note that when <u>actual t-UCLs</u> are calculated from triplicate ISM samples, the degrees of freedom (df) is derived from the total number of samples used to derive the variability RSD [i.e., 3 – 1 = 2]; and the "n" used in the standard error term of the UCL equation is 3, since that is the number of samples from which an estimate of the DU mean is determined.
- ✓ Note that when <u>predicted t-UCLs</u> are calculated, the degrees of freedom (df) is calculated from the total number of samples used to derive the pooled RSD [i.e., (2 x 3) – 1 = 5 in this case]. Hoever, the "n" used in the standard error term of the UCL equation is 1, since that is the number of samples from which an estimate of the DU mean was determined.
- ✓ The predicted 95% t-UCLs for DUs with single ISM samples are listed below. Single ISM results greater than 168 ppm would yield a predicted 95% t-UCL greater than 200 ppm.

	Singlet EBA DU ISM Sample Result	Pred 95% t-UCL [df = 5; n = 1]
EBA DU2 (6-24)	46.5	**55.2**
EBA DU3 (0-6)	325.5	**386.2**
EBA DU3 (6-24)	206.8	**245.4**
EBA DU4 (0-6)	186.5	**221.3**
EBA DU4 (6-24)	67.6	**80.2**
EBA DU5 (0-6)	782.2	**928.0**
EBA DU6 (0-6)	257.7	**305.7**
EBA DU6 (6-24)	56.1	**66.6**
EBA DU7 (0-6)	180.8	**214.4**
EBA DU8 (0-6)	319.5	**379.0**
EBA DU9 (0-6)	1202.6	**1426.6**
EBA DU 11 (0-6)	151.9	**180.1**
EBA DU 12 (0-6)	102.4	**121.5**
EBA DU 13 (0-6)	161.6	**191.7**
EBA DU 14 (0-6)	178.1	**211.3**
EBA DU 15 (0-6)	150.9	**179.0**
EBA DU 16 (0-6)	385.8	**457.7**
EBA DU 17 (0-6)	400.9	**475.6**

Calculator to Adjust for Between-Increment Variability Bias When Determining ISM UCLs

See the "Instructions" tab for detailed instructions.

Project ID: Wilcox Oil Pb Delineation
Property/Sample ID: LSA and EBA areas
Date of spreadsheet operation: 1/22/2018
Person operating the spreadsheet: DM Crumbling
Analyte: Pb
Analyte units: ppm
Notes:

Type number into the cell below

Number of increments per replicate: 30

Note: Assumes all replicates have the same number of increments

Row #	DU IDs	Replicate field sample concentrations					Number of Replicates in the DU	Arithmetic Mean for the DU	SD of DU replicate samples	Calc'd SD of increment population	Calc'd CV for DU's inc. pop.*	Adj Factor to Remove CV Bias	Adj'd SD of increment population	Adj'd CV for DU's inc. pop.*	SE of DU	95% UCL Calculations			
		Rep 1	Rep 2	Rep 3	Rep 4	Rep 5										Student's-t	Chebychev	CV of Increments	UCL value to use
1	EBA DU 1 (0-6)	203.3	161.2	166.1			3	176.9	23.02	126.10	0.71	1.14	143.76	0.81	13.29	215.7	234.8	Low	215.7
2	EBA DU 2 (0-6)	151.3	152.1	155.4			3	152.9	2.17	11.90	0.08	1.13	13.43	0.09	1.25	156.6	158.4	Low	156.6
3	EBA DU 10 (0-6)	328	355.5	368.8			3	350.8	20.81	113.97	0.32	1.13	128.42	0.37	12.01	385.8	403.1	Low	385.8
4	EBA DU 10 (6-24)	129.3	121.6	147.1			3	132.7	13.08	71.64	0.54	1.13	81.08	0.61	7.55	154.7	165.6	Low	154.7
5	LSA DU 5-6 (0-6)	224.2	157.9	173.2			3	185.1	34.71	190.14	1.03	1.17	221.53	1.20	20.04	243.6	272.5	Low	243.6
6	LSA DU 8-9 (0-6)	289.3	305.5	463.8			3	352.9	96.41	528.07	1.50	1.23	647.47	1.83	55.66	515.4	595.5	Med	595.5
7												#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8												#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9												#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
10												#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!

Notes

DU	Decision unit
SD	Standard deviation
SE	Standard error
UCL	Upper confidence limit
CV	Coefficient of variation (equivalent to "RSD")
RSD	Relative standard deviation

* Refers to the degree of variability (as CV/RSD) within the underlying increment population (inc. pop.) within the DU

Appendix 4: Electronic Data

Appendix 5: Daily Reports, Field and Log Books

From: Jefferson, Matthew <jefferson.matthew@epa.gov>
Sent: Sunday, October 29, 2017 8:38 PM
To: Coltrain, Katrina
Cc: Crumbling, Deana; Ball, Gerald; Rice, James; Zarella, Paul; Powell, Dan; Gerard, Henry; todd.downham@deq.ok.gov; pappel@eaest.com
Subject: Wilcox Oil LSA & EBA Remedial Investigation: Daily Field Report #1

Daily Field Report #1
Wilcox Oil Superfund Site
October 29, 2017

Work completed on October 27, 2017:
-GPS all LSA and EBA sampled DUs, SUs and transects
-Collected 30pt shallow (0-6") incremental samples (IS) at EBA DU1A (east of PSA1 – values) and EBA DU2A (north of PSA1)
-Collected 9pt IS cores (0-24") at EBA SU1 (southside building south of door) and EBA SU2 (southside building south of bay door)
-Collected background 9pt incremental background samples at 4 locations LSA 13,5 (along transect 13 between LSA 13O SU and rail spur); LSA 1,3 (along transect 1 estimated 500' away from LSA 1O); LSA 5,2 (along transect 5 between LSA 5O and non-occupied residence); and LSA 6,2 (along transect 6 approx 200' away from LSA 6O)
-Dried and disagragated IS. Analyzed dried IS with Niton XRF and samples archived.
-Set-up Olympus XRF and ran standards for control charts

Meetings:
Health & Safety morning meeting led by Gerald Ball (ERT) with Deana Crumbling (TIIB), Matt Jefferson (TIIB), Chris Kelly (SERAS) and Paul Zarella (ICF).

Upcoming Work:
-GBall to run Olympus XRF standards for control charts on 10/29/17
-Determine locations for next IS along transects for LSA and EBA
-Analyze dry IS with Niton XRF
-Run Olympus XRF standards to build control charts
-Scott Grossman (ERT) and Jim Rice (ICF) expected to arrive 10/29/17 and Carla ??? (ERT) expected to arrive 10/30/17

Issues or problems encountered in the field
-4 shallow sampler still missing. Filed a missing package report with UPS on 10/26/17
-Generator in EPA Region 6 removal trailer stops frequently. Will attempt to trouble shoot.
-Background IS at LSA 13,5 and LSA 1,3 were above 200ppm with LSA 1,3 at ~3000 ppm. Contamination likely from surficial or air transport, but LSA most like extends further to the north and west than expected.

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From: Jefferson, Matthew <jefferson.matthew@epa.gov>
Sent: Tuesday, October 31, 2017 7:37 AM
To: Coltrain, Katrina
Cc: Crumbling, Deana; Ball, Gerald; Grossman, Scott; Guerrero, Karla; Gerard, Henry; Rice, James; Zarella, Paul; Powell, Dan
Subject: Wilcox Oil LSA & EBA Remedial Investigation: Daily Field Report #2

Daily Field Report #2
Wilcox Oil Superfund Site
October 31, 2017

Work completed on October 30, 2017:
-GPS all LSA and EBA new and expanded locations
-Completed 9pt IS shallow (0-6") at the following locations:
LSA> LSA SUT 1,O5,O6 & O7 (transect between transect 1 background and transect 1 outer); LSA SUT 2, 2B (confirmation of transect 2); LSA SUT 2-3,1 (spatial data gap between transects 2 & 3); LSA SUT 4,I3 (determine 200ppm line along transect); LSA SUT 5,I3 (transect step in); LSA SUT 7,O3 (transect step out); LSA SUT 8, O2 (transect step out); LSA SUT 10,2B (confirmation of transect 10), LSA SUT 11,1B (confirmation of transect 11); LSA SUT 12,I2 (transect step in); and LSA SUT 16,O4 (transect step out)
EBA> EBA DU5, EBA DU 101 102 and 103 and Triplicates at EBA DU1A & 2A
-Collected cores (0-24") at LSA SUT 9,2 at 10' from location in North, West and South directions (hotspot delineation)
-Collected cores for LSA deep (6-24) the following locations: LSA T2 CORE 1, LSA T4 CORE 1, LSA T7 CORE 1, LSA T14 CORE 1 and LSA T16 CORE 1
-Dried and disagragated IS. Analyzed dried IS with Niton XRF and samples archived.
-Set-up Olympus XRF and ran standards for control charts
-Resolved generator issue in EPA Region 6 removal trailer – added more oil.

Meetings:
-ERT Carla Guerrero arrived onsite in the morning and ERT Scott Grossman arrived at noon
-Graduate student from University of Berkeley arrived on site.
-Health & Safety morning meeting led by Gerald Ball (ERT) with Deana Crumbling (TIIB), Carla Guerrero (ERT), Matt Jefferson (TIIB), Chris Kelly (SERAS), Jim Rice (ICF), Paul Zarella (ICF) and grad student.

Upcoming Work:
-Complete remaining step in/out shallow IS for LSA
-Complete remaining DUs for EBA
-Determine new IS locations for LSA and EBA based on XRF data
-Analyze dry IS with Niton XRF
-Run Olympus XRF standards to build control charts – Olympus should be ready to run samples tomorrow

Issues or problems encountered in the field:
-4 shallow samplers still missing. Filed a missing package report with UPS on 10/26/17. POC: Teresa Jones

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From: Jefferson, Matthew <jefferson.matthew@epa.gov>
Sent: Saturday, November 04, 2017 7:24 AM
To: Coltrain, Katrina; todd.downham@deq.ok.gov
Cc: Powell, Dan; Crumbling, Deana; Ball, Gerald; Grossman, Scott; Guerrero, Karla; Gerard, Henry; Rice, James; Zarella, Paul; pappel@eaest.com
Subject: Wilcox Oil LSA & EBA Remedial Investigation: Daily Field Report #3

Daily Field Report #3
Wilcox Oil Superfund Site
November 4, 2017

Work completed on October 31, 2017:
-GPS all LSA and EBA new and expanded locations
-Completed 30pt IS shallow (0-6") at the following locations: Last triplicate at EBA DU10 (step out of EBA DU 5 along southern EBA), EBA DU 7 (step out of EBA 6), EBA DU 8 (small corridor between EBA buildings), and EBA DU 9 (area underneath
-Dried and disagragated IS. Analyzed dried IS with Niton XRF and samples archived.
-Set-up Olympus XRF and ran standards for control charts

Meetings:
-Health & Safety morning meeting led by Gerald Ball (ERT) with Deana Crumbling (TIIB), Karla Guerrero (ERT), Matt Jefferson (TIIB), Chris Kelly (SERAS), Jim Rice (ICF), Paul Zarella (ICF) and grad student.

Upcoming Work:
-Complete remaining step in/out shallow IS for LSA
-Complete remaining DUs for north and east side of the EBA
-Determine new IS locations for LSA and EBA based on XRF data
-Analyze dry IS with Niton XRF
-Run Olympus XRF standards to build control charts – Olympus should be ready to run samples tomorrow

Issues or problems encountered in the field:
-4 shallow samplers still missing. Filed a missing package report with UPS on 10/26/17. POC: Teresa Jones
-Transect 7 will remain unbound – Pb concentration along the transect were all above 200ppm until the ravine

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From: Jefferson, Matthew <jefferson.matthew@epa.gov>
Sent: Thursday, November 02, 2017 7:25 AM
To: Coltrain, Katrina; todd.downham@deq.ok.gov
Cc: Crumbling, Deana; Ball, Gerald; Grossman, Scott; Guerrero, Karla; Gerard, Henry; Rice, James; Zarella, Paul; Powell, Dan; pappel@eaest.com
Subject: Wilcox Oil LSA & EBA Remedial Investigation: Daily Field Report #4

Daily Field Report #4
Wilcox Oil Superfund Site
November 2, 2017

Work completed on November 1, 2017:
-GPS all LSA and EBA new and expanded locations
-Completed 9pt IS shallow (0-6") at the following locations:
LSA> LSA SU T11,3A and LSA SU T11, 3B (step out and transect 11 confirmation); and LSA 16-1,1 through 16-1,3 (resolve transect 1 & 16 spatial data gaps)
EBA> EBA DU11 (step out of DU1); EBA DU12 (north of DU3); EBA DU 13 (north of pad on road leading to EBA); EBA SU T1,1 through EBA SU T1,5 (transect from DU 3 to DU13 along west side of pad)
-Dried and disagragated IS. Analyzed dried IS with Niton XRF and samples archived.
-Set-up Olympus XRF and ran standards for control charts

Meetings:
-Health & Safety morning meeting led by Gerald Ball (ERT) with Deana Crumbling (TIIB), Scott Grossman (ERT), Karla Guerrero (ERT), Matt Jefferson (TIIB), Chris Kelly (SERAS), Jim Rice (ICF), Paul Zarella (ICF) and the grad student.
-Graduate student from University of Berkeley left site around 1pm

Upcoming Work:
-Complete remaining DUs shallow IS for LSA
-Determine new IS locations for LSA and EBA based on XRF data
-Analyze dry IS with Niton XRF
-Run Olympus XRF standards to build control charts – Olympus should be ready to run samples tomorrow

Issues or problems encountered in the field:
-4 shallow samplers still missing. Filed a missing package report with UPS on 10/26/17. POC: Teresa Jones
-Transect 1 (due north of the LSA) will be unbound – all IS along transect were above 200ppm

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From: Jefferson, Matthew <jefferson.matthew@epa.gov>
Sent: Friday, November 03, 2017 7:25 AM
To: Coltrain, Katrina; todd.downham@deq.ok.gov
Cc: Powell, Dan; Crumbling, Deana; Ball, Gerald; Grossman, Scott; Guerrero, Karla; Rice, James; Zarella, Paul; pappel@eaest.com
Subject: Wilcox Oil LSA & EBA Remedial Investigation: Daily Field Report #5

Daily Field Report #5
Wilcox Oil Superfund Site
November 3, 2017

Work completed on November 2, 2017:
-GPS all LSA and EBA new and expanded locations
-Completed 9pt IS deep (6-24") at the following LSA locations:
LSA SU T2,1 (bounding composite to the NW of the suspected source area); LSA SU T4,I3 (bounding composite to the W of the suspected source area); LSA SU T7,1 (bounding composite to the SW of the suspected source area); LSA SU T14,5 (bounding composite to the NE of the suspected source area); and LSA SU T16,4 (bounding composite to the N of the suspected source area)
-Completed 30pt IS shallow (0-6") at the following LSA locations:
LSA DU T4-5 (W of suspected source area); LSA T5-6A through 6C (W of suspected source area; DU triplicates for QC); and LSA DU T6-7 (SW of suspected source area)
-Modified CSM to consider potential contamination transport by roads in the LSA and EBA. Discussed and approved by the RPM. Developed Road DU procedures for IS.
-Dried and disagragated IS. Analyzed dried IS with Niton XRF and samples archived.

Meetings:
-Health & Safety morning meeting led by Gerald Ball (ERT) with Deana Crumbling (TIIB), Scott Grossman (ERT), Karla Guerrero (ERT), Matt Jefferson (TIIB), Chris Kelly (SERAS), Jim Rice (ICF), and Paul Zarella (ICF).
-EPA RPM Katrina Coltrain and ODEQ RPM Todd Downham on site for this week
-Overview to ODEQ and ATSDR on investigation and real-time decision making process

Upcoming Work:
-Attempt to bound S and SE LSA locations
-Attempt to bound deep LSA locations
-Attempt to bound locations to the S and W of EBA
-Begin implementing Road DU strategy
-Analyze dry IS with Niton XRF

Issues or problems encountered in the field:
-4 shallow samplers still missing. Filed a missing package report with UPS on 10/26/17. POC: Teresa Jones
-Transect 15 (due east of the LSA) will be unbound – all IS along transect were above 200ppm
-Area to the N of EBA will be unbound – all DUs were above 200ppm

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From: Jefferson, Matthew <jefferson.matthew@epa.gov>
Sent: Saturday, November 04, 2017 7:16 AM
To: Coltrain, Katrina; todd.downham@deq.ok.gov
Cc: Powell, Dan; Crumbling, Deana; Ball, Gerald; Grossman, Scott; Guerrero, Karla; Gerard, Henry; Rice, James; Zarella, Paul; pappel@eaest.com
Subject: Wilcox Oil LSA & EBA Remedial Investigation: Daily Field Report #6

Daily Field Report #6
Wilcox Oil Superfund Site
November 4, 2017

Work completed on November 3, 2017:
-GPS all LSA and EBA new and expanded locations
-Completed 9pt IS shallow (0-6") at the following LSA locations:
LSA SUT 9,1B (Transect 9 confirmation); LSA 8,02B (Transect 8 confirmation); LSA 8-9, 1 (Data gap between Transects 8 & 9); LSA SUT 3,04A&B (Transect 3 step out confirmation); LSA SUT 2-3, 03A&B (Data gap between Transect 2-3, step out and confirmation); LSA SUT 11,4 A&B (in between LSA SUT 11,2 and LSA SUT 11,3, and confirmation SU); and LSA SUT 12,I2B (Transect 12 confirmation)
-Completed 30pt IS shallow (0-6") at the following EBA locations:
EBA DU 14 (step out of EBA DU 7); EBA DU 15 (north side of EBA and north of EBA DU 3); and EBA DU 16 (step out of EBA DU 10)
-Completed 30 pt shallow (0-6") at the following LSA locations:
EBA DU 1 (adjacent to values along east side of EBA); and EBA DU 6 (adjacent to possible source to the SE of EBA)
-Dried and disagragated IS. Analyzed dried IS with Niton XRF and samples archived.

Meetings:
-Health & Safety morning meeting led by Gerald Ball (ERT) with Deana Crumbling (TIIB), Scott Grossman (ERT), Karla Guerrero (ERT), Matt Jefferson (TIIB), Chris Kelly (SERAS), Jim Rice (ICF), and Paul Zarella (ICF).

Upcoming Work:
-Attempt to develop DU to the E, SE and S at LSA locations
-Attempt to bound NE, E, S and W deep LSA locations
-Attempt to bound locations to the S and W of EBA
-Begin implementing Road DU strategy
-Analyze dry IS with Niton XRF

Issues or problems encountered in the field:
-4 shallow samplers still missing. Filed a missing package report with UPS on 10/26/17. POC: Teresa Jones
-Likely clean area along LSA Transects 12-14 near fence line due east of the LSA. Area too difficult and dangerous due to heavy brush and structures. Transect 12-14 will be modeled to determine 200ppm clean zone.
-LSA Transects 1, 2 and 16 will be unbound – likely Pb sources from other operations or abandoned tanks.

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From: Jefferson, Matthew <jefferson.matthew@epa.gov>
Sent: Monday, November 06, 2017 6:42 AM
To: Coltrain, Katrina; todd.downham@deq.ok.gov
Cc: Powell, Dan; Crumbling, Deana; Ball, Gerald; Grossman, Scott; Guerrero, Karla; Gerard, Henry; Rice, James; Zarella, Paul; pappel@eaest.com
Subject: Wilcox Oil LSA & EBA Remedial Investigation: Daily Field Report #7
Attachments: LSA_11.5.17.pdf

Daily Field Report #7
Wilcox Oil Superfund Site
November 6, 2017

Work completed on November 5, 2017:
-GPS all LSA and EBA new and expanded locations
-Completed 30 point IS shallow (0-6") at LSA DUT 8-9A through C (Decision to the S of the LSA suspected source)
-Completed 30 point IS deep (6-24") at the following EBA locations:
EBA DU 2 (NE corner of the EBA) and EBA (North side of EBA along fenceline)
-Completed 9 point deep (0-6") at LSA SUT 11,2 (southern bounding LSA 24" IS)
-Dried and disagragated IS. Analyzed dried IS with Niton XRF and samples archived.

Meetings:
-Health & Safety morning meeting led by Gerald Ball (ERT) with Deana Crumbling (TIIB), Scott Grossman (ERT), Karla Guerrero (ERT), Matt Jefferson (TIIB), Chris Kelly (SERAS), Jim Rice (ICF), and Paul Zarella (ICF).

Upcoming Work:
-Attempt to bound locations to the shallow western area and deep zones of EBA
-Begin implementing Road DU strategy
-Analyze dry IS with Niton XRF

Issues or problems encountered in the field:
-4 shallow samplers still missing. Filed a missing package report with UPS on 10/26/17. POC: Teresa Jones
-LSA will be unbound based on transect and IS decision unit data (see attached). Levels in the 1000s were found in areas within berms to the north, northeast and southwest of the LSA. Data indicates that lead contamination is widely distributed above 200ppm, even though clean spots exist. Leads distribution appears to be movement of soils in the demolition of buildings and linked to the refinery process. Based on this information, it is recommended that delineation under a 200ppm scenario should be discontinued due to the widespread nature of the lead contamination around the LSA.

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From: Jefferson, Matthew <jefferson.matthew@epa.gov>
Sent: Tuesday, November 07, 2017 10:41 AM
To: Coltrain, Katrina; todd.downham@deq.ok.gov
Cc: Powell, Dan; Crumbling, Deana; Bussey, Donald; Gerard, Henry; Rice, James; Zarella, Paul; pappel@eaest.com
Subject: Wilcox Oil LSA & EBA Remedial Investigation: Daily Field Report #8

Daily Field Report #8
Wilcox Oil Superfund Site
November 7, 2017

Work completed on November 6, 2017:
-GPS all EBA and Road Test Samples (RTS) for new and expanded locations
-Completed the following: EBA DU 17 (30pt IS shallow step out from EBA DU 11) and EBA SUT 1,3 (9ft IS deep to bound EBA DU 3 – due north of the EBA building)
-Completed RTS with road classified as built roads (roads with gravel or asphalt/coke base), cut roads (roads cut through woods and unplanned), and berm roads (originally used as berm but now are roads). Roads are being analyzed due to higher than anticipated lead concentrations in the EBA and along LSA transects which have DUs or SUs near roads. A 100' section of the each type of road were sampled with 10 IS composited. A map of each location will be provided in the next daily field report.
-All areas have been sampled and field work is complete.
-Dried and disagragated IS. Analyzed dried IS with Niton XRF and samples will be disposed on site per instructions provided by the EPA RPM.

Meetings:
-Health & Safety morning meeting led by Matt Jefferson (TIIB) with Don Bussey (ERT), Deana Crumbling (TIIB), Chris Kelly (SERAS), Jim Rice (ICF), and Paul Zarella (ICF).
-Gerald Ball (ERT) and Karla Guerrero (ERT) departed on Sunday.
-Scott Grossman (ERT) departed Saturday afternoon.
-Don Bussey (ERT) arrived Monday morning.

Upcoming Work:
-Will classify samples by soil type and characteristics for reporting
-Will dispose of all IS at the LSA 14,2 (within the LSA hot zone) per EPA RPM instructions
-Complete demobilization by COB
-Analyze, dry and sieve 4 remaining RTS with Niton XRF

Issues or problems encountered in the field:
-4 shallow samplers still missing. Filed a missing package report with UPS on 10/26/17. POC: Teresa Jones
-The southeast side of the EBA (DUs 6,7 and 14) will be unbound based DUs running into a disposal area with empty drums and construction debris.

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From: Jefferson, Matthew <jefferson.matthew@epa.gov>
Sent: Monday, November 13, 2017 10:17 AM
To: Coltrain, Katrina; todd.downham@deq.ok.gov
Cc: Powell, Dan; Crumbling, Deana; Bussey, Donald; Gerard, Henry; Rice, James; Zarella, Paul; pappel@eaest.com
Subject: Wilcox Oil LSA & EBA Remedial Investigation: Daily Field Report #9 (Final Daily Report)

Daily Field Report #9
Wilcox Oil Superfund Site
November 13, 2017

Work completed on November 7, 2017:
-Classified IS by soil type and characteristics for reporting and disposed of all IS at the LSA 14,2 (within the LSA hot zone) per EPA RPM instructions
-Dried and disagragated IS. Samples LSA DUT 5-6B (0-6), LSA DUT 6-7 (6-24), LSA SUT 4,I3 (0-6), LSA SUT 9,1B (0-6), EBA DU 14 (0-6), EBA DU 16 (0-6), and EBA SUT 1,1 (0-6) were dried near the trailer generator. Samples were covered during the drying process. In addition, a heat lamp was purchased and used to help the drying process. Analyzed dried IS with Niton XRF and samples
-All areas have been sampled and analyzed – all site characterization activities under the LSA & EBA work plan are complete and this is the final daily report.

Meetings:
-None, all field and lab personal will travel back on Wednesday, November 8

Upcoming Work:
-TIIB will document finding in a report for RPM review and comment

Issues or problems encountered in the field:
-4 shallow samplers still missing. Filed a missing package report with UPS on 10/26/17. POC: Teresa Jones
-Cut and build road ISs were at or above 200ppm Pb and berm road ISs were below 200 ppm. The highest concentration/XRF reading was 1652 ppb Pb at RTS-7.

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PAGE	REFERENCE	DATE

Location Bristow, OK Date 10/24/17

Project / Client WA # 308 Wilcox

0700 GJC at FedEx to pickup equipment

0715 At walmart to purchase consumables

0815 GJC on site w/ Don Cussey (ERT), Deana Crumbling (EPA HQ), Jim Rice (ICF) and Paul Zarella (ICF)

- held H&S tailgate meeting
- Trimble unit missing. Call to Jean Boldue to ship replacement and file FedEx claim

0915 Group to lead Sweetening area (LSA) to scope sampling transects

- review sampling & statistical approach, agree to estimate location of transect 13 & sample test couplets as described in the QAPP

GJC

Location Bristow, OK Date 10/24/17
Project / Client WA# 308 Wilcox

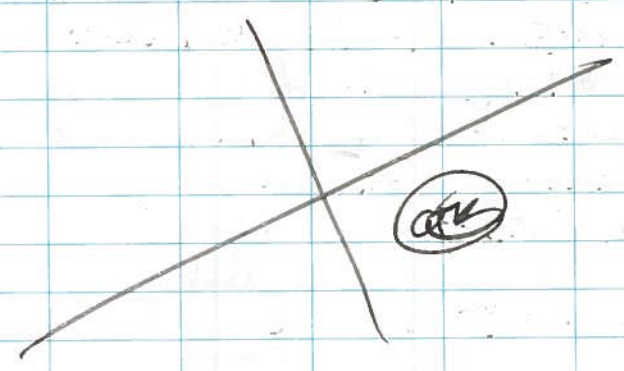
1000 Agree to practice sampling approach w/ a "TEST" run on transect 13.

1230 Break for lunch

1400 Continue TEST transect using hammer sampler for 0-6 and 6-24 inch samples. D. Crumbling running prelim XRF on non-dry samples

1630 Begin cleanup

1520 Debrief & off-site



Location Bristow, OK Date 10/25/17
Project / Client WA# 308 Wilcox

0710 Move to site

0800 SERAS, ERT, EPA HQ & ICF on-site. Hold tailgate meeting
- begin approximating other transects w/ site maps

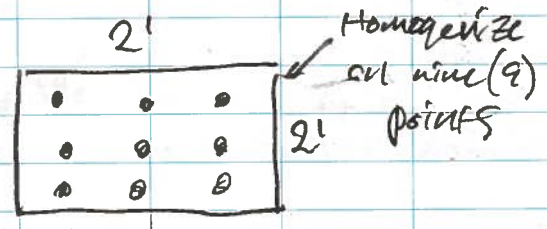
1000 Trimble unit on-site. GJC convert .XLS file to .Shp & export to handheld. Data & handheld set to Oklahoma State plane North projection

1100 GJC & P. Zarella begin marking Inner (I) & 200-ppm Cut-off (M) portions of 16 transects using trimble unit.
- Some locations shifted due to hazards, standing water or inaccessibility.

1220 Break for lunch

Location Bristow, OK Date 10/23/17
Project / Client WA#308 Wilcox

1330 Begin collecting 0-6 inch Samples from 200 ppm locations (M) for transects located within the LSA



Naming: LSA - SUT14, 1
0-6 ↑ ↑ ↑ Sample #
Lead screening area
Sample Unit
Transect #14

1430 Collect Samples from an 200 ppm Cutoff points within fence of LSA
- G. Ball (ERT) on-site
1515 Clean up & off-site

Location Bristow, OK Date 10/26/17
Project / Client WA #308 Wilcox

0800 SERAS, ERT (G. Ball), EPA HQ, and ICF on-site

0915 Begin Sampling transects on far side of pond (GK & GB) using Trimble unit.
- Collect 200 ppm (M) Samples and a Sample on the berm Separating pond from the creek
- additionally mark outer points (O) of transects
1215 Break for lunch

1400 Break into groups and re-Sample transects 1-3, 9-11 and 13-16 based on preliminary XRF results.

1640 Finish Sampling, clean up
1730 All off-site

Location Bristow, OK Date 10/27/17
Project / Client WA #308 Wilcox

0800 SERAS, ERT, EPA HQ and ICF on-site
- Hold tailgate meeting

0900 GJC & GB to Sample high Pb Concentration areas in CSA
- don level C PPE
- activate Data RAM

1245 Complete Sampling & break for lunch

1345 Sample interior points of transects 1, 4, 5, 7 and 16 in level C PPE.

1530 Clean up & off-site

Location Bristow, OK Date 10/28/17
Project / Client WA #308 Wilcox

0800 All parties on-site

0830 GJC & GB GPS remaining Sample points

1000 GJC & GB to EBA to Sample DUs.

1230 GPS EBA Sampling point
- break for lunch

1330 GJC process GPS data w/ Trimble Software

1500 GJC off-site
- Send GPS data to P. Zerilla w/ ICF

Location Bristow, OK Date 10/30/17

Project / Client WA # 308 wilcox

0800 All groups on-site. K. Guerrero from ERT on-site
- hold tailgate meeting

Missing GPS Coords:
LSA SUT 1, 3, 5 (0-6) ✓
LSA SUT 7, 3 (0-6) ✓
LSA SUT 6, 2 (0-6) ✓
LSA SUT 7, 2 (0-6) ✓
LSA SUT 1, 4 (0-6) ✓

0900 GB & KG to EBA

10:15 Deliver Coords to PZ.

1245 Break for lunch

1400 S. Grossman (ERT) on-site

1415 Break to Sample LSA transects

1800 CJK off-site

Location Bristow, OK Date 10/31/17

Project / Client WA # 308 wilcox

0800 All parties on-site

0815 Hold tailgate meeting for the day

10:15 CJK & SG finish Sampling

1115 CJK & PZ collect GPS points

1230 Break for lunch

1400 Back to complete DU-10 triplicate (90 Samples)

1810 Complete Coo/90 DU10 Samples

1750 Clean up & off-site

Location Bristow OK Date 11/1/17

Project / Client WA#308 Wilcox

0800 All parties on-site

0815 Hold daily tailgate meeting

0835 Break to sample DU-10, DU-11, DU-12, DU-13 and EBA-SUT1, 1 thru 5

1230 Complete sampling, break for lunch

1400 Back on-site
- Sample DU3 (6-24)
- Sample new SUs in LSA

1700 cpk provide GPS data

1715 All off-site

cp

Location Bristow OK Date 11/2/17

Project / Client WA#308 Wilcox

0800 All on-site
- hold tailgate meeting for the day

0810 Set up in LSA - tyvek level C PPE

1220 Complete LSA sampling, take lunch

1440 Set up on for single off road to complete first transect DUs. (4-5, 5-6, 6-7)

1600 Return to trailer w/ DU samples

1630 ERT & SERAS off-site

cpk

Location Bristow OK Date 11/3/17

Project / Client WA #308 Wilcox

0800 All on-site
- held tailgate meeting for morning work

0830 Discuss plans for day

0900 Begin Sampling in LSA

1100 Move to start Sampling on EBA

1155 Deliver DU Sampler

1200 Break for lunch

1400 Start Sampling DUs in EBA

1700 Return to trailer w/ Samples

1715 off-site

CGK

Location Bristow, OK Date 11/4/17

Project / Client WA #308 Wilcox

0800 All on-site

0815 Receive Sampling locations for the day
- H&S meeting

1130 Complete Sampling of DUs & SUTICe/11

1145 Break for lunch

1335 Return to sample DUT8-9 triplicate

1415 Finish Sampling

1415 CGK transfer GPS to ICE

1500 ERT & SERAs off-site

CGK

Location Bristow, OK Date 11/6/17
Project / Client WA #308 Wilcox

0700 EPA HQ, ICF, SERAS and ERT (Don Bussey) on-site

0730 Meet to EPA to complete final sampling of DU17 & RST5

0830 Sample RST 1 thru RST 5
- deliver samples to trailer

GPS: LSA SUT 2-3, 03
LSA SUT 16, 05
LSA SUT 5, 3

1105 Finish collecting GPS points

- 1115 Break for lunch

- 1215 Leave on-site to complete RST sampling

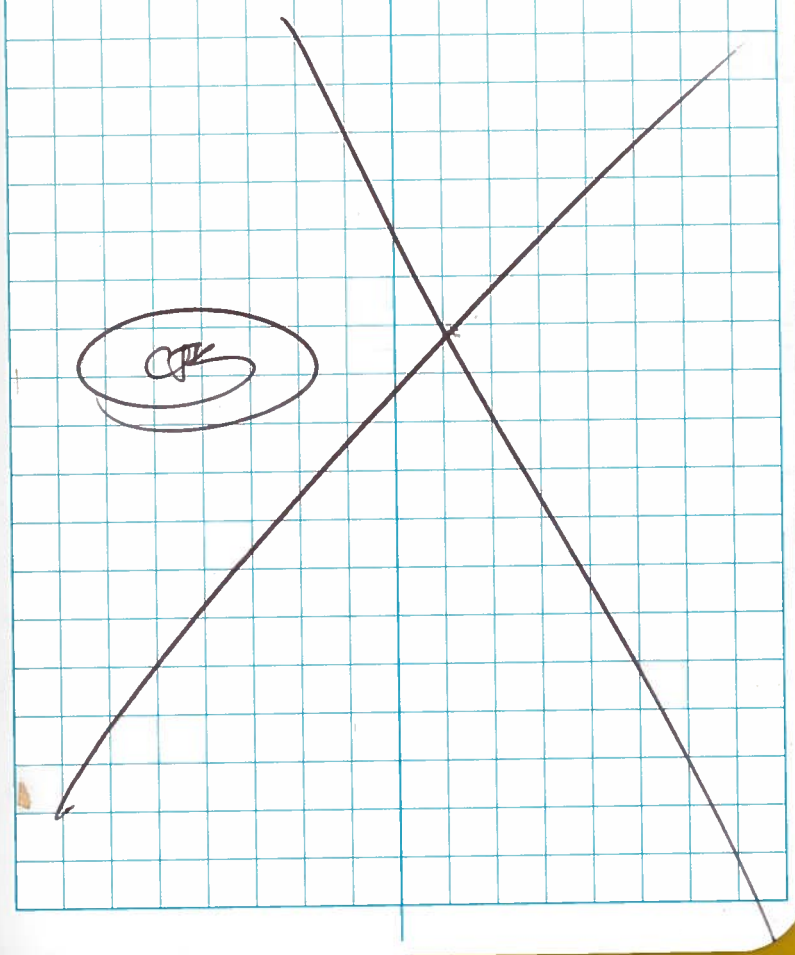
1400 finish sampling
- begin packing

CR

Location Bristow, OK Date 11/6/17
Project / Client WA #308 Wilcox

1515 Transfer GPS data to ICF

1600 ERT & SERAS off-site



Location Bristow, OK Date 11/7/17

Project / Client WA # 308 Wilcox

0700 All parties on-site
-ERT/SERAS to begin Classifying Soil

FedEx Acct: 2146160289

1130 Break for lunch

1230 Back on-site to Complete logging of Soil

1330 Finish logging Samples
- begin packing

1400 D. Bussey off-site

1430 GPK off-site
- will strip equipment 11/7 or 11/8

Location Date

Project / Client

Mead®
Learn. Organize. Create.

COMPOSITION

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T B XRF N [illegible] XLS [illegible]
log book # 2 May ~~20~~ 10, 2017 -

3 SUBJECT

Tues Deana M Crumbling

Oct 24, 2017 Wilcox Oil

Field Deployment to LSA area DMC

-Run XRF on battery in field - direct shots on ground (a few @ start), then direct thru PO film on SU samples. Repeat 15 sec shots on soils. Sample ID only entered - repeat shots on same sample not numbered. Readings recorded on Field Sample sheets. Downloaded to electronic later.

Unable to get into mobile lab trailer - no keys. Did not have easy way to run LCSS - skip them

Samples moist, but no free water. Many samples very clayey & plastic. Difficult to mix. No stones or lg material that would be removed by 10-mesh sieve. Samples not sievable.

Work on Test transect couplets, both shallow & deep. Couplets mostly agreeing, with need to remix & reshoot some bags due to heterogeneity & ↑% RSDs.

Samples run in field

LSA-Test1 - SU1A mean of 12 readings = 3141 SU3B deep = ~~123~~ 295 RSD = 103%

" " " B mean of 12 rdgs = 3279

" " SU1A deep mean of 14 rdgs = 296

" " SU1B deep " " 16 rdgs = 880

" " SU2A shallow mean of 12 rdgs = 230

" " SU2B shallow " " 14 " = 248

" " SU3A shallow " " 10 " = 1342 RSD = 59% remix & reshoot =

" " SU3B shallow " " 9 " = 564 RSD = 44% 3B shallow reshoot 423 RSD

Wed

Oct 25, 2017 (#1) Buc

Keys and for trailer. Set up XRF, altho still using in hand-held mode due to diff. of working with very plastic samples. Downloaded yesterday's data + erased all (lots of CRMS data)

Run SiO_2 + LSCs ~12 noon

ID	time	Rdg #	Pb	Pb err (1SD)	~30 sec read (hold trigger manually)
SiO_2		3	0.12	1.30	
JSAC 0462		4	64.4	3.3	main filter only
RCRA		~~4~~ 5 ~~497.7~~	497.7	8.8	
NIST 2111a		6	1387	12	
RCRA ↑ - remix	1218	7	484.6	9.0	(cleaned surface of cup some ~~[illegible]~~ schmutz)
LSA Test 1 - SU3B shallow	~15 sec	#8	370	9.4	time
removed & roller		9	439		~12:40 - 12:45
		10	503		
n=9		11	350		
ave = 387		12	351		
% RSD 13.9		13	339		
		14	356		
		15	366		
		16	407		
LSA Test 1 - SU3A 0-6 remix with roller		17	1062	21 932	25 602
		18	861	22 986	26 970
n=11		19	687	23 1263	27 1429
ave = 986		20	1364	24 1090	
% RSD = 29.5					

10/25/2017 con't #2

LSA-Test1 -SU3A (6-24)

is sa/rdg

all readings in handheld mode ≈ 155

highly variable - remix - roll bag

samples too damp to crumble.

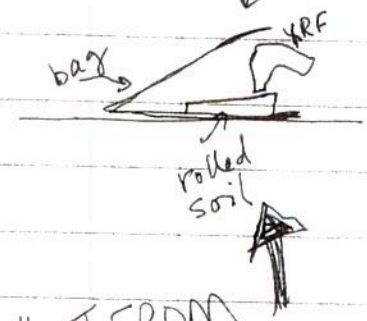
shoot from side of bag

n = 9
ave = 435.8
RSD = 205%

Time	Rdg #	Pb
	28	153.4
	29	157.9
	30	151.2
	31	127.1
	32	248.7 — flip bag
	33	1446
	34	554.2
	35	202.7
	36	693.4
1422	37	196.6
	38	180.0
	39	112.4
	40	167.4
	41	122.3
	42	119.7
	43	68.7
	44	93.2
	45	62.1
	46	294.2
	47	209.7
	48	200.3
	49	128.3
	50	347.8
	51	104.3

Flatten with roller. Hold back open

shoot from side



"SHOOT FROM Side" Figure

n = 14
ave = 164
RSD = 50%
95tucl = 203
95chucl = 260

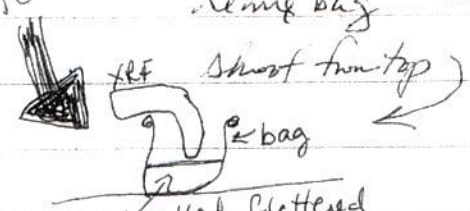
Flipped bag
shoot from side

(II5) Done

10/25/17

USA-Text 1-Su 3A (6-24)	52	70.6	#50-59
	53	104.6	n=10
			ave=165
(had to double-	54	115.6	RSD=50
			t UCL=214
bag, original bag	55	159.7	Ch UCL=280
getting small holes	56	173.0	#37-59 n=24
from the roller	57	204.9	ave=165
			RSD=49%
	58	123.4	t-UCL=193
			Ch UCL=237
	59	248.6	
remix bag	60	92.8	#60-68
	61	83.1	n=9
	62	53.4	ave=117
			RSD=40%
	63	189.2	t UCL=146
			Ch UCL=185
	64	68.5	
flip bag:	65	135.1	
reshoot again on top	66	132.7	
	67	126.8	
	68	174.4	

"SHOOT FROM TOP" Figure



stats for Rdg # 37-68 n=33
ave=152
RSD=50%
t UCL=174
Ch UCL=209

Prob UCL on #37-68 not normal, are γ dist. 95% adj γ UCL = 176.9

10/25/17 #4 DMC

LSA-Test 1-5U3B (6-24) time 1533 pm

	Rdg#		
shoot from side	69	174.8	
	70	108.3	
	71	176.4	
	72	266.7	
	73	179.6	
	74	154.2	
	75	366.6	
	76	218.0	
	77	178.8	n = 21
flipped over shoot from side	78	142.2	ave = 207
	79	void	RSD = 46.4
	80	495.3	t UCL = 244
	81	272.1	Ch UCL = 299
	82	168.8	
	83	204.6	
	84	166.8	
	85	160.3	
	86	185.9	
	87	333.4	
	88	61.5	
	89	206.6	
	90	134.0	
remix bag shoot from top	91	152.6	
	92	144.0	
	93	134.4	n = 7
	94	169.9	ave = 165
	95	165.1	RSD = 17.6
	96	~~165.1~~	t UCL = 186.4
	97	165.9	Ch UCL = 213
	98	224.1	
remix, shoot on top	99	53.5	
	100	139.1	126.6
	101	122.0	184.3
	102	126.6	200.3
	103	200.3	125.9
	104	125.9	85.2
	105	85.2	

n = 8
ave = 130
RSD = 37%
t UCL = 182
Ch UCL = 203

all above: n = 36
ave = 182
RSD = 46%
t UCL = 205
Ch UCL 242
ProUCL - γ dist; γ adj. UCL = 206.8
+ logn dist; H UCL = 208.8

Wed
10/25/17 #5 DMC

	time	Rdg #	Pb	err	
SiO_2	1745	106	-1.00	1.94	in handheld mode ~30s
JSAC 0462	1801	107	74.9	5.49	
RCRA	1803	~~488~~ DMC 108	488	12.7	
NIST 2711a	1804 (per instrument)	109 - void + 110 111	~~2711~~ 1368	12.0	

the JSAC 0462 used routinely throughout was made up 12/5/2016

Thurs

10/26/2017 DMC (#1)

plastic lot #5

WM A607OC5 start up Niton @ 8:45am; set up in stand

PO 312861 download yesterday's data; do not delete

pick out sandy sample to sieve to 10-mesh.

system ck @ 0900; make Δs to program files (pick list + user file) + uploaded

re-system ck @ 0920

ID	time	Rdg #	Pb	error (1 SD)	
SiO_2	0925	116	-0.61	1.34	30 sec
JSAC 0462	0929	117/118	66.9/74.3	3.57/3.74	
RCRA	0934	119	478.4	8.4	
NIST 2711a	0935	120	1373	12	

changed run time in instrument (was 1 hr + 10 min off Δ date/time) to 15 sec - worked w/o updating LCS method file

Run samples — 15 sec

LSA - SUT 15, 1	0942	121	306.6	8.2
(0-6) ↓ <10-mesh in WM bag				
move bag	0944	122	328.0	8.6
flip bag	0945	123	324.1	8.5
↓ moved bag	0945	124	314.2	8.4
remix bag	0946	125	302.1	8.2
↓ moved bag	0947	126	281.7	8.0
bag prep: no move bag #1	0948	127	284.5	8.1
no move bag #2	0948	128	274.2	7.9
no move bag #3	0949	129	276.1	7.9
moved bag	0949	130	285.5	8.0
flipped bag	0950	131	315.6	8.4

10/26/2017 DMC (#2)

ID	time	Rdg #	Pb	ORS	
LSA-SUT-1,1	1006	132	222.7	7.3	15 sec
(0-6) bulk - too wet to sieve - in wm bag					
move each	1008	133	240.3	7.6	
	1009	134	222.2	7.2	
flip bag	1009	135	213.9	7.3	
moved bag	1010	136	207.5	7.1	
mixed bag	1011	137	194.6	7.0	
moved bag	1011	138	223.5	7.3	
moved bag	1012	139	261.8	8.1	
moved bag	1013	140	257.2	8.0	
LSA-SUT 2,1 (0-6)	1024	141	209.1	7.3	
bulk - too wet to sieve - in wm bag					
moved bag	1025	142	130.0	6.0	
flip bag	1026	143	234.8	7.6	
moved bag	1026	144	214.4	7.3	
"	1027	145	234.2	7.6	
flip	1028	146	187.9	6.9	
moved bag	1029	147	241.4	7.7	
remix bag	1030	148	217.8	7.3	
move	1031	149	196.8	7.1	
flip	1031	150	214.7	7.3	

10/26/17 (#3) DMC

"B is on page 11/3 #5

ID	time	Rdg#	Pb	err	15sec
LSA SUT 9,1A (0-6) bulk in lumber	1039	151	49.3	3.95	
move bag	1040	152	67.3	4.33	
flip bag	1040	153	63.6	4.28	
move bag	1041	154	62.9	4.24	
remix ~~move~~ bag	1042	155	64.4	4.25	
move bag	1043	156	68.1	4.35	
bag trip not move bag #1	1043	157	70.5	4.47	
not move #2	1044	158	70.2	4.43	

LSA SUT 3,1 (0-6) bulk in wm bag	1103	159	123.6	5.8	
move bag	1103	160	113.9	5.7	
flip bag	1104	161	148.9	6.2	
move bag	1105	162	142.0	6.1	
remix bag	1106	163	131.3	5.9	
move bag	1107	164	138.8	6.1	
flip bag	1107	165	122.3	5.7	
move bag	1108	166	158.8	6.4	
"	1108	167	141.3	6.0	

Thurs
10/26/17 #4 Dave

ID	atime	Rdg#	pb	err	15sec
LSA SUT 11,1	1124	168	88.4	4.95	
(0-6) bulk in WM bag					
move bag	1125	169	57.92	4.23	
flip bag	1126	170	58.7	4.25	
move	1126	171	63.8	4.37	
remix bag	1127	172	52.8	4.06	
move	1128	173	60.0	4.27	
LSA-SUT 16,1	1135	174	194.3	6.8	
(0-6) bulk in WM bag					
move bag	1136	175	207.4	7.1	
flip bag	1137	176	178.3	6.5	
move bag	1137	177	190.8	6.8	
remix bag	1138	178	191.0	6.8	
move bag	1139	179	188.0	6.8	
		180 - Void			
LSA-SUT 10,1	1159	18~~0~~	47.8	3.92	
(0-6) bulk; in PO bag - too big for WM bag					
(bag dup) not move bag	1202	182	49.6	3.95	
(bag trip) not move bag	1202	183	48.2	3.90	
move bag	1202	184	47.9	3.91	
flip bag	1203	185	51.5	3.98	
move bag	1204	186	50.4	3.94	
remix bag	1205	187	51.4	4.04	
move bag	1205	188	~~3~~ 48.8	3.92	

Thurs
10/26/2017

#5 DMC

ID	time	Rdg#	Pb	err	15 sec
LSA SUT 14,1	1221	189	953	15.1	
(0-6) <10-mesh, in wm bag					
moved bag	1222	190	827	14.1	
flip bag	1222	191	800	13.8	
move bag	1223	192	806	14.1	
SiO_2	1230	193	nd<2		30s
JSAC 0462	1231	194	77.1	3.76	
RCRA	1232	195	484.6	8.6	
NIST 2711a	1233	196	1371	12	

— turn off Niton @ 1234

— turn off Niton @ 1342

					30 sec
SiO_2	1402	199	nd<2		
JSAC 0462	1403	200	72.4	3.79	
RCRA	1404	201 ~~473.6~~ DMC	474	8.4	
Nist 2711a	1406	202	1363	12	

EBA PSA 2 side (0-6)	1408	203-void 204	213.3	7.6	15 sec
10/26/17 1030 <10-mesh, in wm bag					
moved	1409	205	207.0	7.3	
flip bag	1410	206	205.3	7.3	
moved	1410	207	238.7	7.8	
remix bag	1412	208	205.9	7.3	
moved	1412	209	224.7	7.6	

10/26/17 #6 DMC

ID	time	Rdg #	Pb	dm	ISRC
LSA SUT 4,1 (0-6) 10/26/17 bulk	1423	210	143.5	6.1	
moved bag	1424	211	138.9	6.0	
flip bag	1424	212	117.6	5.6	
moved	1425	213	108.5	5.3	
remix bag	1426	214	116.9	5.6	
moved	1427	215	119.0	5.7	
flip bag	1428	216	132.1	5.9	
moved	1428	217	120.6	5.6	
LSA SUT 5,1 (0-6) bulk, in wm bag	1436	218	155.8	6.3	15s
moved bag	1437	219	136.3	5.8	
flip bag	1437	220	138.6	6.0	
moved	1438	221	147.5	6.1	
remix bag	1439	222	128.3	5.9	
moved	1439	223	139.2	6.0	
flip bag	1440	224	149.3	6.0	
moved	1441	225	154.6	6.2	
LSA Berm (0-6) bulk, in wm bag	1450	226	63.4	4.3	
moved bag	1450	227	66.1	4.4	
flip bag	1451	228	62.9	4.3	
moved bag	1452	229	64.1	4.4	
remix bag	1453	230	56.0	4.0	
flip bag	1453	231	62.2	4.3	

Thurs
10/26/2017 (#7) AMC

ID	time	Rdg #	Pb	err	15 sec
LSA-SUT12,1 (0-6) bulk, in WM bag	1504	232	36.5	3.4	
movebag	1505	233	69.0	4.4	
flip bag	1505	234	56.8	4.2	
movebag	1506	235	61.8	4.3	
remix bag	1508	236	62.0	4.3	
movebag	1508	237	51.0	3.9	
LSA-SUT 6,1 (0-6) bulk, in WM bag	1520	238	98.8	5.1	
moved	1521	239	115.8	5.3	
moved	1522	240	132.6	5.6	
flip bag	1523	241	126.4	5.8	
moved	1523	242	121.4	5.5	
remix bag	1524	243	115.9	5.5	
moved	1525	244	119.5	5.6	
LSA SUT 8,1 (0-6) bulk, in WM bag	1534	245	303.1	8.3	
moved bag	1535	246	361.7	8.8	
flip bag	1535	247	372.6	9.4	
move	1536	248	345.6	8.4	
remix bag	1537	249	336.7	8.5	
move	1537	250	329.8	8.4	
flip bag	1538	251	349.8	8.7	
move	1539	252	317.1	8.2	

Thurs. (#8) DMC
10/26/17

LSA SU71(0-6) bulk, wm bag	1551	253	1499	18
flip bag	1552	254	1595	19
move bag	1553	255	1434	18
remix bag	1553	256	1670	19
flip bag	1555	257	1613	19

EBA - PSA1 (0-6) bulk, in wm bag	1603	258	732.6	13
moved bag	1604	259	987.4	15
flip bag	1605	260	765.3	14
moved	1605	261	843.4	14
remix bag	1606	262	887.0	15
moved	1607	263	731.5	14
flip bag	1607	264	1052	16
moved	1608	265	808.4	14

EBA PSA2 side (6-24) 10/26/17 1030 <10-mesh in PO bag	1630	266	99.7	5.3
moved	1631	267	85.6	5.0
flip bag	1632	268	91.0	5.2
moved	1633	269	105.0	5.4
remix bag	1634	270	85.1	5.0
moved	1636	271	94.7	5.3

Thurs
10/26/2017

#9 DMC

ID	time	Rdg#	Pb	err	15sec
EBA PSA 1 (6-24)	1657	273	412	10	
<10-mesh 10/26 1135	1658	274	471	11	
use PO bag moved					
Dip bag	1700	275	419	10.5	
~~move~~ moved	1703	276	387.7	9.9	
remix bag	1705	277	411	10.2	
moved	1705	278	435	10.4	
SiO_2	1717	279	nd <2 (0.31	1.34)	30s
JSAC 0462	1718	280	75.5	3.71	
RCRA	1719	281	468	8.3	
~~JSAC~~ NIST 2711a	1720	282	1369	12	

download Oct 25 + 26 data, erase data off Niton

turn Niton off @ 1731

put all data generated on Niton/stand in RTeX form

Friday
10/27/2017 DMC (#1)

Niton on @ 8am system ck @ 0815

ID	time	Rdg #	Pb	err	30s
SiO_2	0819	~~0849~~ DMC 3	-0.42	1.31	
JSAC 0462	0822	4	70.8	3.60	
RCRA	0826	5	470.6	8.4	
NIST 2711a	0828	6	1369	12	
containment sludge in clm bag	0832	7	97.0	2.9	
move bag		8	83.0	2.7	
flip bag		9	128.7	3.3	
move bag		10	73.1	2.5	

Go out to field to shoot down cores in EBA, around PSA ~~LSA SUT~~ to check for deep contamination 15sec

EBA PSA 1 core - next to piping. From 0900 to 1030, shot total of 6 cores. Discovered "core retrieval shavings" effect where hi conc surface soil collects @ bottom of corer's slot. Took pix of area + core. Jim Rice has record of core readings.

Back to trailer + start analyzing samples collected yesterday.

run SiO_2 + RCRA to ck after fieldwork
SiO_2 (15sec): nd <3 (-1.55, err 1.96) RCRA (15s): 477, err 12.9

10/27/2017 #2 KRC

15 sec

LSA SUT 16,2 (0-6) (outward of 16,1) bulk	1110	80	243	7.3
move bag	1114	~~80~~ 81	245	7.8
flip bag	1115	82	287	8.6
move	1116	83	277	8.2
remix bag	1117	84	238	7.6
move	1118	85	257	7.9
LSA SUT 2,2 (0-6) bulk	1127	86-void # 87	158	6.4
move bag	1128	88	153	6.3
flip bag	1129	89	146	6.1
move bag	1130	90	139	6.1
remix bag	1131	91	139	6.1
move bag	1132	92	147	6.2
LSA SUT 3,2 (0-6) 40-mesh	1149	93	3955	32
moved	1149	94	4083	33
flip bag	1150	95	3672	31
moved	1151	96	4582	36
remix bag	1152	97	3739	31
moved	1152	98	4494	35

10/27/2017 (#3) DMC

ID	time	Rdg #	Pb	err	15s
LSA-SUT 1,2 (0-6) bulk	1203	99	350.3	9.1	
moved bag	1204	100	476	10.9	
flip bag	1204	101	346	9.2	
moved bag	1205	102	370	9.5	
remix bag	1206	103	329	9.1	
moved bag	1207	104	367	9.5	
flip bag	1207	105	371	9.5	
moved bag	1208	106	399	9.7	
LSA-SUT 15,2 bulk (0-6)	1255	107	989	15.4	
moved bag	1256	108	1238	17	
flip bag	1256	109	1152	17	
moved	1257	110	1125	17	
remix bag	1258	111	1134	17	
moved	1258	112	1073	16	
					30s
SiO_2	1301	113	0.49	2.04	
JSAC 0462	1303	114	68.9	3.62	
RCRA	1304	115	470.6	8.4	
NIST 2711a	1305	116	1354	12	

turn off XRF @ 1306
turn on XRF @ 1445
system ck @ 1500

10/27/2017 #4 DMC

ID	time	Rdg#	Pb	err	30s
SiO_2	1510	119	2.48	1.41	
blown window SiO_2	1511	~~121~~ 120 ~~void~~	nd<2 -1.24	1.29	
JSAC0462	1512	121-void 122	71.3	3.56	
RCRA	1513	123	475	8.4	
NIST 2711a	1514	124	1357	12	
LSA SUT9,2 (0-6) <10-mesh	1517	125	5741	40	15sec
moved	1518	126	5986	40	
flip bag	1519	127	5932	42	
moved	1519	128	6141	42	
remix bag	1520	129	6165	42	
moved	1521	130	6071	41	
LSA SUT 11,2 (0-6) <10-mesh	1535	d131-void 132	214.9	7.4	
moved	1535	133	217.3	7.4	
flip bag	1536	134	218.6	7.4	
moved	1536	135	189.4	7.0	
remix bag	1538	136	226.4	7.5	
moved bag	1538	137	206.1	7.2	

10/27/2017 (#5) DMC

ID	time	Rdg #	Pb	err	15sec.
LSA SUF HI 1	1552	138	11,500	100	
(0-6) <10-mesh					
moved	1553	139	13,000	100	
flip bag	1554	140	11,100	100	
moved	1555	141	12,000	100	
remix bag	1556	142	11,500	100	
moved	1556	143	11,900	100	
LSA SUT 13,4	1616	144	376.0	9.3	
(0-6) <10-mesh					
moved	1617	145	422.3	10.2	
flip bag	1618	146	378.6	9.7	
moved	1619	147	461.2	10.0	
remix bag	1619	148	445.7	10.3	
moved	1620	149	491.4	11.0	
flip bag	1620	150	408.7	10.0	
moved	1621	151	445.2	10.6	
LSA SUT 14,2	1650	152	730.4	13.4	
(0-6) <10-mesh					
moved	1650	153	788	13.9	
flip bag	1651	154	802	14.0	
moved	1651	155	925	15.1	
remix bag	1652	156	724	13.3	
moved	1653	157	678.3	12.6	
flip bag	1653	158	647	12.7	
moved	1654	159	655	12.6	
remix bag	1655	160	648	12.5	

10/27/2017 (#6) DmC
Fri

LSA SUT 10.2	1710	161	66.1	4.6		15
(0-6) <10 mesh moved	1710	162	79.2	4.9		
flip bag	1711	163	60.6	4.4		
moved	1712	164	69.9	4.6		
remix bag	1713	165	69.7	4.7		
moved	1714	166	71.4	4.7		
RCRA ~~SiO_2~~	1720	167	458	8.4	30s	not clerical error
mistaken as SiO_2 SiO_2	1726	168	nd < 2 (1.27, 1.35)			
JSAC 0462	1728	169	75.5	3.72		
NIST 2711a	1729	170	1363	13		

download data
turn off XRF @ 1730

Saturday (#1) AMC
10/28/2017

XRF on @ 0815 synthetic ck @ 0855 / trailer warming up
+ prep depth sample

ID	time	Rdg #	Pb	err	30 sec
SiO_2	0859	173	nd<2 (0.72, 1.34)		
		174-void			
JSAC 0462	0900	175	74.5	3.7	
RCRA	0902	176	474.4	8.4	
NIST 2711a	0904	177	1358	12	
LSA SUFHI-1	0908	178	11,300	0.0K	
(6-24) <10-mesh					
moved	0909	179	10,500	0.0K	
pobag					
flip bag	0910	180	11,600	0.1K	
moved	0912	181	12,200	0.1K	15 sec
was mislabeled as HI-1 Z DMC 10/30 LSA SUFHI-2	0917	182	179K	0.5K	
(0-6) bulk					
moved	0918	183	158.1K	0.5K	
mixed bag	0919	184	164 K	0.5K	
moved	0920	185	179 K	0.5K	
LSU SUT 5,2	0927	186	272.8	7.8	
(0-6) bulk					
moved	0928	187	285.7	8.2	
flip bag	0929	188	380.7	9.3	
moved	0929	189	305.3	8.5	
remix bag	0931	190	273.0	8.2	
moved	0931	191	262.3	7.9	

Sat (#2) DMC
10/28/2017

ID	time	Rdg#	Pb	Eeu	15 sec
LSA SUT 7,2	0944	192	1593	20	
(0-6) bulk moved	0945	193	1559	20	
flip bag	0946	194	1398	19	
moved	0946	195	1673	20	
mislabed as 16,2 LSA SUT 16,3	0953	196	1194	17	
(0-6) bulk moved	0954	197	1096	16	
flip bag	0954	198	1185	17	
moved	0955	199	1154	17	
LSA SUT 1,3	1004	200	164.2	6.4	
(0-6) bulk moved	1004	201	205.8	2.0	
flip bag	1005	202	202.7	7.0	
moved	1006	203	201.5	7.0	
remix bag	1007	204	212.7	7.2	
moved	1008	205	202.5	7.0	
moved	1008	206	196.6	6.8	
prep next sample					
LSA - SUFHI 2	1203	207	17.4K	0.1K	
(6-24) <10-mesh move	1203	208	16.5K	0.1K	
po bag flip bag	1206	209	16.8K	0.1K	
move	1207	210	20.4	0.1K	

Sat
10/28/2017 (#3) DMC

	ID	time	Rdg#	Pb	Eu	
						~~15sec~~ 30sec
	SiO_2	1218	211	0.03	1.33	
	JSAC 0462	1219	212	77.8	3.69	
	RCRA	1220	213	480.6	8.5	
	NIST 2711a	1221	214	1376	13	
	XRF off for lunch @ 1223					
	start XRF back up @ 1305 system ok @ 1320					
30s	SiO_2	1330	217	not<2		30s
	JSAC 0462	1332	218	74.5	3.7	
	RCRA	1332	219	462.5	8.3	
	NIST 2711a	1334	220	1378	12	
	RCRA	1334	221	463.6	8.4	
	RCRA	1335	222	474.2	8.5	
15sec	SiO_2	1336	223	0.81 (2.05)		15s
	JSAC 0462	1337	224	70.25	5.70	
	"	1338	225	75.53	5.72	
	RCRA	1339	226	441	12.4	
	"	1340	227	470.5	12.5	
	"	1341	228	459.9	13.0	
	NIST 2711a	1341	229	1380	19	
	"	1341	230	1346	19	
	LSA SUT 4,2 (0-6) bulk	1344	231	5053	35	
	moved	1344	232	4797	35	
	flip bay	1345	233	5258	37	
	moved	1346	234	4558	33	

Sat
10/28/2017

#4 DMC

ID	time	Rdg #	Pb	um	15s
EBA North transect bulk 12/28 1220 surface soil	1356	235	416.4	10	
moved	1357	236	350.9	8.6	
flip bag	1358	237	370.0	9.2	
moved	1359	238	463.4	9.9	
remix bag	1400	239	379.2	9.5	
moved	1407	240	310.3	8.5	
moved	1408	241	295.1	8.2	
remix bag	1409	242	394.0	9.6	
not moved	1411	243	407.1	9.5	
not moved	1412	244	402.7	9.2	
moved	1413	245	372.6	9.2	
LSA - SUT 13,5 (0-6) bulk	1444	246	240.0	7.7	
moved	1445	247	248.0	7.8	
flip bag	1446	248	257.6	7.9	
moved	1446	249	232.0	7.4	
remix bag	1448	250	250.9	7.3	
LSA SUT 1,~~3~~4 bmc 10/30 (0-6) bulk	1544	251	3455	28	
moved	1545	252	2592	25	
flip bag	1546	253	2890	26	
moved	1547	254	3490	30	
moved	1547	255	3168	28	

Sat
10/28/17 #5 DMC

	ID	time	Rdg #	Pb	Mn	15s
	EBA SUI (0-6) <10 mesh	1607	256	389.0	9.2	
	moved	1607	257	451.5	9.7	
	flip bag	1608	258	429.6	9.1	
	moved	1609	259	329.5	8.4	
	remix bag	1610	260	388.8	9.1	
	moved	1619	261	391.1	9.3	
	EBA South Transect (0-6) bulk	1628	262	306.0	8.3	
	moved	1629	263	301.0	8.5	
	flip bag	1629	264	315.3	8.3	
	moved	1630	265	296.8	8.2	
	remix bag	1632	266	296.8	8.2	
	moved	1633	267	280.7	7.9	
15sec	SiO_2	1739	268	0.44	2.09	15s
	JSAC 0462	1744	269	74.20	5.76	
	RCRA	1746	270	480.6	12.6	
	NIST 2711a	1748	271	1385	19	
30sec	SiO_2	1750	272	0.01	1.32	30s
	JSAC 0462	1752	273	71.27	3.63	30s
	RCRA	—	274 VOID = 7.5 second run - reload nearly			trigger
	RCRA	1755	275	464.8	8.2	30s
	NIST 2711a	1757	276	1396	13	

Turn off XRF @ 1759

Monday #1
Oct. 30, 2017 DMC + Sarick Metzger

start up XRF @ 0900, system ck @ 0930
washed RCRA membrane again

ID	time	Rdg#	Pb	Zn	30sec
SiO_2	0935	279	-0.43	1.31	
JSAC 0462	0940	280	69.4	3.55	
RCRA	0942	281	472.2	8.4	
NIST 2711a	0945	282	1360	12	

EBA SU1
(6-24) <10-mesh 0952 283 15.3 2.9 15sec
moved 0953 284 12.4 2.7
flip bag 0954 285 25.8 3.2
moved 0955 286 18.8 3.0
remixed 0956 287 18.5 3.1
~~mixed~~ moved 0959 288 19.1 3.0

LSA - SUT 6,2 (0-6) bulk 10/28 1610
mistabeled as 6,3 in XRF
1014 289 52.19 4.0
moved 1016 290 63.47 4.28
flipped 1017 291 56.38 4.08
moved 1018 292 67.24 4.40

Monday, Oct. 30, 2017 #2 Dmc + SM

ID	Time	Rdg #	Pb	SD	Rdg time
LSA-SUT 5,3 (0,6) 10/28 1619 bulk					15 sec
~~bag~~	1028	293	57.93	4.34	↓
moved	1029	294	41.95	3.94	
flipped	1030	295	48.59	4.09	
moved	1031	296	38.86	3.80	
remixed	1033	297	44.15	3.96	
moved	10.34	298	45.84	4.11	
EBA SU2 (6-24) <10 mesh 10/28 1120					
	1040	299	83.71	5.04	
flipped bag ~~moved~~	1041	300	58.81	4.37	
flipped bag	1043	301	61.26	4.42	
flipped bag	1044	302	72.27	4.89	
remix	1048	303	75.06	4.78	
flip bag	1049	304	68.66	4.64	
flip bag	1051	305	86.77	5.13	
LSA SU HI, 1 (8-12) bulk 1244					
	1058	306	49,000	200	
moved	1059	307	61,700	200	
flip bag	1100	308	50,300	200	
moved	1101	309	46,200	200	

Oct 30/2017 (#3) DMC + SM

ID	TIME	Rdg #	Pb	SD	15 sec
LSA SU HI, 2 (0-4) <10 mesh					
	1106	310	176,800	500	
moved/flip	1107	311	182,800	500	
flip	1114	312	172,000	500	
moved	1115	313	182,300	500	
LSA SU HI, 1 (0-4) bulk					
	1117	314	8533	49	
moved	1118	315	7732	49	
flip	1120	316	9152	53	
moved	1121	317	7800	49	
LSA SU HI, 1 (4-8) bulk					
	1124	318	8587	51	
moved	1125	319	8580	52	
flipped	1126	320	8683	52	
moved	1127	321	8658	53	
LSA SU HI 1 (0-6) <10-mesh 10/26 10/D					
	1229	322	11.9K	0.1K	to ck ID on mislabeled sample in logbook
mislabeled as → RCRA ~~SiO2~~	1237	323	474.4	8.4	
SiO2	1238	324	-0.44 nd <2	1.31	30 sec
0462	1240	325	69.0	3.63	
2711a	1241	326	1334	12	

10/30/2017 (#4) DMC + SM

15 sec	SiO_2	1242	327	1.91	2.10	15 sec
mislabel as 0462	~~0462~~ RCRA	1245	328	458	12.9	
	RCRA	1246	329	464	12.5	
	2711a	1248	330	1339	19	
	0462	1249	331	61.0	5.6	
	0462 rept	1250	332	69.5	5.7	
15 sec	RCRA	1250	333	478	12.9	

shut down for lunch @ 1252

start XRF up @ 1425 - system check OK 1452 ✓

ID	time	Rdg #	Pb	Sn	run time
SiO_2	1454	336	-1.86	1.97	~~30~~ sec 15 sec
JAC 0462	1455	337	70.18	5.55	
RCRA	1456	338	458.8	12.4	
2711a	1457	339	1400	20	

EBA-SO2 (0-6) <10 mesh 10/28 1120 — 15 sec

	1500	340	307.9	8.9
flip	1501	341	453.8	11.3
flip	1502	342	826.5	14.8
remix	1504	343	350.2	10.0
flip	1504	344	378.0	10.3
flip	1505	345	417.9	10.8

10/30 #5

ID	TIME	Rdg#	Pb	SD	15 sec
~~DU-1A EBA 0-6 <10 mesh 10/28 1120~~					↓
SiO_2	1513	346	0.18	1.34	30 sec
JSAC 0462	1515	347	75.78	3.71	↓
RCRA	1516	348	490.1	8.7	
2711a	1519	349	1369	13	
DU-1A EBA 0-6 <10 mesh 10/28 1120					15 sec
	1523	350	199.9	6.8	↓
flip	1524	351	187.1	6.6	
flip	1525	352	213.2	7.1	
flip	1526	353	212.9	7.2	
EBA DU-1B BULK (EBA) DMC 10/4					
	1528	354	168.6	6.5	
flip	1529	355	135.9	6.0	
flip	1530	356	146.7	6.1	
flip	1531	357	143.5	6.0	
remix	1532	358	167.5	6.5	
flip	1533	359	181.0	6.9	
flip	1534	360	181.0	6.7	
flip	1535	361	165.6	6.4	

10/30 (#6)

ID	TIME	RDG#	Pb	ERR	analysis TIME
DU ~~1B~~ 1C BULK (EBA) pmc 11/4					
	1540	362	154.0	6.2	15 sec
flip	1541	363	164.0	6.4	↓
flip	1542	364	180.9	6.7	
flip	1543	365	174.0	6.6	
remix	1545	366	167.2	6.5	
flip	1546	367	160.9	6.3	
flip	1547	368	162.0	6.4	
EBA-SUS101 BULK					
	1552	369	75.25	4.20	
flip	1553	370	~~66~~ 65.81	4.13	
flip	1554	371	72.81	4.25	
flip	1555	372	99.87	4.83	
remix	1557	373	85.91	4.53	
flip	1558	374	85.95	4.60	
DU 2B BULK (EBA) pmc 11/4					
	1600	375	139.5	6.0	
flip	1602	376	166.2	6.6	
flip	1603	377	152.3	6.3	
flip	1604	378	124.3	5.6	
remix	1605	379	143.3	6.1	
flip	1606	380	189.1	6.9	

cont next page →

10/30 (#1)

ID ~~TIME~~	TIME	RDG #	Pb	ERR	Analysis/Mv
EBA DU2B, cont from prev. page					15 sec
flip	1608	381	150.0	6.2	↓

LSA-SUHI, 2 20-24 1224

move	1616	382	5520	41
~~flip~~	1617	383	11.8K	0.1K
move	1618	384	5501	41
flip	1619	385	5575	42
move	1620	386	5334	39
remix	1621	387	7271	47
move	1622	388	5740	41
flip	1623	389	4886	37
move	1623	390	5034	39

DU 2C BULK (EBA) DMC 11/4

	1626	391	169.1	6.5
flip	1627	392	166.7	6.5
flip	1628	393	145.3	6.1
flip	1629	394	140.5	6.0

→

10/30 #8

ID	TIME	RPG #	Pb	ERR	An. Time
EBA-SUS100	~10 mesh				
	1633	395	92.44	4.98	15 sec
move	1634	396	94.48	5.03	
flip	1635	397	86.53	4.78	
move	1636	398	88.69	4.89	
VOID		(399 - no sample, not a real reading)			
EBA-SUS102	BULK (says ~10 mesh in XRF readout)				
	1648	400	94.58	4.54	
flip ~~move~~	1649	401	79.58	4.37	
flip	1650	402	75.88	4.26	
flip	1651	403	97.94	4.96	
remix	1653	404	88.84	4.68	
LSA-SUHI, 2	8-12	1227	BULK		
	1659	405	878.7	14.6	
move	1700	406	1210	17	
flip ~~move~~	1701	407	952.6	15.1	
move	1701	408	1038	16	
remix	1703	409	1110	16	
move	1704	410	1002	16	
flip	1704	411	988.5	14.7	
move	1705	412	1203	17	
move	1706	413	1147	17	

10/30 #9

ID	TIME	RPG #	Pb	ERR	An. TIME
DU2A EBA 0-6 <10 MESH					
	1717	414	152.5	6.3	
flip	1718	415	153.4	6.3	
flip	1719	416	153.7	6.3	
flip	1719	417	153.3	6.3	
remix	1721	418	144.5	6.1	
flip	1722	419	150.3	6.4	
LSA-SUHI, 2 4-8 BULK 1228					
	1725	420	4498	34	
move	1726	421	3945	32	
flip	1727	422	3700	31	
move	1727	423	3996	32	
~~flip~~ remix	1728	424	4498	34	
move	1729	425	3885	32	
flip	1730	426	3616	30	
move	1730	427	4860	35	
EBA DU5 <10 MESH					
VOID	1732	428	No sample - VOID		
	1733	429	557.0	12.6	
flip	1734	430	569.0	12.3	
flip	1735	431	1850	23	
flip	1736	432	590.8	12.7	

10/30 #10

ID	TIME	RDG #	Pb	ERR	An. TIME
EBA DUS -40 MESH, CONT FROM PREV PAGE					
remix	1740	433	558.1	12.0	15 sec
flip	1741	434	568.9	12.1	↓
Bag mistakeled * -should be 7,4 LSA - SUT ~~7,3~~ 7,4 0-4 BULK					
	1816	435	63.9K	0.2K	
moved	1818	436	56.6K	0.2K	
flip	1819	437	68.5K	0.2K	
move	1820	438	58.3K	0.2K	
LSA - SUHI,1 16-20 1242					
	1823	439	318.7	8.6	
move	1824	440	322.8	8.5	
flip	1824	441	315.3	8.7	
move	1825	442	308.2	8.5	
SiO_2	1827	443	0.67	2.07	15 sec
JSAC 0462	1828	444	68.03	5.60	↓
RCRA	1829	445	480.2	13.1	
2711a	1830	446	1410	19	

Instrument off at 1831. End of day.
Sarick Matzen

10/31/17 Instrument on 0800. SLM

ID	TIME	RDG#	Pb (#1)	ERR	An. TIME
system check	0852	OK ✓			
SiO_2	0857	449	~~NO~~ -0.61	1.52	30 sec
JSAC 0462	0858	450	69.46	3.61	✓
RCRA	0902	451	456.7	8.2	Low
~~RCRA 2711a~~	0903	452	476.1	8.3	✓
2711a	0906	453	1361	12	✓
LSA-SUT 08,02 (0-6) BULK 10/30 1704					15 sec
	0909	454	141.9	6.0	
move	0910	455	166.1	6.3	
flip	0910	456	157.4	6.1	
move	0911	457	156.7	6.1	
remix	0948*	482	194.8	6.8	
flip	0949	483	126.6	5.6	
LSA SUT 12, I2 10/30 (0-6) BULK					
	0914	458	79.56	4.77	
move	0915	459	75.68	4.65	
flip	0916	460	75.05	4.65	
move	0917	461	99.12	5.21	
remix	0918	462	81.14	4.54	
LSA-SUT 08,02 (0-6) BULK 10/30 1704 con't					
move	0950	484	148.2	6.1	
flip	0951	485	141.5	5.9	
remix ~~move~~	0952	486	164.5	6.4	

* went back + remixed + ran again

10/31 (#2)

ID	TIME	RDG #	Pb	ERR	An Time
LSA SUT 7,03 (0,6)		10/30/17	BULK		15 sec
	0920	463	1009	16	↓
move	0921	464	1008	15	
flip	0922	465	1075	16	
move	0923	466	1140	16	
remix	0924	467	988.4	15.4	
move	0925	468	1108	16	
LSA SUH I, 1 (20-24)		1241	BULK		
	0931	469	1801	20	
move	0932	470	1748	21	
flip	0933	471	1677	20	
move	0933	472	1564	20	
remix	0934	473	1547	20	
move	0935	474	1509	20	
LSA SUT 11, 02B (0-6)		BULK	10/30/17	1748	
	0938	475	274.2	7.9	
move	0939	476	283.0	8.1	
flip	0940	477	266.9	7.7	
move	0940	478	262.3	7.8	
remix	0941	479	311.2	8.4	
move	0942	480 ~~353.3~~	353.3	9.1	
flip	0943	481	361.7	9.0	

10/31 #3 SUM

ID	TIME	RDG #	Pb	ERR AN. TIME
LSA-SUT 2,3 0-4 BULK				15 sec
	0958	487	1307	17
moved	0959	488	1118	16
flip	1000	489	1067	15
move	1002	490	1195	16
remix	1003	491	1211	16
move	1004	492	1610	19
flip	1005	493	1260	17
LSA-SUT 2,3 4-8 BULK				
	1008	494	1026	15
move	1009	495	981.4	14.3
flip	1010	496	1088	15
move	1011	497	1011	15
remix	1012	498	1024	15
move	1012	499	1216	16
LSA-SUT 2,3 8-12 BULK				
	1016	500	741.3	12.7
move	1017	501	586.2	11.5
flip	1018	502	618.1	12.1
move	1019	503	489.6	10.7
remix	1021	504	604.4	11.4
move	1022	505	586.8	11.4

10/31 #4 SLM

ID	TIME	RDG#	Pb	ERR	AV. TIME
LSA-SUT 2,3		12-16 BULK			15 sec
	1026	506	446.2	10.3	↓
move	1026	507	251.8	7.6	
flip	1027	508	309.9	8.5	
move	1028	509	258.0	7.8	
remix	1029	510	314.1	8.4	
move	1030	511	277.6	7.7	
LSA-SUT 2,3		(16-20) BULK			
	1032	512	198.9	6.9	
move	1033	513	205.6	7.1	
flip	1034	514	215.6	7.2	
move	1035	515	188.4	6.7	
remix	1037	516	216.7	7.2	
move	1037	517	207.7	7.1	
LSA-SUT 2,3		(20-24) BULK			
	1040	518	261.4	7.8	
move	1041	519	271.7	8.1	
flip	1042	520	295.4	8.4	
move	1043	521	231.0	7.5	
remix	1044	522	255.1	7.8	
move	1044	523	245.2	7.7	

* Sample label 4,2 changed to 4,4 SLM 10/31/17 1228
→ NOT changed in XRF readout!

10/31 (#5) SLM

ID	TIME	RDG #	Pb	ERR	AN.TIME
LSA-SUT ~~4,4~~ 4,2*	(0,4) BULK	(4,4 in XRF readout)			
	1049	524	9076	51	15 sec
move	1050	525	8864	48	↓
flip	1051	526	7914	43	
move	1052	527	9072	49	
remix	1054	528	8537	46	
move	1055	529	7085	41	
LSA-SUT ~~4,4~~ 4,2	(8-12) BULK	(4,4 in XRF readout)			
	1105	530	6278	39	
move	1105	531	6410	41	
flip	1106	532	5884	39	
move	1107	533	5725	38	
remix	1108	534	3547	30	
move	1109	535	5912	39	
LSA-SUT ~~4,4~~ 4,2	(12-16) BULK	(4,4 in XRF readout)			
	1112	536	3637	29	
move	1113	537	2071	20	
flip	1114	538	2957	26	
move	1115	539	4339	33	
remix	1116	540	3976	31	
move	1117	541	4925	35	

10/31 #6 SLM

Forgot to change sample ID - XRF read says LSA-SUT 4,4 12-16

ID	TIME	RDG #	Pb	ERR	AN. TIME
LSA-SUT ~~16,4~~ 16,3	(0-4)	BULK	(16,4 in XRF readout)		
	1120	542	696	12.3	15 sec
move	1121	543	626.0	12.1	↓
flip	1122	544	752.5	13.3	
move	1123	545	882.9	13.7	
remix	1124	546	680.4	12.6	
move	1124	547	1649	20	
move	1125	548	709.4	12.2	
LSA-SUT ~~16,4~~ 16,3	(4-8)	BULK	(16,4 in XRF readout)		
	1130	549	454.7	10.2	
move	1131	550	342.0	8.8	
flip	1132	551	482.0	10.7	
move	1133	552	607.7	11.9	
remix	1134	553	342.1	8.8	
move	1135	554	591.5	11.5	
LSA-SUT ~~16,4~~ 16,3	(8-12)	BULK	(16,4 in XRF readout)		
	1138	555	22.11	3.0	
move	1139	556	31,50	3.18	
flip	1140	557	34.65	3.46	
move	1140	558	28.56	3.22	
remix	1141	559	33.03	3.42	
~~move~~					

10/31 (#7 SLM

ID	TIME	RPG #	Pb	ERR	AV. TIME
LSA - SUT	~~16,4~~ 16,3 (12 -16)	BULK	(16,4 in XRF readout)		
	1144	560	32.52	3.17	15 sec
move	1145	561	13.69	2.56	↓
flip.	1146	562	32.69	3.33	
move	11:47	563	30.02	3.18	
LSA SUT	~~4,4~~ 4,2 (4-8)		(4,4 in XRF readout)		
	1149	564	5503	38	
move	1150	565	5204	35	
flip	1151	566	4880	36	
move	1152	567	5085	36	
remix	1153	568	5859	41	
move	1154	569	5246	37	
LSA SUT	1,05 (0-6)		410-mesh	10/30/17	1600
	1157	570	498.7	11.6	
move	1157	571	529.6	11.9	
flip	1158	572	506.2	11.8	
move	1159	573	503.4	11.5	
remix	1200	574	622.6	12.7	
move	1200	575	502.7	11.3	

10/31 #8 SLM

ID	TIME	RDG #	Pb	ERR	AN TIME
LSA SUT 2, 2B (DMC) SU 2T, 2B (0-6) BULK 10/30/17 1549					
	1204	576	179.3	6.6	15 sec
move	1205	577	173.2	6.6	↓
flip	1205	578	172.5	6.6	
move	1207	579	176.3	6.8	
remix	1208	580	184.9	6.7	
move	1208	581	174.5	6.7	
remix	1210	582	179.0	6.6	
flip	1211	583	200.2	7.0	
move	1211	584	173.0	6.6	
remix	1212	585	195.1	7.0	
LSA SUT 1, 06 (0-6) 10/30/17 1650					
	1214	586	498.2	10.8	
move	1215	587	619.7	12.0	
flip	1216	588	563.7	11.4	
move	1217	589	594.4	11.7	
remix	1218	590	500.0	10.8	
	(591 - no sample)				
Pre-lunch controls					
SiO_2	1235	592	0.64	1.35	30 sec
JSAC 0462	1236	593	70.40	3.57 ✓	
RCRA	1237	594	477.5	8.5 ✓	
2711a	1238	595	1389	12 ✓	

10/31 #9 SLM

ID	TIME	RDG #	Pb	ERR	AN. TIME
shut down for lunch 1239 SLM					
back on @ 1345					
system check OK ✓					
SiO_2	1357	598	-1.07	1.27	30 sec
JSAC 0462	1358	599	77.65	3.73 ✓	30 sec
RERA	1359	600	471.6	8.3 ✓	↓
NIST 2711a	1411	601	1409	13 ✓	
		(602 - no sample)			
LSA SUHI, 1	12-16 BULK	1243			15 sec
	1420	603	6015	40	
move	1421	604	7154	46	
flip	1421	605	5982	40	
move	1422	606	6258	40	
remix	1423	607	5944	40	
LSA SUT 15, 3	(0-6)	410 MESH	10/31/17	1020	
	1426	608	~~378~~ 379.2	9.2	
move	1426	609	399.9	9.9	
flip	1427	610	results screen disappeared		
same pos.	1428	611	409.1	9.8	
move	1429	612	386.0	9.7	
remix	1430	613	394.0	9.7	

10/31 #10 SLM

ID	TIME	RDG #	PG	ERR	AV. TIME
LSA SUHI, 2 (16-20) BULK 1225					
	1433	614	1179	17	
move	1433	615	1182	17	
flip	1434	616	1188	18	
move	1435	617	1267	18	
remix	1436	618	1224	18	
LSA SUHI, 2 12-16 BULK 1226					
	1437	619	2826	27	
move	1438	620	2486	25	
flip	1439	621	2885	26	
move	1440	622	2763	27	
remix	1440	623	2850	26	
EBA DU-9 (0-6) <10 mesh 10/31 1203					
	1445	624	1057	16	
flip	1445	625	1274	17	
flip	1447	626	1016	16	
flip	1448	627	1487	19	
remix	1449	628	1179	17	

10/31 #11 SLM

Bag was PO 312861, ~~Not um~~ AG070CS

ID	TIME	RDG #	Pb	ERR	AN. TI
LSA SUT 9,2W (~~16~~ 20-24 DMC #18) BULK 10/30/17					
	1454	629	7.35	2.56	
move	1455	630	7.59	2.66	
flip	1456	631	6.05	2.47	
move	1457	632	9.17	2.66	
remix	1457	633	~~4~~ 3.71	2.45	
LSA SUT 1,07 (0-6) 410 mesh 10/30 1635					
	1501	634	220.9	7.3	
move	1501	635	244.5	7.7	
flip	1502	636	232.4	7.4	
move	1503	637	233.3	7.5	
remix	1504	638	~~239~~. 239.7	7.4	
LSA SUT 14,3 410 MESH (0-6) 10/31/17 0955					
	1506	639	184.0	6.8	
move	1507	640	153.7	6.4	
flip	1507	641	166.7	6.6	
move	1508	642	160.3	6.4	
remix	1509	643	189.5	7.0	
move	1510	644	201.6	7.3	
flip	1511	645	192.7	6.8	
move	1511	646	183.3	6.8	
remix	1512	647	198.7	7.0	

10/31 (#12) SLM

ID	TIME	RDG #	Pb	ERR	AV. TIME
LSA SUT 9,2W (8-12) BULK 10/30/17					15 sec
	1516	648	18.01	2.88	↓
move	1516	649	22.14	3.11	
flip	1517	650	25.15	3.20	
move	1518	651	20.64	3.08	
remix	1519	652	25.51	3.18	

~~ID~~ +

LSA SUT 9,2W (12-16) BULK 10/30/17				
	1522	653	8.80	2.61
move	1523	654	10.44	2.74
flip	1525	655	8.80	2.61
move	1526	656	9.55	2.66
remix	1527	657	10.18	2.63

*says BULK in XRF readout.	LSA SUT 9,2W (16-20) 10/30/17 <10 MESH*				
	1530	658	15.89	2.90	
	move	1531	659	11.81	2.75
	flip	1531	660	12.39	2.76
	move	1532	661	11.40	2.70
	remix	1533	662	15.82	2.87

10/31 #13 Ane/SLM

ID	TIME	RDG #	Pb	ERR	AN. TIME
LSA SU	9,3 (0-6)	<10 MESH	10/31/17	1035	15 sec
	1536	663	488.4	10.9	↓
move	1537	664	444.6	10.4	
flip	1537	665	339.5	10.1	
move	1538	666	419.1	10.1	
remix	1539	667	548.4	11.5	
move	1540	668	477.4	10.9	

LSA SUT-2	3,1 (0-6)	<10 MESH		
	1542	669	343.9	8.9
move	1543	670	321.3	8.7
flip	1544	671	323.2	8.6
move	1544	672	328.4	8.7
remix	1545	673	~~32~~ 316.5	8.5

EBA DU-3	(0-6)	<10 MESH	10/31	1057
	1553	674	367.5	9.3
move	1554	~~33~~ 675	336.2	8.8
flip	1557	676	289.3	8.3
move	1557	677	314.5	8.8
remix	1559	678	320.1	8.7

10/31 #14 DMC/GLM

ID	TIME	RDG #	Pb	ERR	AN. TIME
SiO_2	1603	679	0.34	2.03	15 sec
JSAC 0462	1604	680	68.27	5.62 ✓	↓
RERA	1606	681	466.5	13.0 ✓	
2711a	1608	682	1370	19 ✓	
		(683 no sample)			

LSA SUT 4,I3 (0-6) BULK 10/30/17 1605 15 sec

	1626	684	3435	29
move	1627	685	3098	28
flip	1628	686	3918	32
move	1628	687	3361	28
remix	1629	688	3101	27

LSA SUT 10,02B 0-6 BULK

	1634	689	53.18	4.08
move	1636	690	59.92	4.35
flip	1636	691	64.25	4.39
move	1637	692	54.05	4.17
remix	1638	693	56.07	4.20

LSA SUT 13,6 0-6 Bulk

~~move~~	1642	694	88.4	4.9
move	1643	695	78.8	4.7
flip	1644	696	78.5	4.7
move	1644	697	104.5	5.2
remix	1645	698	68.8	4.5

(over)

10/31 #15 DMC

Cont'd from previous page
LSA SUT 13,6 0-6 bulk

	moveback	1650	699	80.8	4.7
30 sec	SiO_2	1652	700	nd<2 (0.13, 1.33)	
	0462	1652	701	74.3	3.7
	RCRA	1655	702	470.8	8.3
	2711a	1657	703	1365	12
15 sec	0462	1700	704	71.9	5.5
	2711a	1701	705	1338	18
	RCRA (T11B)	1706	707	453.8	12.5
	RCRA (ERTs)	1704	706	483.4	12.6
	RCRA (T11B) no move				
	~~2711a (ERTs)~~	1707	708	467.7	12.7
	RCRA (T11B) move	1708	709	456.4	12.5
	" no move	1708	710	464.4	12.7
	" "	1709	711	461.1	12.6

download all current data; [redacted] erase data
shut down XRF @ 1712 DMC

Wed
Nov 1, 2017 #1 Dane / SLM

Niton on @ 0800
System check 0840 ok SLM

ID	TIME	READ#	Pb	ERR	An TIME
SiO_2	0845	3	0.95	1.33	30 sec
JSAC 0462	0846	4	68.88	3.51 ✓	
RCRA	0848	5	469.0	8.3 ✓	
~~271a~~ RCRA	0849	6	VOID - WRONG NAME		
271a	0850	7	1381	12 ✓	

LSA SUT 9,2 South (4-8) BULK 10/30/17

	0858	8	495.9	10.8	15 sec
	0859	9	504.0	11.1	↓
move	0900	10	485.0	10.9	
flip	0900	11	494.1	10.8	
move	0901	12	522.5	10.6	
remix	0902	13	500.5	10.9	

(14 - NO SAMPLE)

LSA SUT 4,1 B BULK 10/31 1713 JP

	0922	15	181.6	6.5
move	0923	16	135.5	6.0
flip	0923	17	153.2	6.3
move	0926	18	172.5	6.7
remix	0927	19	170.3	6.6

Wed, 11/1/2017 DMC / SLM #2

ID	TIME	RDG #	Pb	ERR	AN TIME
LSA SUT 5,1B JP 10/31 1705 BULK					15 sec
	0929	20	118.0	5.5	↓
move	0930	21	117.9	5.5	
flip	0931	22	110.3	5.5	
move	0932	23	115.6	5.4	
remix	0932	24	134.5	5.9	
move	0933	25	134.6	6.0	
LSA SUT 6,1B 10/31 BULK 10/31 1723					
	0941	26	141.0	6.0	
move	0942	27	154.0	6.2	
flip	0943	28	159.9	6.3	
move	0944	29	147.0	6.0	
remix	0945	30	152.8	6.3	
LSA SUT 9,2W (0-4) BULK 10/30/17					
	0949	31	3972	30	
move	0950	32	3745	29	
flip	0951	33	3798	29	
move	0952	34	3279	26	
remix	0953	35	3552	28	

11/1/2017 #3 Dmc/SLm

ID	TIME	RDG#	PB	ERR	ANTIME
LSA SUT 9,2 S (12-16) 10/30/17					
	0956	36	190.3	6.9	
move	0957	37	214.0	7.0	
flip	0958	38	215.9	7.2	
move	0959	39	231.7	7.2	
remix	1000	40	239.1	7.5	
move	1001	41	226.7	7.3	
flip	1002	42	222.9	7.3	
LSA SUT 9,2 N BULK (8-12) 10/30/17					
	1006	~~4571~~ 43	~~32~~ 4571	32	
move	1007	44	5247	34	
flip	1007	45	4464	32	
move	1008	46	4724	32	
remix	1009	47	4657	32	
LSA SUT 4,2 (16-20) BULK					
	1012	48	6501	40	
move	1013	49	5392	37	
flip	1013	50	6248	40	
move	1014	51	6937	43	
remix	1015	52	6054	40	

Wed, 11/1/17 #4 SLM

ID	TIME	RDG#	P6	ERR	AN TIME
LSA	SUT	9,2 N (12-16)	10/30/17	BULK	15 sec
	1018	53	4118	31	↓
move	1019	54	3540	28	
flip	1020	55	3422	28	
move	1020	56	3454	28	
remix	1022	57	2771	24	
move	~~3420~~ 1023	58	3420	29	

LSA	SUT	9,2 S (8-12)	10/30/17	
	1025	59	109.1	5.4
~~102~~ move	1026	60	128.3	5.7
flip	1027	61	109.1	5.5
move	1027	62	120.6	5.7
remix	1028	63	126.8	6.0

LSA	SUT	~~16,4~~ 16,3	(16-20)	BULK	(labeled correctly as 16,3 in XRF)
	1043	64	25.35	3.26	
move	1044	65	20.69	3.02	
flip	1045	66	16.94	2.99	
move	1047	67	20.59	3.11	
remixed	1048	68	21.41	3.08	
move	1049	69	25.58	3.34	

2/1/2017 #5 SLM

ID	TIME	RDG #	Pb	ERR	ANTIME
SiO_2	1057	70	2.13	2.17	15 sec
~~JSAC 0462~~ SiO_2		71	-VOID- didn't Δ name		
JSAC 0462	1059	72	74	5.61	
RCRA	1100	73	463.2	13.0	
2711a	1101	74	1380	19	

LSA SUT 9,2 N (4-8) BULK				10/30/17	15 sec
	1220	75	5316	35	
move	1221	76	4891	32	
flip	1222	77	4455	32	
move	1223	78	4795	33	
remix	1224	79	4765	34	
move	1225	80	4613	33	

14,2 DMC 11/1 1654

LSA SUT ~~14,3~~ (12-16) BULK				
	1227	81	35.56	3.77
move	1227	82	26.64	3.51
flip	1228	83	27.44	3.56
move	1229	84	26.48	3.49
remix	1230	85	35.51	3.86
move	1230	86	25.38	3.50

11/1/2017 #6 SLM/DMC

ID	TIME	RDG#	P6	ERR	An. time
LSA	SUT 14,2	(16-20)	BULK		15 sec
	1233	87	17.57	3.24	↓
move	1234	88	27.77	3.61	
flip	1235	89	23.24	3.45	
move	1235	90	12.25	3.06	
remix	1236	91	38.38	4.01	
move	1237	92	29.19	3.59	
LSA	SUT 16,3	(20-24)	BULK		
	1240	93	20.52	3.23	
move	1241	94	29.77	3.67	
flip	1241	95	20.23	3.33	
move	1242	96	27.42	3.54	
remix	1243	97	21.11	3.37	
move	1244	98	16.95	3.09	
SiO_2	1246	99	-0.38	1.32	30 sec
JSAC	0462 1246	100	79.21	3.76 ✓	
RCRA	1247	101	465.1	8.2 ✓	
2711a	1249	102	1400	13 ✓	

shut down for lunch @ 1240

11/1/2017 (#7) DMC
Wed

start @ 2pm system ck ok

ID	time	Rdg #	Pb	err	readtime
S_1O_2	1442	105	-0.77	1.33	30 sec
0462	1443	106	71.6	3.6	
RCRA (T11B)	1444	107	470.8	8.4	
2711a	1445	108	1376	12	
RCRA (T11B)	1446	109	460.7	8.3	
ERT RCRA	1448	110	471.4	8.4	
ERT RCRA (moved)	1449	111	488.3	8.5	
RCRA (T11B)	1450	112	470.5	8.4	
LSA SUT 4,2 core (20-24) bulk	1452	113	4773	36	15 sec
flip	1453	114	4543	35	
no move	1454	115	4596	35	
moved	1455	116	6714	44	
remix	1455	117	5252	38	
moved	1456	118	4551	34	
EBA SUT 1,2 (0-6) <10-mesh	1458	119	405.5	10.0	
moved	1459	120	359.8	9.5	
flip bag	1459	121	397.6	10.2	
moved	1500	122	377.2	9.8	

(black soi)

11/1/17 (#8) Dave

ID	time	Rdg #	Pb	err	read time
LSA SUT 14.2 core (4-8) bulk	1503	123	279.0	8.8	15 sec
move	1504	124	262.1	8.4	
flip bag	1505	125	292.4	8.9	
move	1505	126	390.7	10.4	
remix bag	1506	127	251.5	8.5	
moved	1507	128	242.0	8.4	
LSA SUT 14.2 core (8-12) bulk	1509	129	121.7	6.1	
moved	1509	130	178.1	7.2	
flip bag	1510	131	176.3	7.2	
moved	1511	132	149.2	6.6	
remix bag	1512	133	150.3	6.7	
moved	1512	134	142.3	6.6	
flip bag	1513	135	168.0	7.0	
moved	1513	136	243.9	8.5	← ignore non rep.
moved	1514	137	124.7	6.2	
LSA SUT 9.2 S core (0-4) bulk	1516	138	644.9	12.1	
moved	1517	139	637.6	12.3	
flip	1517	140	652.0	12.5	
moved	1518	141	674.5	12.6	

11/1/17 #9 Ame

ID	time	Rdg#	Pb	cm	Bsec
EBA - DU7	1520	142	196.9	6.6	
(0-6) <10-mesh moved	1521	143	203.7	6.8	
flip bag	1521	144	160.6	6.2	
moved	1523	145	163.7	6.1	
remix bag	1524	146	174.0	6.2	
moved	1527	147	178.5	6.4	
flip bag	1528	148	193.5	6.7	
moved	1529	149	173.5	6.2	
flip bag	1530	150	179.2	6.2	
moved	1330	151	183.8	6.4	
	1533	152-void			
LSA SUT 6-7, 1A		153	103.5	5.4	
bulk (0-6) flip	1534	154	126.6	5.9	
flip	1535	155	137.6	6.0	
moved	1536	156	113.8	5.6	
	1538				
LSA SUT 6-7, 1B		157	147.0	6.2	
bulk (0-6) moved	1539	158	180.4	6.7	
moved	1540	159	129.8	5.9	
flipped	1540	160	116.5	5.6	
moved	1540	161	115.4	5.6	
remix bag	1541	162	132.5	6.0	
moved	1541	163	118.8	5.7	
flip bag	1542	164	116.9	5.6	

11/1/17
Wed

#10 DMC

ID	time	Rdg #	Pb	err	readings
LSA SUT 14,2 core (20-24) bulk	1547	165	163.9	7.0	15 sec
moved	1547	166	129.9	6.5	
flip	1548	167	166.5	6.9	
move	1548	168	158.2	6.9	
remix	1549	169	150.1	6.8	
move	1550	170	180.4	7.3	
move	1550	171	186.7	7.3	
remix bag ~~LSA SUT 7,2~~	1551	172	158.2	6.9	non representative sample
move	1552	173	161.5	7.0	

Note: This 20-24 result is higher than the 2 higher segments. Probably this high 20-24 result is due to pick up of 0-4 ~~7-8~~ material on the bottom of the slot (which has conc >300)

LSA SUT ~~7,2~~ 7,4 core (20-24) bulk	1555	174	4331	36	DMC/per matt
moved	1506	175	4544	36	
flip	1603	176	4197	34	
moved	1604	~~176~~ 177	4674	37	
LSA SUT 9,2 W (4-8) bulk	1606	178	32.8	3.6	DMC
moved	1607	~~178~~ 179	35.5	3.7	
flip	1607	~~179~~ 180	36.8	3.7	
moved	1608	~~180~~ 181	24.1	3.3	
LSA SUT 9,2 S (20-24) bulk	1609	182	125.0	5.7	
moved	1610	183	140.9	6.1	
flip	1611	184	126.0	5.8	
moved	1612	185	129.0	6.0	

11/1/17 #11 DMC

ID	time	Rdg #	Pb	em	15 sec
LSA SUT 9.2 N (20-24) bulk	1613	186	191.2	7.2	
moved	1614	187	144.9	6.2	
flip bag	1614	188	168.3	6.7	
moved	1615	189	298.0	8.8	
remix	1616	190	207.5	7.6	
moved	1616	191	182.4	7.0	
reshmaushin non-read area	1622	192	206.0	7.4	
moved	1624	193	193.3	7.1	
flip bag	1625	194	179.2	7.0	
moved	1625	195	190.6	7.1	
LSA SUT 14.2 (12-16) bulk	1652	196	33.6	3.82	
moved	1653	197	20.1	3.35	

reck from analysis on 11/1 page #5

confirmed that LSA SUT 14.3 (12-16) on 11/1 page #5 is 14.2 (12-16) here

7.4 dmc/per Jim R.

LSA SUT ~~7.2~~ (4-8) core bulk

	1706	198	146.2K	0.5K
move	1709	199	157.0K	0.5K
flip	1710	200	149.4K	0.5K
move	1710	201	162.3K	0.5K

11/1/2017 #12 DMC
Wed

LSA SUT 9,2 5 (16-20) bulk core

	1713 →	202	240.7	2.8	15 sec
	moved 1714	203	251.3	7.9	
	flip 1714	204	254.9	8.1	
	moved 1715	205	243.0	2.7	

LSA SUT 7,4 (16-20) core bulk

	1720	206	20.8K	0.1K	
	moved 1721	207	17.8K	0.1K	
	flip 1722	208	19.3K	0.1K	
	moved 1722	209	25.0K	0.1K	
15 sec data collection	SiO_2 1725	210	0.78	2.07	15 sec
	0462 1725	211	71.6	5.8	
	RCRA (J11B) 1726	212	456	13.0	
	" " no move 1726	213	464	12.7	
	" " move 1727	214	474.5	12.4	
	2711a 1728	215	1360	19	
	RCRA (ERT) 1729	216	482.6	13.4	
	" " no move 1730	217	490.1	13.0	
	move 1730	218	509.9	13.1	
30 sec LCSs	JSAC 0462 1731	219	70.9	3.7	30 sec
	2711a 1732	220	1319	12	
	RCRA (T11B) 1733	221	468.0	8.5	
	" " no move 1734	222	475.0	8.4	

XRF off @ 1735 DMC

11/2/2017 (#1 DMC
Thurs.

Niton on @0800, but need to sieve bunch of samples. sys ck @ 0942

ID	time	Rdg#	Pb	Sn	
			nd <2		
SiO_2	0945	225	-1.93	1.27	30sec
0462	0946	226	~~76.~~ 77.0	3.7	
RCRA(T11B)	0948	227	478.0	8.5	
RCRA(ERT)	0949	228	482.2	8.3	
2711a	0950	229-void 230	1382	12	
EBA ~~LSA~~ DU-10A (06) <10mesh	0954	231 ~~321~~	~~321 (30sec)~~ ~~5.8~~	5.8 (15 sec)	30sec
moved	0955	232	323.5	9.1	15sec
flip bag	0956	233	320.9	9.0	
moved	0956	234	343.0	8.9	
remix bag	0958	235	334.8	8.8	
moved	0958	236	324.7	8.6	
EBA DU-10B (0-6) <10mesh	0959	237	326.3	9.0	
moved	1000	238	348.3	9.1	
flip bag	1001	239	340.0	9.0	
moved	1001	240	349.2	9.1	
remix bag	1002	241	374.4	9.3	
moved	1003	242	380.2	9.4	
flip bag	1004	243	356.5	9.2	
moved	1004	244	369.1	9.5	

Thurs
11/2/2017 Dmc #2

ID	time	Rdg #	Pb	err	run time
LSA SUT 16-1,3 (0-6) <10 mesh	1007	245	1942	21	15.0ec
moved	1008	246	1959	21	
flip bag	1008	247	2101	22	
moved	1009	248	1881	20	
		249-Void			
EBA SUT 1,1 <10 mesh (0-6)	1011	250	345.2	9.0	
moved	1012	251	370.8	9.5	
flip bag	1012	252	383.4	9.8	
moved	1013	253	375.4	9.9	
~~EBA~~ LSA SUT 16-1,2 (0-6) <10 mesh	1015	254	711.3	12.6	
moved	1016	255	666.5	11.9	
flip bag	1017	256	714.0	12.6	
moved	1017	257	679.0	12.1	
EBA SUT 1,4 (0-6) <10 mesh	1020	258	358.8	9.6	
moved	1020	259	373.3	9.6	
flip bag	1021	260	382.7	9.7	
moved	1021	261	335.4	9.1	
EBA SUT 1,5 (0-6) <10 mesh	1023	262	562.4	11.9	
moved	1024	263	487.1	11.0	
flip bag	1025	264	384.9	9.9	
moved	1025	265	414.9	10.5	

mislabeled as "SUT" in XRF file should have been "SUT"

Thurs 11/2 DMC #3

ID	time	Rdg#	Pb	err	15sec
EBA DU-13	1052	267	180.0	6.9	
(0-6) <10 mesh moved	1053	268	153.5	6.2	
flip bag	1054	269	159.7	6.4	
moved	1054	270	145.2	6.2	
remix bag	1055	271	165.0	6.4	
moved	1056	272	166.1	6.5	
D462 (15 sec)	1057	273	62.1	5.5	
RCRA (TIIB)	1058	274-void 275 ~~475.4~~	475.4	12.8	
RCRA (ERT)	1059	276	482.8	12.8	
2711a	1100	277	1357	19	
LSA SUT 7,4	1102	278	95.9K	0.3K	
(8-12) bulk moved	1102	279	88.9K	0.3K	
flip bag	1103	280	81.8K	0.3K	
moved	1104	281	83.9K	0.3K	
LSA-SUT 9,2N	1108	282	275.7	8.5	
(16-20) bulk moved	1109	283	249.8	8.0	
flip bag	1110	284	290.3	8.5	
moved	1110	285	271.7	8.3	

11/3
J. Rice - Sample # changed to LSA SOT 14,2.5 to preserve chronology of collection.

T. Turo 11/2/17 DMC GMT #4

ID	time	Rdg #	Pb	±2σ	LS sec
LSA SOT 14,2.5 (0-6) Bulk	1128	286	1261	18	
(Move)	1130	287	1419	19	
(Flip)	1144	288	~~14~~ 1510	20	
(Move)	1145	289	1377	19	
LSA SOT 2-3,02 (0-6) Bulk	1156	290	324.7	9.0	
(Move)	1156	291	312.6	9.1	
(Flip)	1158	292	375.0	9.6	
(Move)	1159	293	393.0	10.0	
(Mix & Flip)	1200	294	359.3	9.5	
(Move)	1202	295	352.3	9.3	
RCRA ERT	1210	296	475.0	13.0	15 sec
RCRA T11B	1211	297	457.8	12.6	
NIST 2711a	1212	298	1355	19	
JSAC 0462	1214	299	74.05	5.81	
SiO_2	1216	300	0.42	1.34	30 sec
RCRA ERT	1218	301	456.5	8.2	
RCRA T11B	1220	302	482.8	8.5	
NIST 2711a	1221	303	1386	13	
JSAC 0462	1228	304	71.25	3.63	
Shut down XRF @ 1229					

11/22/17 DMC note: system ck not performed*

Thursday 11/2/17 MJ #5

ID	Time	Rdg#	Pb	Err	
SiO_2	1516	305	-1.23	1.29	30s
RCRA ERT	1518	306	481.2	8.6	
RCRA T11B	1520	307	472.9	8.5	
NIST 2711a	1522	308	1378	12	
JSAC 0462	1533	309	71.28	3.67	
LSA SUT 3,03 (0-6)	1555	310	Void → Need to set time to 155		
	1556	311	218.7	7.1	155
(Move)	1557	312	233.3	7.6	
(Flip)	1605	313	234.5	7.6	
(Move)	1606	314	220.1	7.3	
LSA SUT 16,04 (0-6)	1609	315	34.04	3.50	
(Move)	1610	316	27.80	3.32	
(Flip)	1610	317	37.82	3.67	
(Move)	1611	318	41.05	3.70	
(Mix & Flip)	1612	319	35.12	3.64	
(Move)	1613	320	39.82	3.66	
LSA SUT 14,04 (0-6) <10mesh	1615	321	66.09	4.46	
(Move)	1616	322	71.83	4.64	
(Flip)	1617	323	65.09	4.44	
(Move)	1619	324	74.72	4.57	

Thursday 11/2/17 DMC (#6)

ID	time	Reg#	Pb	arm	15 sec
EBA DU-10A (6-24) <10-mesh	1624	325	123.6	5.8	
moved	1625	326	131.3	6.0	
flip bag	1625	327	128.5	6.1	
moved	1626	328	133.6	6.0	
EBA DU-11 (0-6) <10 mesh	1628	329	124.4	5.7	
moved	1629	330	146.3	6.3	
flip bag	1630	331	167.0	6.5	
moved	1630	332	155.3	6.3	
remix bag	1631	333	155.6	6.4	
moved	1632	334	165.6	6.4	
flip bag	1633	335	133.9	5.9	
moved	1634	336	166.7	6.6	
EBA SUT 1,3 (6-24) <10 mesh soil black but not oily	1635	337	148.7	6.3	
moved	1637	338	138.3	6.2	
flip bag	1638	339	110.5	5.6	
moved	1639	340	114.6	5.5	
remix bag	1640	341	158.6	6.4	
moved	1640	342	155.7	6.5	
moved	1641	343	360.4	9.5	largest result partially effect ignore
remix bag	1642	344	142.7	6.2	
moved	1642	345	162.8	6.5	
moved	1643	346	135.4	6.0	

Thurs. 11/2/17 Dne (#7)

EBA DU-10 C	1646	347-void 348	130.0	5.8	15 sec
(6-24) <10 mesh moved	1646	349	166.3	6.6	
moved	1647	350	139.7	6.2	
flip bag	1648	351	152.3	6.6	
moved	1648	352	108.9	5.6	
remix bag	1649	353	119.7	5.8	
moved	1650	354	121.0	5.9	
flip bag	1651	355	158.7	6.6	
moved	1652	356	158.0	6.5	
EBA-DU6	1653	357	252.8	8.1	
(0-6) <10 mesh moved	1654	358	251.5	7.9	
flip bag	1655	359	273.3	8.4	
move	1655	360	253.2	8.0	
15 sec 0462	1657	361	74.9	5.7	
RCRA-TIIB verified	1701	362	495.1	13.1	
RCRA-ERT verified	1702	363	467.0	12.4	
2711a	1703	364	137.7	19	
EBA DU3 (6-24) ~ only 10 increments	1730	365	162.1	6.2	
(Move)	1731	366	171.8	6.6	
(Flip)	1732	367	220.4	7.6	
(Move)	1733	368	205.4	7.6	

Thurs 11/2/17 MJ (#8)

ID		Time	Idx #	lb	Esc	
EBA DU 3	(6-24)	1735	369	735.7	7.5	16 s
(move)		1736	370	1885	6.9	
(flip)		1737	371	175.1	6.5	
(move)		1738	372	207.9	7.2	
(mix & flip)		1740	373	281.0	8.1	
(move)		1742	374	185.4	6.7	
LSA SUT	11,03 0-6	1747	375	980.0	15.6	
(move)		1749	376	980.7	15.7	
(flip)		1750	377	1116	17	
(move)		1751	378	989.7	15.8	
EBA DU 10 C	(0-6)	1755	379	362.5	9.6	
<10 mol						
(Move)		1756	380	386.3	10.1	
(Flip)		1757	381	385.7	10.4	
(Move)		1758	382	340.6	9.3	
LSA SUT	15,4 (0-6)	1802	383	348.0	9.3	
<10 mol						
(Move)		1804	384	510.2	11.4	
(Flip)		1805	385	354.3	9.6	
(Move)		1805	386	380.2	10.0	
(Mix & Flip)		1807	387	446.1	10.5	
(Move)		1808	388	364.7	9.8	
(Move)		1809	389	589.1	12.1	

Thurs 11/2/17 MJ #9

ID	Time	Rdg #	Pb	Err	
SiO_2	1813	390	1.10	1.38	30s
RCRA ERT	1814	391	471.1	8.5	
RCRA T11B	1815	392	484.5	8.5	
NIST 2711a	1816	393	1340	12	
JSAC-0462	1817	394	VOID- cup off center		
JSAC 0462	1818	395	82.44	3.83	
JSAC 0462	1823	396	74.00	3.62	

Shut down XRF at 1824

Friday 11/3/2017 #1 DMC/MJ

11/22/2017 DMC Note: system ck not performed *

start up XRF @ 0855.

ID	Time	Rdg #	Pb	Err	
SiO_2	0908	397	0.05	1.32	30s
RCRA ERT	0911	398	480.6	8.5	
RCRA T11B	0912	399	472.1	8.4	
NIST 2711a	0913	400	1389	12	
JSAC 0462	0914	401	71.68	3.58	
EBA DU 8 (0-6)	0919	402	325.7	8.9	15s
(Move)	0919	403	290.9	8.5	
(Flip)	0920	404	322.3	9.0	
(Move)	0921	405	422.9	10.1	
(Move & Flip)	0922	406	269.1	8.3	
(Move)	0923	407	286.1	8.3	
EBA DU 12 (0-6)	0925	408	109.8	5.6	15s
(Move)	0930	409	101.2	5.5	
(Flip)	0931	410	92.73	5.22	
(Move)	0932	411	105.9	5.4	
LSA SUT 7,1 (6-24)	0935	412	102.4	5.4	15s
(Move)	0936	413	100.9	5.4	
(Flip)	0937	414	104.3	5.5	
(Move)	0938	415	107.7	5.5	

Friday 11/3/17 #2 MJ

ID	Time	Rdg#	Pb	Er	
LSA SUT 16-1,1 ~~[illegible]~~ #10 mesh	0944	416	534.6	11.4	155
(Move)	0945	417	577.3	11.4	
(Flip)	0945	418	538.3	11.8	
(Move)	0946	419	549.0	11.6	
LSA SUT 7,4 (12-16) Bulk	0950	420	26.0k	0.1K	
(Move)	0951	421	24.1K	0.1K	
(Flip)	0951	422	26.3K	0.1K	
(Move)	0952	423	24.6K	0.1K	
EBA SUT 1,3 (0-6) #10 mesh	0955	424	397.1	9.7	
(Move)	0955	425	413.1	10.0	
(Flip)	0956	426	416.1	9.8	
(Move)	0957	427	378.0	9.8	
LSA ~~EBA~~ SUT 11,3B (0-6) #10 mesh	1000	428	40.8K	0.3K	
(Move)	1002	429	41.5K	0.3K	
(Flip)	1003	430	50.6K	0.3K	
(Move)	1004	431	45.9K	0.3K	
(Mx & Flip)	1005	432	41.4K	0.3K	
(Move)	1006	433	41.3K	0.3K	

Friday 11/3/17 (#3) MJ

ID	Time	Rec #	Pb	Ex	
LSA SUT 8, 02B 0-6 Bulk	1010	434	88.94	4.70	15s
(Move)	1011	435	101.4	5.1	
(Flip)	1012	436	102.2	5.2	
(Move)	1013	437	96.63	5.04	
LSA SUT 17, I 2B (0-6) Bulk	1018	438	59.11	4.23	
(Move)	1019	439	59.75	4.26	
(Flip)	1020	440	57.40	4.04	
(Move)	1021	441	55.55	4.12	
* Mislabeled should be LSA T11 → LSA ~~SUT~~ T11 Test 2 0-3 Bulk	1023	442	172.4	6.6	
(Move)	1025	443	171.9	6.6	
(Flip)	1026	444	209.8	7.2	
(Move)	1027	445	160.8	6.6	
LSA T11 Test 1 0-3 Bulk	1028	446	181.7	6.8	
(Move)	1029	447	200.0	7.0	
(Flip)	1029	448	189.5	7.0	
(Move)	1030	449	172.2	7.0	
EBA DU 4 (0-6) >10 Mesh	1034	450	170.4	6.6	
(Move)	1035	451	176.7	6.8	
(Flip)	1036	452	199.8	7.2	
(Move)	1037	453	199.2	7.1	

Friday 11/3/17 #4 MJ

ID	Time	Rds#	Pb	Ex	
EBA DU-10B (6-24) <10mesh	1040	454	114.6	5.6	1.5s
(Move)	1041	455	99.37	5.35	
(Flip)	1041	456	92.81	5.14	
(Move)	1043	457	186.2	7.0	
(Mix & Flip)	1044	458	106.6	5.5	
(Move)	1045	459	130.3	5.9	
		460 — VOID			
RCRA ERT	1047	461	491.4	13.2	15s
Tattered RCRA T11B	1049	462	480.0	12.5	
Change Operator to Jim Rice @ 1050					
NIST 2711A	1052	463	1374	19	15 sec
JSAC 462	1055	464	90.31	5.93	1
dense & clayey LSA SUT 8-9, 1 Bulk (0-6)	1100	465	324.2	8.8	
Move	1103	466	302.2	8.6	
Flip	1104	467	~~408.6~~ 404.6	10.2	
Move	1106	468	314.1	8.8	
Changed					
LSA SUT 16, ~~4~~ 5 OR (6-24) Bulk	1117	469	671.7	12.6	
Move	1118	470	875.6	14.4	
Flip	1123	471	603.9	12.0	
Move	1124	472	784.1	13.7	

Friday 11/3/17 (#5) MJ

ID	Time	Rds #	Pb	Fe	
SiO_2	1207	473	1.62	1.36	30s
RCRA ERT	1209	474	482.5	8.4	
— VOID mislabel		475			
RCRA T11B	1211	476	481.7	8.5	
~~JSAC~~ NIST 2711a	1212	477	1355	12	
JSAC 0462	1212	478	68.70	3.63	

Turned off XRF: 1218 for lunch

11/22/2017 Note: system cb not performed *

Turned on XRF : 1335

Trice operator @ 1350

RCRA T11B	1356	479.	479.9	8.3	30 sec
RCRA ERT	1357	480	477.5	8.4	
JSAC 0462	1359	481	69.29	3.68	
NIST 2711a	1400	482	1363	12	
SiO_2	1401	483	-1.27	1.27	

change read time to 15 seconds

LSA Sot 9, 1B 0-6	1408	484	~~4.67~~ 85.53	4.67	15 sec
Move	1410	485	84.06	4.76	
Flip	1411	486	88.28	5.62	
Move	1412	487	93.44	5.02	

Friday 11/3/17 #6 MJ

ID	Time	Rd#	Pb	Err	Real Time
LSA DUT 4-5 (0-6)	1418	488	76.29	4.77	15 sec
bulk move	1419	489	99.18	5.18	
flip	1421	490	78.33	4.74	
Move	1422	491	68.13	4.48	
Move	1423	492	76.28	4.69	
flip	1424	493	76.50	4.74	
LSA SUT 11,4 B (0-6) <10mesh					
	1636	494	159.4	6.6	
move	1637	495	106.5	5.7	
flip	1639	496	105.2	5.5	
Move	1640	497	101.1	5.3	
LSA SUT (6-24) <10 Mesh 4,I3	1657	~~25 ms~~ 498 ms 499	258.9	8.1	
Move	1715	~~282.3 ms~~	282.3	8.6	
Flip	1716	500	244.2	8.1	
Move	1720	501	397.5	10.3	
Mix & Flip	1722	502	186.1	7.1	
Move	1725	503	282.8	8.6	
RCRA EAT	~~480~~ 1728	504	480.0	13.0	
RCRA T11B	1730	505	482.8	12.9	
NIST 2711a	1730	506	1395	19	
*Mislabeled on → JASC 0462	1733	507	63.95	5.33	

Friday 11/3/12 MJ (#7)

ID	Time	Rdg #	Pb	Error	
SiO_2	~~1736~~ MJ 1736	508	-1.59	1.26	30s
RCRA ERT	1737	509	500.5	8.5	
RCRA T11B	1738	510	481.4	8.5	
NIST 2711a	1740	511	1385	12	
JSAC 0462	1741	512	70.67	3.72	

Shut down Niton XRF @ 1743

Saturday 11/4/17 (#1) PZ

11/22/2017 Dmc Note: System ck not performed *

0820 start up XRF

ID	Time	Rdg #	Pb	Error	RunTime
SiO2	0832	513	1.14	1.35	30sec
RCRA ERT	0835	514	489.9	8.4	
RCRA TIIB	0836	515	466.6	8.3	
NIST 2711A	0838	516	1356	12	
ISAL 0462	0840	517	74.03	3.66	

EBA DU14 11/3 1126
(0-6) <10mesh

	0846	518	205.5	6.6	15 sec
mix	0847	519	152.7	6.0	
move	0848	520	161.2	6.2	
mix	0849	521	185.7	6.8	
move	0850	522	182.0	6.5	
move	0850	523	175.4	6.5	
	0851	524	183.9	6.6	

LSA SOT 11,4A 11/3 1010
(0-6) <10mesh

	0854	525	60.24	4.4
move	0855	526	49.37	4.17
mix	0856	527	48.01	4.07
move	0857	528	51.20	4.22

11/4 #2 Sat

ID	Time	RIX#	Pb	Err	Run Time
LSA DUT 5-6B					30
<100 (0-6)	0912	529	166.7	6.7	
11/2 1510	0913	530	156.6	6.4	
move	0914	531	160	6.5	
mix	0915	532	156	6.4	
move	0916	533	159.8	6.5	
mix	0917	534	148.9	6.2	
LSA SUT 2-3,03B					
(0-6) Bulk					
11/3 10:09 move	0921	535	1319	18	
	0922	536	1171	17	
mix	0924	537	1190	18	
move	0925	538	1282	18	
mix	0926	539	1368	18	
move	0927	540	1588	20	

1154 shut down for lunch / no time to run LCS's.

1328 Turn Xe1 On ~~11/22/2007 System ck not performed * Dmc~~

SPO2	1339	541	-0.13	1.30	30
RCRA ERT	1341	542	487	8.4	
RCRA TIB	1342	543	485.1		
NIST 27HA	1343	544	1359	12.0	
SSAC 0467	1345	545	74.12	3.67	
LSA SUT 3,04A					15
(0-6) Bulk 11/3 10:26	1348	546	55.28	4.12	
move	1349	547	61.44	4.38	
mix	1349	548	49.39	3.99	
move	1350	549	59.68	4.31	
LSA SUT 3,04B					
(0-6) <10 11/3 10:30	1351	550	58.66	4.37	
move	1352	551	60.56	4.35	
mix	1354	552	55.79	4.24	
	1354	553	57.52	4.28	

Sat 11/4 (#3)

ID	Time	RDG #	Pb	Error	run
LSA DUT, 6-7	mole 1359	554	170	6.7	15
	1400	555	178.6	6.7	
(0-6) <10	mix 1401	556	195.9	7	
	mole 1402	557	159.4	6.4	
11/2 15:30	mix 1403	558	174.5	6.8	
	mol 1404	559	174.5	6.8	
	mix 1405	560	162.7	6.5	
	mole 1405	561	163.3	6.6	
	mix 1406	562	157.8	6.5	
	mole 1407	563	189.9	6.9	
LSA DUT 5-6 A					
<10 11/2 1458 (0-6)	1412	564	213.5	7.4	
	mole 1413	565	230.6	7.5	
	mix 1414	566	220.1	7.3	
	mol 1415	567	203.0	7.2	
	mix 1419	568	209.1	7.1	
	mole 1419	569	255.0	7.9	
	mix 1420	570	237.3	7.6	
LSA DUT 5-6 C	1425	571	157.9	6.3	
0-6 <10 11/2	mole 1425	572	176.1	6.6	
15:20	mix 1426	573	193.2	6.9	
	mol 1427	574	164.3	6.4	
	mix 1428	575	189.9	6.9	
	mol 1430	576	157.2	6.3	
	1431	577	174.4	6.7	
		578 – misfire			
LSA SUT 14.2 core					
(0-4) 10/31 BIK	mole 1534	579	1690	21	
	1535	580	1412	20	
	mix 1535	581	1554	20	
	mole 1536	582	1670	21	
	mix 1537	583	1358	19	
	mole 1538	584	1316	19	
LSA SUT 9.2 CON DMC 11/8 core					
(0-4) 10/30 BIK	mo 1541	585	3380	27	
	1543	586	3578	28	
	mix 1545	587	3342	28	
	mol 1545	588	3564	27	
	mix 1546	589	3646	28	

Sat 11/4 PM #4

ID	Time	Rdg #		Pb	Err	RunTime
LSA SUT 14,5 (6-24) <10 Mesh		~~1648~~ ~~590~~ 1648	590	459.9	10.4	~~30s~~ 15s
(Move)		1649	591	403.2	10.2	
Flip		1650	592	414.3	10.4	
Move		1651	593	397.6	10.2	
LSA SUT 2-3, 03A (0-6) <10 Mesh		1656	594	1725	22	
Move		1658	595	1901	23	
Flip		1659	596	1608	21	
Move		1700	597	1670	21	
EBA DU 16 (0-6) <10 mesh		1702	598	410.0	10.4	
Move		1704	599	406.1	10.3	
Flip		1704	600	388.8	9.8	
Move		1705	601	338.9	9.3	
Flip & Mix		1706	602	385.1	10.2	
Move		1707	603	385.7	9.8	
EBA DU 1 (6-24) <10 mesh		1710	604	36.13	3.64	
Move		1710	605	40.37	3.80	
Flip		1711	606	35.98	3.57	
Move		1712	607	28.92	3.39	

Sat 11/4 MJ #5

ID	Time	Rdg#	Pb	Fe	
EBA DU 2 (6-24) <10 Mesh	1718	608	47.24	4.06	15s
→ Mark	1719	609	41.89	3.96	
Flip	1721	610	49.76	4.05	
Mark	1722	611	47.69	4.13	
SiO_2	1804 1806	602	1.56	1.37	
RCRA ERT	~~1808~~	603	474.6	8.3	
RCRA T11B	1807	604	453.6	8.3	
RCRA T11B	1808	605	476.3	8.4	
~~JSAC~~ DIST 2711a	1810	606	132.7	12	
— Load orang std — V07D —		607			
JSAC 0462	1812	608	76.61	3.74	

Turn off XRF @ 1813

Monday 11/6/2017 (II) DMC

XRF turned on @ 0658; system ck @ 0716

SiO_2	0720	#621	nd<2 -2.09 (1.27)		30sec
JSAC 0462	0721	622	74.45	3.71	
RCRA (T11B)	0722	623	486.7	8.3	
NIST 2711a	0724	624	1373	12	
RCRA (ERT)	0725	625	461.9	8.1	

EBA DU-6	0728	626	3410	3.53	15sec
(6-24) <10-mesh moved	0729	627	153.5	6.3	aberrant result
flip bag	0729	628	42.2	3.76	
moved	0731	629	69.08	4.54	
remix bag	0732	630	41.59	3.79	
moved	0737	631	28.89	3.39	
flip bag	0738	632	39.72	3.80	
moved	0738	633	40.14	3.76	

→ EBA DU-4	0754	634	70.75	4.73
(6-24) <10-mesh moved	0755	635	63.26	4.58
flip bag	0755	636	67.87	4.76
moved	0756	637	68.6	4.75

→ LSA SUT 11.2	0800	638	3103	29
(6-24) <10 mesh moved	0801	639	2696	27
flip bag	0802	640	2777	27

Mon 11/6 #2

LSA SUT 11,2	0803	641	3231	29	15sec
Cont'd remix	0804	642	2630	26	
moved	0804	643	2740	27	
2nd sieve bag	0805	644	2684	26	
(Wpn bag) moved	0805	645	2795	27	
flip bag	0806	646	2674	26	
moved	0807	647	2795	28	
(process 4 samples)					
LSA SUT 7,1					
→ (6-24) <10 mesh	0929	648	768.9	13.5	
moved	0930	649	725.4	13.0	
flip bag	0931	650	839.0	14.0	
moved	0932	651	763.0	13.2	
LSA DUT 8-9C	0933	652	429.6	10.2	
(0-6) <10 mesh moved	0934	653	421.8	10.1	
flip bag	0935	654	569.1	11.5	
moved	0936	655	434.6	10.2	
		~~656 void~~			
LSA DUT 8-9A	0938	657	291.4	8.4	
(0-6) <10-mesh moved	0939	658	303.3	8.7	
flip bag	0940	659	288.2	8.5	
moved	0940	660	263.3	8.1	
remix bag	0941	661	300.3	8.6	

Mon 11/6/2017 (#3) DMC

EBA DU15		0944	662	131	6.1	15 sec
(0-6) <10 mesh						
	moved	0945	663	167.3	6.6	
	flip bag	0946	664	145.7	6.3	
	moved	0946	665	153.4	6.4	
	remix bag	0947	666	145.1	6.3	
	moved	0948	667	155.9	6.5	
	moved	0949	668	157.8	6.5	
LSA DUT 8-9B		0951	669	285.0	8.4	
(0-6) <10 mesh						
	moved	0951	670	343.3	9.1	
	flip bag	0952	671	265.6	8.1	
	moved	0953	672	309.9	8.7	
	remix bag	0954	673	343.6	9.1	
	moved	0955	674	285.7	8.5	
15 sec	SiO_2		675	-1.86	1.94	
	0462		676	73.51	5.66	
	RCRA-TIB		677	472.9	12.5	
	RCRA-ERT		678	488.5	13.3	
	2711a		679	1340	19	
30 sec	0462	1007	680	74.85	3.69	30 sec
	RCRA-TIB	1009	681	476.3	8.5	
	RCRA ERT	1010	682	479.6	8.3	
	2711a	1011	683	1349	12	

11/6/17 (#4) DMC

(RST) Road Sample Test 1	1101	684	775.0	13.2	15sec
(.0-3) <10 mesh moved	1102	~~58~~ 685	585.2	11.8	
flip bag	1103	686	609.8	12.3	
moved	1104	687	616.0	12.4	
remix bag	1105	688	654.9	12.7	
moved	1106	689	608.9	12.4	
EBA DU-7 (Coke)	1109	690	45.18	3.07	
(0-6) black rocky stuff chunks of coke like material	1110	691	74.24	3.58	
[different chunks read each shot]	1111	692	119.4	4.8	
	1113	693	54.7	3.2	
EBA DU-7 (Coke) after pulverized	1117	694	95.7	4.1	
move	1118	695	129.6	4.7	
flip	1119	696	101.0	4.1	
move	1119	697	106.1	4.3	
EBA DU-10B	1124	698	129.4	6.2	
(6-24) <120-mesh remix	1127	699	126.3	6.1	
take 6 "	1128	~~69~~ 700	128.7	6.2	
readings to of SD "	1129	701	123.2	6.2	
to <10-mesh "	1132	702	147.0	6.5	
flip	1132	703	124.4	5.9	

11/6/2017 #5 Dmc

EBA DU-10B (6-24) <80 mesh		1135	704	112.3	5.6	15sec
	flip bag	1136	705	101.0	5.4	
	remix	1137	706	98.24	5.4	
	flip	1138	707	101.4	5.3	
	remix	1138	708	90.5	5.2	
	flip	1139	709	95.5	5.3	
LSA DUT 5-6B (0-6) <80 mesh		1144	710	144.0	6.2	
	flip	1145	711	153.1	6.5	
	remix	1146	712	147.2	6.3	
	flip	1146	713	149.6	6.2	
	remix	1147	714	150.3	6.3	
	flip	1148	715	145.1	6.2	
~~LSA DUT 5-6B (0-6) <120 mesh~~						
30sec	0462	1151	716	77.8	3.7	30sec
	RCRA (T11B)	1152	717	463.2	8.4	
	RCRA (ERT)	1153	718	483.8	8.4	
	2711a	1154	719	1354	12	

shut down XRF @ 11:55

11/6/17 (#6) DMC

XRF on @ 1320 system ck @ 1332

SiO_2	1334	722	-1.60	1.27	30 sec
0462	1335	723	73.2	3.7	
RCRA (T11B)	1336	724	463.6	8.3	
RCRA (ERT)	1337	725	492.7	8.4	
2711a	1338	726	1334	12	
0462	1339	727	76.3	5.7	15 sec
RCRA (T11B)	1340	728	478.0	13.1	
RCRA (ERT)	1341	729	475.0	13.3	
2711a	1342	730	1342	18	
repeat 2711a (30 sec)	1343	731	1361	12	30 sec
EBA DU5	1346	732	884.9	15.5	15 sec
(0-6) <120 mesh moved	1347	733	903.6	15.9	
flip bag	1348	734	832.1	15.0	
remix bag	1350	735	901.4	15.6	
moved	1351	736	912.3	15.7	
flip bag	1351	737	810.9	15.0	
EBA DU5	1353	738	701.2	13.4	
(0-6) <80-mesh moved	1354	739	674.4	13.3	
flip	1354	740	719.4	13.8	
moved	1355	741	722.1	14.4	
remix bag	1356	742	738.8	14.4	
moved	1356	743	692.3	14.1	

11/6/17 (#1) DMC

	LSA DUT 5-6B (0-6) <120mesh	1359	#744	188.2	7.2	15sec
	moved	1359	745	187.0	7.1	
	flip bag	1400	746 ~~476~~	186.9	7.2	
	moved	1401	747 ~~477~~	181.5	7.0	
	remix bag	1402	748 ~~478~~	195.5	7.2	
	moved	1402	749 ~~479~~ DMC	191.9	7.3	
15sec	SiO_2	1515	750	-0.84	2.00	
	0462	1516	751	73.15	5.66	
	RCRA (T11B)	1518	752	479.1	12.7	
	2711a	1519	753	1383	20	
30sec	~~0462~~ 2711a	1520	754	1343	12	30sec
	RCRA	1521	755	459.1↓	8.3	
	0462	1522	756	72.4	3.7	
	RCRA (rept)	1523	757	453.5↓	8.2	
	RCRA (don't move cup)	1524	758	475.7	8.3	
	EBA DU-17 (0-6) <10mesh	1527	759	381.0	9.5	15sec
	moved	1527	760	357.5	9.4	
	flip bag	1528	761	439.8	10.3	
	moved	1530	762	443.6	10.4	
	remix bag	1532	763	399.5	9.9	
	moved	1532	764	384.2	9.8	

11/6/17 #8

Road ST-6	1615	#765	420.0	10.5	15 Dec
(0-3) <10 mesh moved	1615	766	396.8	10.0	
flip bag	1616	767	375.5	9.9	
moved	1616	768	470.7	10.9	
remix bag	1617	769	360.0	9.7	
moved	1617	770	430.0	10.5	
RST-3	1619	771	257.9	8.1	
(0-3) <10-mesh moved	1620	772	297.8	8.7	
flip bag	1620	773	259.7	8.0	
moved	1621	774	246.4	7.9	
remix bag	1622	775	308.1	9.0	
moved	1622	776	270.5	8.3	
RST-5	1624	777	585.3	12.0	
(0-3) <10 mesh moved	1624	778	435.5	10.5	
flip bag	1625	779	424.6	10.2	
moved	1626	780	384.1	9.7	
remix bag	1627	781	393.4	9.8	
moved	1627	782	404.8	10.0	

Mon 11/6/2017 (#9) DMC

	RST-2	1629	783	662.6	12.9	15 sec
	(0-3) <10mesh moved	1630	784	671.8	13.0	
	flip bag	1631	785	710.6	13.3	
	moved	1631	786	689.0	13.1	
	remix bag	1632	787	658.3	12.8	
	moved	1633	788	647.9	12.6	
	RST-7	1636	789	1728	21	
	(0-3) <10mesh moved	1637	790	1693	21	
	flip bag	1637	791	1488	19	
	moved	1638	792	1709	21	
	remix bag	1639	793	1643	20	
	moved	1639	794	1649	20	
15 sec	SiO_2	1641	795	-0.04	2.04	
	0462	1642	796	69.23	5.63	
	RCRA	1642	797	456.3	12.7	
	2711a	1643	798	1336	18	
30 sec	0462	1644	799	76.2	3.7	30 sec
	RCRA	1645	800	465.7	8.4	
	2711a	1646	801	1369	13	

XRF off @ sundown - 4:47 pm download data

Donna M Cary

Tues
11/7/2017 (#1) DMC

XRF turned on @ 0650; system ck @ 0707
erased all previous data after storing in other
places (on XRF laptop; on a thumb drive (blue one)
on desktop of my personal computer, and on work
external drive.

ID	time	Rdg#	Pb	err	acq. time
SiO_2	0714	#1	0.06	1.33	30 sec
0462	0717	2	75.9	3.7	
RCRA	0718	3	450.8↓	8.2	
RCRA rept-no move	0719	4	468.5 (ok)	8.2	
RCRA " " #1	0720	5	462.2	8.2	
" " " #2	0721	6	473.6	8.4	
" " " #3	0723	7	453.8	8.3	
" " " #4	0724	8	466.9	8.2	
" " #5	0724	9	459.4	8.2	
" " #6	0725	10	457.6	8.1	
" " #7	0726	11	451.5	8.2	
" " #8	0726	12	467.9	8.3	
" " #9	0727	13	465.1	8.4	
" " #10/#1	0728	14	467.1	8.4	
RCRA moved #2	0729	15	471.4	8.4	
" " #3	0729	16	470.0	8.3	
" " #4	0730	17	473.5	8.5	
" " #5	0731	18	469.2	8.4	
" " #6	0732	19	467.5	8.2	

precision test
back-to back no move cup

precision test
back + back - move cup

Tues 11/7/17 DMC (#2)

ID	time	Rdg#	Pb	cm	acq. time
RCRA mond #7	0733	20	445.2	8.1	30 sec
precision test " " #8	0734	21	462.8	8.3	
" " #9	0735	22	472.4	8.4	
" " #10	0735	23	468.7	8.4	
2711a	0737	24	1383	12	
RST 8	0739	25	32.2	3.4	15 sec
(0-3) <10 mesh moved	0740	26	34.1	3.5	
flip bag	0741	27	33.1	3.5	
moved	0741	28	31.8	3.5	
remix bag	0743	29	31.7	3.5	
EBA SUT 1,1	0745	30	109.2	5.6	
(6-24) <10 mesh moved	0745	31	117.9	5.8	
flip bag	0746	32	89.6	5.2	
moved	0747	33	152.0	6.4	
remix bag	0748	34	147.2	6.3	
moved	0749	35	108.2	5.6	
flip bag	0749	36	155.5	6.7	
move	0750	37	125.9	6.1	
move	0751	38	106.8	5.6	

Tues 11/7/17 (#3)

	RST 4	0755	39	167.1	6.7	15 sec
	(0-3) <10mesh moved	0758	40	205.6	7.4	
	moved	0758	41	185.0	6.9	
	flip bag	0759	42	181.0	6.9	
	moved	0800	43	192.2	~~7.0~~ 7.1	
	remix bag	0801	44	212.1	7.5	
	moved	0803	45	215.2	7.5	
15 sec	SiO_2	0811	46	-1.58	1.94	15 sec
	0462	0812	47	63.3 ↓	5.5	
	0462 no more rept	0813	48	68.4	5.4	
	0462 rept moved	0813	49	70.65	5.4	
	RCRA #1	0814	50	469.9	12.9	
	RCRA no more #2	0815	51	486.5	12.9	
	" " " #3	0815	52	484.1	13.1	
	" " " #4	0815	53	450.1	12.4	
	" " " #5	0816	54	499.4	13.0	
	" " #6	0816	55	479.2	13.1	
	" " #7	0817	56	460.5	12.5	
	" " #8	0817	57	453.0	12.2	
	" " #9	0818	58	485.5	13.1	
	" " #10	0818	59	451.4	12.3	
	" " #11	0819	60	472.5	13.1	
	" " #12	0819	61	468.0	12.6	

#1 moved

11/7/17 #4 Dpo

15sec	RCRA move #2 between rdgs	0820	#62	471.4	12.7	15sec
	" " #3	0821	63	450.6	12.6	
	" " #4	0822	64	493.6	12.8	
	" " #5	0822	65	462.2	13.0	
	" " #6	0823	66	496.8	12.9	
	" " #7	0823	67	466.7	12.5	
	" " #8	0824	68	461.0	12.7	
	" " #9	0824	69	488.8	12.9	
	" " #10	0825	70	482.9	13.2	
	" " #11	0825	71	483.0	12.9	
	" " #12/#1	0826	72	445.9	12.4	
	no move - ck low rdg - spot on random #2	0826	73	452.8	12.7	
	" " #3	0827	74	493.0	13.0	
	" " #4	0828	75	447.6	12.6	
	" " #5	0828	76	455.2	12.5	
	" " #6	0831	77	457.6	12.8	
	" " #7	0831	78	464.5	12.5	
	" " #8	0832	79	480.3	12.4	
	" " #9	0832	80	465.6	12.8	
	" " #10	0833	81	469.6	12.6	
	" " #11	0833	82	482.7	12.9	
	" " #12	0834	83	448.9	12.2	
2711a		0834	84	1359	19	
"	no move	0835	85	1328	19	
	"	0835	86	1320	19	
"	"	0836	87	1355	19	

evel RCRA variably

evel RCRA var.

11/7/17 (#5) [illegible]

			Pb	Cu	
~~FMPO~~					
RST -9	#1 0838	#88	31.6	3.4	15sec
(0-3) <10 mesh moved	#2 0839	89	20.3	3.0	
flip bag	#3 0839	90	24.5	3.2	
moved	#4 #1 0840	91	30.8	3.5	
no move bag	#2 0840	92	28.9	3.5	
" "	#3 0841	93	29.3	3.5	
" "	#4 0841	94	29.1	3.5	
last sample!					
15sec SiO_2	0844	95	-0.79	2.01	
0462	#1 0844	96	67.7	5.6	
no move	#2 0845	97	75.7	5.8	
"	#3 0845	98	69.1	5.6	
"	#4 0846	99	71.4	5.63	
"	#5 0846	100	68.7	5.55	
"	#6 0846	101	71.16	5.65	
"	#7 0847	102	70.6	5.6	
"	#8 0847	103	72.7	5.7	
"	#9 0848	104	75.9	5.8	
"	#10 0848	105	73.6	5.7	
RCRA	0849	106	457.2	12.8	
2711a	#1 0850	107	1394	19	
no move cup	#2 0850	108	1368	19	
"	#3 08	109	1334	19	

variability check

back to back no move 15sec

back to back no move 15sec

11/7/17 Dmc #6

variability ck

15 sec	2~~7~~11a (cont)	no move #4	0851	#110	1387	20	15 sec
	"	" #5	0852	111	1367	19	
	"	#6	0852	112	1370	20	
	"	#7	0852	113	1328	19	
	"	#8	0853	114	1368	19	
	"	#9	0853	115	1355	19	
	"	#10	0854	116	1367	19	
30 sec	0462	#1	0855	117	73.5	3.7	30 sec
back to back - no move 30 sec	" no move	#2	0855	118	67.6	3.6	
	" "	#3	0856	119	72.4	3.7	
	" "	#4	0857	120	72.5	3.7	
	" "	#5	0857	121	63.9	3.6	
	" "	#6	0858	122	77.6	3.7	
	" "	#7	0859	123	78.8	3.8	
	" "	#8	0859	124	67.8	3.6	
	" "	#9	0900	125	70.2	3.6	
	" "	#10/#1	0901	126	69.1	3.6	
back to back move bot. ridge 30 sec	0462 move bot. ridge	#2	0902	127	65.9	3.6	
	"	#3	0902	128	73.2	3.7	
	"	#4	0903	129	69.2	3.6	
	"	#5	0904	130	75.0	3.7	
	"	#6	0905	131	74.4	3.7	
	"	#7	0905	132	73.3	3.7	
	"	#8	0906	133	74.04	3.7	

11/7/17 Dme (#7)

		variability	cks	Pb	err	
0462 cont.	#9	0907	134	67.3	3.5	30 sec
	#10	0908	135	73.1	3.6	
RCRA		0909	136	475.1	8.3	
2711a	no move #1	0910	137	1401	13	
"	" #2	0911	138	1377	13	
"	" #3	0911	139	1393	13	
"	" #4	0912	140	1389	12	
"	" #5	0912	141	1368	12	
"	" #6	0913	142	1382	13	
"	" #7	0914	143	1369	13	
"	" #8	0915	144	1393	13	
"	" #9	0915	145	1381	13	
"	" #10/#1	0916	146	1395	13	
2711a	move bet. bdg #2	0917	147	1359	13	
"	" #3	0918	148	1407	13	
"	" #4	0918	149	1376	12	
"	" #5	0919	150	1378	13	
"	" #6	0920	151	1370	12	
"	" #7	0920	152	1371	12	
"	" #8	0921	153	1364	12	
"	" #9	0922	154	1388	13	
"	" #10	0923	155	1367	12	

back to back no move 30 sec

back-to-back move 30 sec

11/7/17 (#8)

run other CRMs @ 30 sec — 30 sec

2709a	0925	156	13.9	2.13
2710a	0926	157	5463	30
1646a	0927	158	9.65	1.83
USGS	0928	159	807.2	9.7
→ mislabeled as USGS CC580 (3-20-17)	0929	160	37.05	2.94
all these JSACs made 12/5/2016 → mislabeled as CC580 JSAC 0461	0930	161	22.96	2.40
0463	0933	162	143.3	4.8
0464	0934	163	284.1	6.7
0465	0937	164	576.5	9.5
0466	0939	165	1159	14
these JSACs made up 1/15/17 (ICF had) JSAC 0461	0941 - void - off center - 166	0942 167 →	26.0	2.47
" repeat (more cup)	0942	168	25.2	2.4
0462	0943	169	72.5	3.66
0463	0944	170	144.0	4.9
mislabeled @ 0463 0464	0946	171	279.6	6.7
0465	0953	172	572.9	9.6
0466	0954	173	1143	14
ICF's CC580 (3-20-17) (2)	0957	174	33.6	2.8
" moved	0958	175	30.3	2.7

some "fake" shots to show DEQ guy (Zach Paden) our process

11/7/17 (#9) DmC

BAC set made 12/5/16	change time to 120 sec for Hg			Pb	Sn	120 sec
	0462	1037	~~1038~~ 179	72.64	1.73	
	0465	1040	~~10~~ 180	588.3	4.6	
	0463	1045	181	153.1	2.4	
	0464	1048	182	285.6	3.2	
	0466	1051	183	1201	7	
	3/20/17 CC580 (1)	1054	184	34.2	1.32	
~~ISAC~~ set made 1/15/17	0462	1057	185	68.8	1.69	
	0463	1100	186	143.6	2.3	
IGF's set	0464	1102	187	294.5	3.2	
	0465	1106	188	588.8	4.6	
	0466	1108	189	1189	7	
	3/20/17 CC580 (2)	1111	190	32.0	1.3	
	SiO_2	1114	191	-0.18 nd<1 (0.62)		
30 sec	0462 (12/5/16) not 1-15-17	1117	192	69.3	3.65	30 sec
	RCRA	1118	193	477.3	8.4	
	2711a	1120	194	1372	12	

shut down XRF @ 1145
pack up materials for shipment back
clean up Lab trailer.
drive XRF boxes back to Tulsa to UPS store for shipment
back to hotel: 6:30pm