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March 10, 1997

MEMORANDUM

TO: Anita Cummings

FROM: Howard Finkel

SUBJECT: Final Revised Calculation of Treatment Standards Using Data Obtained From Rollins Environmental's Highway 36 Commercial Waste Treatment Facility and GNB's Frisco, Texas Waste Treatment Facility

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I followed the methodology presented in "Final Best Demonstrated Available Technology (BDAT) Background Document For Quality Assurance/Quality Control Procedures and Methodology," dated October 23, 1991 to evaluate the data obtained from both Rollins and GNB. Attachment 1 presents a summary of all the data without any data manipulation.

As the first step, I removed data that either (1) did not have both untreated (influent) and treated (effluent) characterization results, or (2) had effluent concentrations that were equal to, or greater than the influent concentrations.

In the second step, I used the Z-score test, as described in Attachment A-1 of the background document, to remove all values that fell outside of the -2.0 to +2.0 range. Based on the Z-score outlier test, I removed one antimony value, one arsenic value, one barium value, two cadmium values, two chromium values, two lead values, one nickel value, one selenium value, two silver values, and one thallium value.[1] Attachment 2 presents a summary of the Z-score analysis.

I then used the BDAT methodology to calculate variability factors and treatment standards. Specifically, I followed Appendix D - Variability Factor to estimate the daily

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[1] A second zinc value was removed because the [effluent] was more than 50 times higher than the next highest data point and, based on engineering judgement, suggested incomplete treatment.

maximum variability factor using both Rollins' and GNB's data. Following this procedure, I used equation [1], on page D-1 to calculate VF:

$$VF = \frac{C_{99}}{Mean}$$

Where:

$$C_{99} = EXP\ (y + 2.33 * Sy)$$

y	=	the mean of the logtransformed (natural log) data
Sy	=	the standard deviation of the logtransformed (natural log) data
Mean	=	the average of the individual performance values.

As noted on page D-2 of the background document, "For residuals with concentrations that are not all below the detection limit, the 99th percentile and the mean can be estimated using equation 1". However, in cases where all of the data are reported as non-detects, I assumed that the actual values were the same as the detection limits to calculate the mean values, and then applied the standard VF of 2.8.

The treatment standard for each constituent was then calculated by taking the product of the variability factor and mean constituent concentration. Attachment 3 presents both the variability factors and treatment standards calculated using both Rollins' and GNB's data - minus the outliers, sets of data that did not have both untreated and treated data, and sets of data where the effluent was equal to or greater than the influent concentrations.

Attachment 4 presents a summary exhibit to document the final calculations and results for the combined data set (Rollins and GNB). Attachment 5 presents a comparison of the treatment standards for stabilization and HTMR. Attachment 6 presents the hand calculations conducted for chromium.

If you have any questions regarding the attached analyses, please call me at (703) 934-3656.

attachments

ATTACHMENT 1

TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- All Data

Samples	Waste	Antimony Raw	Antimony Treated	Antimony (LN)	Arsenic Raw	Arsenic Treated	Arsenic (LN)	Barium Raw	Barium Treated	Barium (LN)	Beryllium Raw	Beryllium Treated	Beryllium (LN)	Cadmium Raw	Cadmium Treated	Cadmium (LN)
1	C-825		0.0897	-2.4113		< 0.0304	-3.4933		0.1970	-1.6246		0.0014	-6.5713		< 0.0050	-5.2983
2	WP-11262	< 0.0255	< 0.0255	-3.6691	< 0.0304	< 0.0304	-3.4933	1.4000	0.3930	-0.9339				0.0118	< 0.0050	-5.2983
3	WP-10073	3.4800	0.0428	-3.1512	0.4420	< 0.0304	-3.4933	3.7200	0.3690	-0.9970				< 0.0500	< 0.0050	-5.2983
4	C-833		0.0270	-3.6119		< 0.0304	-3.4933		0.8000	-0.2231					< 0.0050	-5.2983
5	C-832		< 0.0255	-3.6691		< 0.0304	-3.4933		0.9620	-0.0387					< 0.0050	-5.2983
6	C-828		0.0421	-3.1677		< 0.0304	-3.4933		0.7320	-0.3120					< 0.0050	-5.2983
7	C-830		< 0.0255	-3.6691		< 0.0304	-3.4933		0.8420	-0.1720					< 0.0050	-5.2983
8	WP-10076	3.1300	0.0499	-2.9977	0.4340	< 0.0304	-3.4933	0.2470	0.3160	-1.1520				< 0.0500	< 0.0050	-5.2983
9	WP-10081	16.1000	0.0382	-3.2649	2.0300	< 0.0304	-3.4933	0.0764	0.2970	-1.2140				0.0979	< 0.0050	-5.2983
10	WP-7397	0.8100	0.0411	-3.1917	< 0.0304	< 0.0304	-3.4933	13.5000	0.6480	-0.4339				0.0081	< 0.0050	-5.2983
11	WP-6458				0.0482	0.0995	-2.3076	0.2280	0.2880	-1.2448				< 0.0050	< 0.0050	-5.2983
12	WP-1731				< 2.5200	< 0.0176	-4.0399	< 0.2400	0.4158	-0.8776				1220.00	0.0815	-2.5072
13	WP-12967	0.4210	0.0590	-2.8302	< 0.0300	0.0330	-3.4112	1.6700	1.1800	0.1655	< 0.0050	< 0.0050	-5.2983	1.7900	< 0.0050	-5.2983
14	WP-1772	0.5970	< 0.0200	-3.9120	< 0.0300	< 0.0300	-3.5066	0.2450	< 0.0100	-4.6052	0.0160	< 0.0050	-5.2983	4.1500	< 0.0050	-5.2983
15	WP-10078	0.2350	0.2870	-1.2483	0.4890	< 0.0304	-3.4933	0.1450	0.5430	-0.6106				0.4110	< 0.0050	-5.2983
16	WP-7124				1.3100	0.0534	-2.9299	2.3200	0.3650	-1.0079				< 0.0500	< 0.0050	-5.2983
17	C-473		0.0365	-3.3104		< 0.0304	-3.4933		0.3110	-1.1680					< 0.0050	-5.2983
18	WP-6795				0.5000	< 0.0304	-3.4933	0.2940	1.1500	0.1398				< 0.0500	< 0.0050	-5.2983
19	WP-6797				< 0.0304	< 0.0304	-3.4933	0.1960	0.7310	-0.3133				0.0154	< 0.0050	-5.2983
20	WP-6798				0.1310	< 0.0304	-3.4933	0.1840	0.6350	-0.4541				< 0.0050	< 0.0050	-5.2983
21	C-992		0.0690	-2.6736		< 0.0300	-3.5066		0.4630	-0.7700		< 0.0050	-5.2983		< 0.0050	-5.2983
22	WP-6458				0.0482	0.0995	-2.3076	0.2280	0.2880	-1.2448				< 0.0050	< 0.0050	-5.2983
23	WP-7393	0.8100	0.0411	-3.1917	< 0.0304	< 0.0304	-3.4933	13.5000	0.6480	-0.4339				0.0081	< 0.0050	-5.2983
24	WP-12651	< 3.0000	< 0.0300	-3.5066	< 3.0000	< 0.0300	-3.5066	< 1.0000	1.2600	0.2311	< 0.5000	< 0.0050	-5.2983	13.0000	< 0.0050	-5.2983
25	C-1454		0.0520	-2.9565		< 0.0300	-3.5066		0.3230	-1.1301		< 0.0050	-5.2983		0.0310	-3.4738
26	C-1448		1.8400	0.6098		0.4290	-0.8463		0.4450	-0.8097		< 0.0050	-5.2983		0.0090	-4.7105
27	C-1456		0.0460	-3.0791		< 0.0300	-3.5066		0.4170	-0.8747		< 0.0050	-5.2983		< 0.0050	-5.2983
28	C-1458		9.8900	2.2915		1.2000	0.1823		0.6300	-0.4620		< 0.0050	-5.2983		0.0120	-4.4228
29	WP-11504	< 0.0300	0.0490	-3.0159	0.1790	0.3090	-1.1744	0.0450	0.3630	-1.0134	< 0.0050	< 0.0050	-5.2983	0.0080	< 0.0050	-5.2983
30	WP-13041	< 0.0300	< 0.0300	-3.5066	0.5220	< 0.0300	-3.5066	0.0190	1.1500	0.1398	< 0.0050	< 0.0050	-5.2983	0.0100	< 0.0050	-5.2983
31	WP-14700	0.4340	0.0440	-3.1236	33.1000	0.3200	-1.1394	0.1100	0.7260	-0.3202	0.0080	< 0.0050	-5.2983	0.5080	< 0.0050	-5.2983
32	WP-6766				< 3.0400	0.0563	-2.8771	< 0.1400	0.8150	-0.2046				11.7000	< 0.0050	-5.2983
33	WP-8036				< 3.0400	< 0.0304	-3.4933	< 0.1400	0.9000	-0.1054				0.2390	< 0.0050	-5.2983
34	WP-7280				< 3.0400	< 0.0304	-3.4933	0.3200	0.7830	-0.2446				< 0.5000	< 0.0050	-5.2983
35	WP-6969				< 0.0304	0.0486	-3.0241	0.0739	0.3570	-1.0300	< 0.0050			0.3300	< 0.0050	-5.2983
36	WP-1672		< 0.0178	-4.0286	1.1000	< 0.0176	-4.0399	0.5800	0.4933	-0.7066	< 0.0050	< 0.0017	-6.3771	2.3000	< 0.0013	-6.6454
37	C-491		0.0496	-3.0038		< 0.0304	-3.4933		0.7800	-0.2485					< 0.0050	-5.2983
38	C-484		0.0587	-2.8353		0.3100	-1.1712		0.7020	-0.3538					< 0.0050	-5.2983
39	C-470		0.0476	-3.0449		0.0581	-2.8456		0.7980	-0.2256					< 0.0050	-5.2983
40	C-480		0.0407	-3.2015		0.4170	-0.8747		0.4610	-0.7744					< 0.0050	-5.2983
41	C-489		0.0482	-3.0324		0.2990	-1.2073		0.6520	-0.4277					< 0.0050	-5.2983
42	C-495		0.1170	-2.1456		0.4080	-0.8965		0.6910	-0.3696					< 0.0050	-5.2983
43	C-1002		0.0480	-3.0366		0.0320	-3.4420		0.2530	-1.3744		< 0.0050	-5.2983		< 0.0050	-5.2983
44	WP-12111	0.2440	< 0.0300	-3.5066	< 0.0300	0.0320	-3.4420	< 0.0100	0.5850	-0.5361	< 0.0050	< 0.0050	-5.2983	0.4230	< 0.0050	-5.2983
45	C-896		0.0360	-3.3242		< 0.0300	-3.5066		0.5350	-0.6255		< 0.0050	-5.2983		0.0090	-4.7105
46	C-906		0.0500	-2.9957		< 0.0300	-3.5066		0.5200	-0.6539		< 0.0050	-5.2983		< 0.0050	-5.2983
47	C-912		0.0350	-3.3524		0.0410	-3.1942		0.6130	-0.4894		< 0.0050	-5.2983		< 0.0050	-5.2983

TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- All Data

Samples	Waste	Antimony Raw	Antimony Treated	Antimony (LN)	Arsenic Raw	Arsenic Treated	Arsenic (LN)	Barium Raw	Barium Treated	Barium (LN)	Beryllium Raw	Beryllium Treated	Beryllium (LN)	Cadmium Raw	Cadmium Treated	Cadmium (LN)
48	C-918		0.6480	-0.4339		< 0.0300	-3.5066		0.6240	-0.4716		< 0.0050	-5.2983		< 0.0050	-5.2983
49	C-925		0.0460	-3.0791		< 0.0300	-3.5066		0.7610	-0.2731		< 0.0050	-5.2983		0.0050	-5.2983
50	C-935		0.0580	-2.8473		< 0.0300	-3.5066		0.7450	-0.2944		< 0.0050	-5.2983		< 0.0050	-5.2983
51	C-1198		0.0360	-3.3242		< 0.0300	-3.5066		0.8520	-0.1602		< 0.0050	-5.2983		< 0.0050	-5.2983
52	C-1203		0.0600	-2.8134		0.0300	-3.5066		0.9120	-0.0921		< 0.0050	-5.2983		< 0.0050	-5.2983
53	C-1281		0.0480	-3.0366		0.0370	-3.2968		0.4330	-0.8370		< 0.0050	-5.2983		< 0.0050	-5.2983
54	C-1299		0.0460	-3.0791		< 0.0300	-3.5066		0.6740	-0.3945		< 0.0050	-5.2983		0.0160	-4.1352
55	C-980		0.0340	-3.3814		< 0.0300	-3.5066		0.8300	-0.1863		< 0.0050	-5.2983		< 0.0050	-5.2983
56	R-1731	< 0.0200			0.1240			0.8280			< 0.0050			3200.00		
57	R-1731	< 0.0200			0.2080			0.8020			< 0.0050			4280.00		
58	R-1731	< 0.0255			< 0.0304			0.3440						0.2250		
59	R-1731				< 3.0400			0.3100						4090.00		
60	R-1731	< 2.5500			< 3.0400			0.2100						1680.00		
61	R-1731				< 0.0304			0.3890						3.6600		
62	R-1731	< 0.0255			0.2810			0.0237						3260.00		
63	GNB-1				0.1980	< 0.0050	-5.2983	10.2000	2.5000	0.9163				2.3200	< 0.0050	-5.2983
64	GNB-2				0.8110	< 0.0050	-5.2983	82.0000	8.4000	2.1282				0.0470	< 0.0050	-5.2983
65	GNB-3				0.4000	< 0.0050	-5.2983	24.1000	8.9000	2.1861				0.0400	< 0.0050	-5.2983
66	GNB-4				0.1850	< 0.0050	-5.2983	16.9000	2.4000	0.8755				1.0600	< 0.0050	-5.2983
67	GNB-5				0.1590	< 0.0050	-5.2983	13.4000	2.6000	0.9555				1.4600	< 0.0050	-5.2983
68	GNB-6				0.1480	< 0.0050	-5.2983	11.4000	2.6000	0.9555				1.2700	< 0.0050	-5.2983
	# of Obs:	19	44	44	39	61	61	39	61	61	11	26	26	39	61	61
	# of NDs:	9	8	44	17	41	61	5	1	61	9	25	26	8	54	61
	Minimum:	0.0200	0.0178	-4.0286	0.0300	0.0050	-5.2983	0.0100	0.0100	-4.6052	0.0050	0.0014	-6.5713	0.0050	0.0013	-6.6454
	Mean:	1.6836	0.3285	-2.8582	1.6377	0.0881	-3.2631	5.1676	1.0011	-0.4398	0.0513	0.0047	-5.3888	455.7899	0.0070	-5.1920
	Maximum:	16.1000	9.8900	2.2915	33.1000	1.2000	0.1823	82.0000	8.9000	2.1861	0.5000	0.0050	-5.2983	4280.0000	0.0815	-2.5072
	Std:	3.6887	1.5023	1.1445	5.2863	0.1800	1.1318	13.9120	1.5197	0.9043	0.1489	0.0009	0.3207	1171.1805	0.0104	0.5009

TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- All Data

		Chromium			Lead			Nickel			Selenium			Silver		
Samples	Waste	Raw	Treated	(LN)	Raw	Treated	(LN)	Raw	Treated	(LN)	Raw	Treated	(LN)	Raw	Treated	(LN)
1	C-825		0.4030	-0.9088		< 0.0296	-3.5200		< 0.0150	-4.1997		< 0.0384	-3.2597		< 0.0046	-5.3817
2	WP-11262	40.6000	2.0400	0.7129	< 0.0296	< 0.0296	-3.5200	0.0442	< 0.0150	-4.1997	< 0.0384	< 0.0384	-3.2597	< 0.0046	< 0.0046	-5.3817
3	WP-10073	284.0000	1.0100	0.0100	< 0.0296	< 0.0296	-3.5200	0.3630	< 0.0150	-4.1997	< 0.3840	< 0.0384	-3.2597	< 0.0910	< 0.0046	-5.3817
4	C-833		0.1250	-2.0794		< 0.0296	-3.5200		< 0.0150	-4.1997		< 0.0384	-3.2597		< 0.0046	-5.3817
5	C-832		0.6200	-0.4780		< 0.0296	-3.5200		< 0.0150	-4.1997		< 0.0384	-3.2597		< 0.0046	-5.3817
6	C-828		0.1570	-1.8515		< 0.0296	-3.5200		< 0.0150	-4.1997		< 0.0384	-3.2597		< 0.0046	-5.3817
7	C-830		0.1710	-1.7661		< 0.0296	-3.5200		< 0.0150	-4.1997		< 0.0384	-3.2597		< 0.0046	-5.3817
8	WP-10076	317.0000	1.4000	0.3365	< 0.2960	< 0.0296	-3.5200	0.6070	< 0.0150	-4.1997	< 0.3840	< 0.0384	-3.2597	< 0.0910	< 0.0046	-5.3817
9	WP-10081	1580.00	< 0.0028	-5.8781	< 0.2960	< 0.0296	-3.5200	3.0400	< 0.0150	-4.1997	< 0.3840	< 0.0384	-3.2597	< 0.0910	< 0.0046	-5.3817
10	WP-7397	0.0056	0.0939	-2.3655	50.7000	< 0.0296	-3.5200	0.2180	< 0.0150	-4.1997	< 0.3840	< 0.0384	-3.2597	< 0.0910	< 0.0046	-5.3817
11	WP-6458	< 0.0028	< 0.0028	-5.8781	0.2880	< 0.0296	-3.5200	0.0694	< 0.0150	-4.1997	0.0621	0.1290	-2.0479	< 0.0046	< 0.0046	-5.3817
12	WP-1731	< 0.6100	< 0.0057	-5.1673	13.0000	< 0.0217	-3.8304	< 8.8000	< 0.0880	-2.4304	< 2.7100	0.1164	-2.1507	< 5.7700	< 0.0577	-2.8525
13	WP-12967	< 0.0050	< 0.0050	-5.2983	390.0000	< 0.0300	-3.5066	0.1450	< 0.0100	-4.6052	< 0.0500	< 0.0500	-2.9957	< 0.0500	< 0.0500	-2.9957
14	WP-1772	0.0070	< 0.0050	-5.2983	114.0000	< 0.0300	-3.5066	0.2340	0.0500	-2.9957	< 0.0500	0.0610	-2.7969	< 0.0050	< 0.0050	-5.2983
15	WP-10078	0.6390	0.0987	-2.3157	2690.00	< 0.0296	-3.5200	0.0686	< 0.0150	-4.1997	< 0.0384	< 0.0384	-3.2597	< 0.0091	< 0.0046	-5.3817
16	WP-7124	< 0.0280	< 0.0028	-5.8781	900.0000	1.1400	0.1310	< 0.1500	< 0.0150	-4.1997	< 0.3840	0.1320	-2.0250	< 0.0910	< 0.0046	-5.3817
17	C-473		< 0.0028	-5.8781		< 0.0296	-3.5200		0.0401	-3.2164		< 0.0384	-3.2597		< 0.0046	-5.3817
18	WP-6795	0.0390	< 0.0028	-5.8781	4430.00	< 0.0296	-3.5200	0.1660	< 0.0150	-4.1997	< 0.3840	< 0.0384	-3.2597	< 0.0910	< 0.0046	-5.3817
19	WP-6797	< 0.0028	< 0.0028	-5.8781	77.2000	< 0.0296	-3.5200	< 0.0150	< 0.0150	-4.1997	< 0.0384	0.1090	-2.2164	< 0.0091	< 0.0046	-5.3817
20	WP-6798	< 0.0018	< 0.0028	-5.8781	8.6700	0.4400	-0.8210	< 0.0150	< 0.0150	-4.1997	< 0.0384	0.0669	-2.7046	< 0.0091	< 0.0046	-5.3817
21	C-992		0.0340	-3.3814		< 0.0300	-3.5066		< 0.0050	-5.2983		0.3090	-1.1744		< 0.0050	-5.2983
22	WP-6458	< 0.0028	< 0.0028	-5.8781	0.2880	< 0.0296	-3.5200	0.0694	< 0.0150	-4.1997	0.0621	0.1290	-2.0479	< 0.0046	< 0.0046	-5.3817
23	WP-7393	0.0056	0.0939	-2.3655	50.7000	< 0.0296	-3.5200	0.2180	< 0.0150	-4.1997	< 0.0384	< 0.0384	-3.2597	< 0.0091	< 0.0046	-5.3817
24	WP-12651	< 0.5000	0.0150	-4.1997	220.0000	0.3100	-1.1712	< 1.0000	< 0.0100	-4.6052	< 5.0000	< 0.0500	-2.9957	< 5.0000	< 0.0500	-2.9957
25	C-1454		< 0.0050	-5.2983		< 0.0300	-3.5066		0.0380	-3.2702		< 0.0500	-2.9957		< 0.0500	-2.9957
26	C-1448		< 0.0050	-5.2983		0.1900	-1.6607		< 0.0100	-4.6052		0.0630	-2.7646		< 0.0500	-2.9957
27	C-1456		0.0090	-4.7105		< 0.0300	-3.5066		< 0.0100	-4.6052		< 0.0500	-2.9957		< 0.0500	-2.9957
28	C-1458		< 0.0050	-5.2983		< 0.0300	-3.5066		0.0100	-4.6052		< 0.0500	-2.9957		< 0.0500	-2.9957
29	WP-11504	0.0100	< 0.0050	-5.2983	1400.00	0.4690	-0.7572	0.0900	0.0950	-2.3539	< 0.0500	< 0.0500	-2.9957	< 0.0050	< 0.0050	-5.2983
30	WP-13041	0.0110	< 0.0050	-5.2983	1900.00	1.0900	0.0862	0.1010	< 0.0100	-4.6052	< 0.0500	< 0.0500	-2.9957	< 0.0500	< 0.0500	-2.9957
31	WP-14700	< 0.0050	0.2320	-1.4610	0.0610	< 0.0300	-3.5066	0.0760	0.0080	-4.8283	< 0.0500	< 0.0500	-2.9957	< 0.0050	< 0.0050	-5.2983
32	WP-6766	< 0.2800	< 0.0028	-5.8781	338.0000	0.1490	-1.9038	< 1.5000	< 0.0150	-4.1997	< 3.8400	0.0756	-2.5823	< 0.9100	0.0090	-4.7105
33	WP-8036	< 0.0280	< 0.0028	-5.8781	783.0000	< 0.0296	-3.5200	< 0.1500	0.0347	-3.3610	< 0.3840	< 0.0384	-3.2597	< 0.0910	0.0079	-4.8409
34	WP-7280	< 0.2800	< 0.0028	-5.8781	1280.00	0.6450	-0.4385	< 1.5000	< 0.0150	-4.1997	< 3.8400	< 0.0384	-3.2597	< 0.4600	< 0.0046	-5.3817
35	WP-6969	0.0922	< 0.0028	-5.8781	18.8000	0.0377	-3.2781	2.2200	0.0951	-2.3528	0.1100	0.7070	-0.3467	< 0.0091	< 0.0046	-5.3817
36	WP-1672	0.0240	< 0.0057	-5.1673	3.8000	< 0.0217	-3.8304	1.0000	0.2810	-1.2694	0.5600	0.0697	-2.6636	< 0.0140	< 0.0577	-2.8525
37	C-491		< 0.0028	-5.8781		< 0.0065	-5.0360		< 0.0150	-4.1997		0.0484	-3.0283		< 0.0046	-5.3817
38	C-484		< 0.0028	-5.8781		< 0.0065	-5.0360		< 0.0150	-4.1997		0.0782	-2.5485		< 0.0046	-5.3817
39	C-470		0.0227	-3.7854		< 0.0100	-4.6052		< 0.0150	-4.1997		< 0.0384	-3.2597		< 0.0046	-5.3817
40	C-480		0.0573	-2.8595		< 0.0065	-5.0360		< 0.0150	-4.1997		0.0793	-2.5345		< 0.0046	-5.3817
41	C-489		0.0104	-4.5659		< 0.0065	-5.0360		< 0.0150	-4.1997		0.2220	-1.5051		< 0.0046	-5.3817
42	C-495		0.0046	-5.3817		< 0.0065	-5.0360		< 0.0150	-4.1997		0.1150	-2.1628		< 0.0046	-5.3817
43	C-1002		0.0800	-2.5257		< 0.0300	-3.5066		0.4230	-0.8604		0.0700	-2.6593		< 0.0050	-5.2983
44	WP-12111	< 0.0050	< 0.0050	-5.2983	246.0000	< 0.0300	-3.5066	0.0740	< 0.0100	-4.6052	< 0.0500	< 0.0500	-2.9957	< 0.0500	< 0.0500	-2.9957
45	C-896		< 0.0050	-5.2983		0.2180	-1.5233		< 0.0050	-5.2983		0.1830	-1.6983		< 0.0050	-5.2983
46	C-906		< 0.0050	-5.2983		3.0800	1.1249		0.0080	-4.8283		0.8100	-0.2107		< 0.0050	-5.2983
47	C-912		< 0.0050	-5.2983		0.5390	-0.6180		0.0100	-4.6052		0.1010	-2.2926		< 0.0050	-5.2983

TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- All Data

Samples	Waste	Chromium Raw	Chromium Treated	Chromium (LN)	Lead Raw	Lead Treated	Lead (LN)	Nickel Raw	Nickel Treated	Nickel (LN)	Selenium Raw	Selenium Treated	Selenium (LN)	Silver Raw	Silver Treated	Silver (LN)
48	C-918		1.6600	0.5068		0.1010	-2.2926		< 0.0050	-5.2983		0.2190	-1.5187		< 0.0050	-5.2983
49	C-925		< 0.0050	-5.2983		0.1040	-2.2634		< 0.0050	-5.2983		0.0520	-2.9565		< 0.0050	-5.2983
50	C-935		< 0.0050	-5.2983		0.0950	-2.3539		0.0110	-4.5099		< 0.0500	-2.9957		< 0.0050	-5.2983
51	C-1198		< 0.0050	-5.2983		0.0410	-3.1942		< 0.0100	-4.6052		0.0700	-2.6593		< 0.0050	-5.2983
52	C-1203		< 0.0050	-5.2983		< 0.0300	-3.5066		< 0.0100	-4.6052		0.0800	-2.5257		< 0.0050	-5.2983
53	C-1281		< 0.0050	-5.2983		< 0.0300	-3.5066		< 0.0100	-4.6052		< 0.0500	-2.9957		< 0.0500	-2.9957
54	C-1299		< 0.0050	-5.2983		0.0680	-2.6882		0.0100	-4.6052		< 0.0500	-2.9957		< 0.0500	-2.9957
55	C-980		< 0.0050	-5.2983		0.7220	-0.3257		< 0.0050	-5.2983		0.1230	-2.0956		< 0.0050	-5.2983
56	R-1731	0.1730			0.0750			0.1850			< 0.0500			< 0.0050		
57	R-1731	0.2150			1.3800			0.1970			< 0.0500			< 0.0050		
58	R-1731	0.0846			0.0415			< 0.0150			0.1320			< 0.0046		
59	R-1731	< 0.2800			< 2.9600			2.0800			< 3.8400			< 0.4600		
60	R-1731	< 0.2800			< 2.9600			< 1.5000			< 3.8400			< 0.4600		
61	R-1731	0.0037			0.1640			< 0.0150			< 0.0384			< 0.0046		
62	R-1731	0.1730			1670.00			0.2280			< 0.0384			< 0.0046		
63	GNB-1	< 0.0200	< 0.0200	-3.9120	874.0000	< 0.1000	-2.3026				0.1100	< 0.0500	-2.9957	< 0.0100	< 0.0100	-4.6052
64	GNB-2	0.7500	< 0.0200	-3.9120	5.0000	< 0.1000	-2.3026				< 0.0500	< 0.0500	-2.9957	< 0.0100	< 0.0100	-4.6052
65	GNB-3	0.2100	< 0.0200	-3.9120	< 0.1000	< 0.1000	-2.3026				< 0.0500	< 0.0500	-2.9957	< 0.0100	< 0.0100	-4.6052
66	GNB-4	< 0.0200	< 0.0200	-3.9120	282.0000	0.3000	-1.2040				0.1100	0.0500	-2.9957	< 0.0100	< 0.0100	-4.6052
67	GNB-5	< 0.0200	< 0.0200	-3.9120	215.0000	0.1000	-2.3026				0.1300	0.0600	-2.8134	< 0.0100	< 0.0100	-4.6052
68	GNB-6	< 0.0200	< 0.0200	-3.9120	898.0000	< 0.1000	-2.3026				0.1000	0.0900	-2.4079	< 0.0100	< 0.0100	-4.6052
	# of Obs:	39	61	61	39	61	61	33	55	55	39	61	61	39	61	61
	# of NDs:	19	40	61	7	41	61	11	41	55	30	32	61	39	59	61
	Minimum:	0.0018	0.0028	-5.8781	0.0296	0.0065	-5.0360	0.0150	0.0050	-5.2983	0.0384	0.0384	-3.2597	0.0046	0.0046	-5.3817
	Mean:	57.0880	0.1410	-4.2116	483.7651	0.1834	-2.8859	0.7925	0.0310	-4.1313	0.7155	0.0954	-2.6965	0.3595	0.0145	-4.7922
	Maximum:	1580.0000	2.0400	0.7129	4430.0000	3.0800	1.1249	8.8000	0.4230	-0.8604	5.0000	0.8100	-0.2107	5.7700	0.0577	-2.8525
	Std:	259.1531	0.3958	1.8874	906.8499	0.4467	1.3720	1.6286	0.0673	0.8851	1.3844	0.1338	0.6790	1.2007	0.0185	0.9397

TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- All Data

Samples	Waste	Thallium Raw	Thallium Treated	Thallium (LN)	Vanadium Raw	Vanadium Treated	Vanadium (LN)	Zinc Raw	Zinc Treated	Zinc (LN)	Mercury Raw	Mercury Treated	Mercury (LN)
1	C-825		< 0.0700	-2.6593		< 0.0041	-5.4968		< 0.0082	-4.8036		< 0.0080	-4.8283
2	WP-11262	< 0.1100	< 0.1100	-2.2073							< 0.0080		
3	WP-10073	< 1.1000	< 0.1100	-2.2073							< 0.0080		
4	C-833		< 0.1100	-2.2073								< 0.0080	-4.8283
5	C-832		< 0.1100	-2.2073								< 0.0080	-4.8283
6	C-828		< 0.1100	-2.2073								< 0.0080	-4.8283
7	C-830		< 0.1100	-2.2073								< 0.0080	-4.8283
8	WP-10076	< 1.1000	< 0.1100	-2.2073							< 0.0080		
9	WP-10081	< 1.1000	< 0.1100	-2.2073							< 0.0080		
10	WP-7397	< 0.0780	< 0.0780	-2.5510							< 0.0080		
11	WP-6458	0.1440	< 0.0780	-2.5510							< 0.0080		
12	WP-1731	< 7.8000	0.8137	-0.2062							< 0.0080		
13	WP-12967	< 0.0700	< 0.0700	-2.6593	< 0.0050	< 0.0050	-5.2983	44.2000	< 0.5000	-0.6931	< 0.0080		
14	WP-1772	0.0990	< 0.0500	-2.9957	< 0.0050	< 0.0050	-5.2983		< 0.0100	-4.6052	< 0.0080		
15	WP-10078	0.7140	< 0.1100	-2.2073							< 0.0080		
16	WP-7124	< 0.7800	< 0.0780	-2.5510							< 0.0080		
17	C-473		< 0.0780	-2.5510								< 0.0080	
18	WP-6795	< 0.7800	< 0.0780	-2.5510							< 0.0080		
19	WP-6797	< 0.0780	0.0851	-2.4639							< 0.0080		
20	WP-6798	< 0.0780	< 0.0780	-2.5510							< 0.0080		
21	C-992		< 0.0500	-2.9957		0.0210	-3.8632		0.0430	-3.1466		< 0.0080	-4.8283
22	WP-6458	0.1440	< 0.0780	-2.5510							< 0.0080		
23	WP-7393	< 0.0780	< 0.0780	-2.5510							< 0.0080		
24	WP-12651	< 7.0000	< 0.0700	-2.6593	< 0.0050	< 0.0050	-5.2983	3100.00	< 0.5000	-0.6931	< 0.0080		
25	C-1454		< 0.0700	-2.6593		0.0110	-4.5099		< 0.5000	-0.6931		< 0.0080	-4.8283
26	C-1448		< 0.0700	-2.6593		0.0120	-4.4228		< 0.5000	-0.6931		< 0.0080	-4.8283
27	C-1456		< 0.0700	-2.6593		0.0110	-4.5099		< 0.5000	-0.6931		< 0.0080	-4.8283
28	C-1458		< 0.0700	-2.6593		0.0120	-4.4228		< 0.5000	-0.6931		< 0.0080	-4.8283
29	WP-11504	< 0.0700	< 0.0700	-2.6593	< 0.0050	< 0.0050	-5.2983	0.2950	0.0630	-2.7646	0.0080		
30	WP-13041	< 0.0700	< 0.0700	-2.6593	< 0.0050	< 0.0050	-5.2983	1.2000	< 0.5000	-0.6931	< 0.0080		
31	WP-14700	0.0780	< 0.0500	-2.9957	0.0150	0.0310	-3.4738	3.1300	0.0320	-3.4420	< 0.0080		
32	WP-6766	< 7.8000	0.2260	-1.4872							0.0320		
33	WP-8036	< 0.7800	< 0.0780	-2.5510							< 0.0080		
34	WP-7280	< 7.8000	< 0.0780	-2.5510							< 0.0080		
35	WP-6969	< 0.0780	< 0.0780	-2.5510							< 0.0080		
36	WP-1672	0.7700	< 0.0780	-2.5510	< 3.0000	0.5661	-0.5690	170.0000	27.7400	3.3229	< 0.0200	< 0.0080	-4.8283
37	C-491		< 0.0780	-2.5510								< 0.0080	-4.8283
38	C-484		< 0.0780	-2.5510								< 0.0080	-4.8283
39	C-470		< 0.0780	-2.5510								< 0.0080	-4.8283
40	C-480		< 0.0780	-2.5510								< 0.0080	-4.8283
41	C-489		< 0.0780	-2.5510								< 0.0080	-4.8283
42	C-495		< 0.0780	-2.5510								0.0110	-4.5099
43	C-1002		< 0.0500	-2.9957		0.0800	-2.5257		0.0380	-3.2702		< 0.0080	-4.8283
44	WP-12111	< 0.0700	< 0.0700	-2.6593	< 0.0050	< 0.0050	-5.2983	2.2200	< 0.5000	-0.6931	< 0.0080		
45	C-896		< 0.0500	-2.9957		< 0.0050	-5.2983		0.1060	-2.2443		< 0.0080	-4.8283
46	C-906		< 0.0500	-2.9957		< 0.0050	-5.2983		1.0000	0.0000		< 0.0080	-4.8283
47	C-912		< 0.0500	-2.9957		< 0.0050	-5.2983		0.2870	-1.2483		< 0.0080	-4.8283

TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- All Data

Samples	Waste	Thallium Raw	Thallium Treated	Thallium (LN)	Vanadium Raw	Vanadium Treated	Vanadium (LN)	Zinc Raw	Zinc Treated	Zinc (LN)	Mercury Raw	Mercury Treated	Mercury (LN)
48	C-918		0.1280	-2.0557		0.0140	-4.2687		1.1100	0.1044		< 0.0080	-4.8283
49	C-925		< 0.0500	-2.9957		0.0080	-4.8283		0.3920	-0.9365		< 0.0080	-4.8283
50	C-935		< 0.0500	-2.9957		0.0050	-5.2983		0.0420	-3.1701		0.0120	-4.4228
51	C-1198		< 0.0700	-2.6593		< 0.0050	-5.2983		0.3240	-1.1270		< 0.0080	-4.8283
52	C-1203		< 0.0700	-2.6593		< 0.0050	-5.2983		0.2070	-1.5750		< 0.0080	-4.8283
53	C-1281		< 0.0700	-2.6593		< 0.0050	-5.2983		0.9200	-0.0834		< 0.0080	-4.8283
54	C-1299		< 0.0700	-2.6593		0.0060	-5.1160		< 0.5000	-0.6931		< 0.0080	-4.8283
55	C-980		< 0.0500	-2.9957		0.0060	-5.1160		1.2000	0.1823		< 0.0080	-4.8283
56	R-1731	4.7700			< 0.0050			430.0000			< 0.0080		
57	R-1731	3.4200			< 0.0050			257.0000			0.1050		
58	R-1731	< 0.1100									< 0.0080		
59	R-1731	< 7.8000									< 0.0080		
60	R-1731	< 7.8000									< 0.0080		
61	R-1731	< 0.0780									< 0.0080		
62	R-1731	5.7500									< 0.0080		
63	GNB-1										0.1100	< 0.0500	-2.9957
64	GNB-2										< 0.0020	< 0.0020	-6.2146
65	GNB-3										< 0.0020	< 0.0020	-6.2146
66	GNB-4										< 0.0020	< 0.0020	-6.2146
67	GNB-5										< 0.0020	< 0.0020	-6.2146
68	GNB-6										< 0.0020	< 0.0020	-6.2146
	# of Obs:	33	55	55	10	26	26	9	26	26	39	36	36
	# of NDs:	24	51	55	9	13	26	0	11	26	35	34	36
	Minimum:	0.0700	0.0500	-2.9957	0.0050	0.0041	-5.4968	0.2950	0.0082	-4.8036	0.0020	0.0020	-6.2146
	Mean:	2.0757	0.0932	-2.5306	0.3055	0.0326	-4.6923	445.3383	1.4624	-1.3479	0.0133	0.0085	-4.8157
	Maximum:	7.8000	0.8137	-0.2062	3.0000	0.5661	-0.5690	3100.0000	27.7400	3.3229	0.1100	0.0500	0.0000
	Std:	2.9855	0.1028	0.4317	0.9468	0.1099	1.0965	1006.6580	5.3706	1.7184	0.0227	0.0075	1.0218

ATTACHMENT 2

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Antimony Raw	Antimony Treated	Antimony (LN)	Z-Test	Outlier? (Yes)	Arsenic Raw	Arsenic Treated	Arsenic (LN)	Z-Test	Outlier? (Yes)
1	C-825										
2	WP-11262										
3	WP-10073	3.4800	0.0428	-3.1512	0.3812		0.4420	< 0.0304	-3.4933	0.3736	
4	C-833										
5	C-832										
6	C-828										
7	C-830										
8	WP-10076	3.1300	0.0499	-2.9977	0.8837		0.4340	< 0.0304	-3.4933	0.3736	
9	WP-10081	16.1000	0.0382	-3.2649	0.0089		2.0300	< 0.0304	-3.4933	0.3736	
10	WP-7397	0.8100	0.0411	-3.1917	0.2485						
11	WP-6458										
12	WP-1731						< 2.5200	< 0.0176	-4.0399	-0.1359	
13	WP-12967	0.4210	0.0590	-2.8302	1.4323						
14	WP-1772	0.5970	< 0.0200	-3.9120	-2.1100	Yes					
15	WP-10078						0.4890	< 0.0304	-3.4933	0.3736	
16	WP-7124						1.3100	0.0534	-2.9299	0.8988	
17	C-473										
18	WP-6795						0.5000	< 0.0304	-3.4933	0.3736	
19	WP-6797										
20	WP-6798						0.1310	< 0.0304	-3.4933	0.3736	
21	C-992										
22	WP-6458										
23	WP-7393	0.8100	0.0411	-3.1917	0.2485						
24	WP-12651	< 3.0000	< 0.0300	-3.5066	-0.7823		< 3.0000	< 0.0300	-3.5066	0.3613	
25	C-1454										
26	C-1448										
27	C-1456										
28	C-1458										
29	WP-11504										
30	WP-13041						0.5220	< 0.0300	-3.5066	0.3613	
31	WP-14700	0.4340	0.0440	-3.1236	0.4717		33.1000	0.3200	-1.1394	2.5681	Yes
32	WP-6766						< 3.0400	0.0563	-2.8771	0.9481	
33	WP-8036						< 3.0400	< 0.0304	-3.4933	0.3736	
34	WP-7280						< 3.0400	< 0.0304	-3.4933	0.3736	
35	WP-6969										
36	WP-1672						1.1000	< 0.0176	-4.0399	-0.1359	
37	C-491										
38	C-484										
39	C-470										
40	C-480										
41	C-489										
42	C-495										
43	C-1002										
44	WP-12111	0.2440	< 0.0300	-3.5066	-0.7823						
45	C-896										
46	C-906										
47	C-912										

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Antimony Raw	Antimony Treated	Antimony (LN)	Z-Test	Outlier? (Yes)	Arsenic Raw		Arsenic Treated	Arsenic (LN)	Z-Test	Outlier? (Yes)
48	C-918											
49	C-925											
50	C-935											
51	C-1198											
52	C-1203											
53	C-1281											
54	C-1299											
55	C-980											
56	R-1731											
57	R-1731											
58	R-1731											
59	R-1731											
60	R-1731											
61	R-1731											
62	R-1731											
63	GNB-1						0.1980	<	0.0050	-5.2983	-1.3091	
64	GNB-2						0.8110	<	0.0050	-5.2983	-1.3091	
65	GNB-3						0.4000	<	0.0050	-5.2983	-1.3091	
66	GNB-4						0.1850	<	0.0050	-5.2983	-1.3091	
67	GNB-5						0.1590	<	0.0050	-5.2983	-1.3091	
68	GNB-6						0.1480	<	0.0050	-5.2983	-1.3091	
	# of Obs:	10	10	10			21		21	21		
	# of NDs:	1	3				5		18			
	Minimum:	0.2440	0.0200				0.1310		0.0050			
	Mean:	2.9026	0.0396	-3.2676			2.6952		0.0380	-3.8941		
	Maximum:	16.1000	0.0590				33.1000		0.3200			
	Std:	4.8069	0.0110	0.3054			7.0544		0.0664	1.0726		
	C99:											
	VF:											

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Barium Raw	Barium Treated	Barium (LN)	Z-Test	Outlier? (Yes)	Beryllium Raw	Beryllium Treated	Beryllium (LN)	Z-Test	Outlier? (Yes)	Cadmium Raw	Cadmium Treated	Cadmium (LN)	Z-Test	Outlier? (Yes)
1	C-825															
2	WP-11262	1.4000	0.3930	-0.9339	-0.5202							0.0118	< 0.0050	-5.2983	-0.0868	
3	WP-10073	3.7200	0.3690	-0.9970	-0.5560							< 0.0500	< 0.0050	-5.2983	-0.0868	
4	C-833															
5	C-832															
6	C-828															
7	C-830															
8	WP-10076											< 0.0500	< 0.0050	-5.2983	-0.0868	
9	WP-10081											0.0979	< 0.0050	-5.2983	-0.0868	
10	WP-7397	13.5000	0.6480	-0.4339	-0.2363							0.0081	< 0.0050	-5.2983	-0.0868	
11	WP-6458															
12	WP-1731											1220.00	0.0815	-2.5072	4.6111	Yes
13	WP-12967	1.6700	1.1800	0.1655	0.1040							1.7900	< 0.0050	-5.2983	-0.0868	
14	WP-1772	0.2450	< 0.0100	-4.6052	-2.6045	Yes	0.0160	< 0.0050	-5.2983	0.5000		4.1500	< 0.0050	-5.2983	-0.0868	
15	WP-10078											0.4110	< 0.0050	-5.2983	-0.0868	
16	WP-7124	2.3200	0.3650	-1.0079	-0.5622							< 0.0500	< 0.0050	-5.2983	-0.0868	
17	C-473															
18	WP-6795											< 0.0500	< 0.0050	-5.2983	-0.0868	
19	WP-6797											0.0154	< 0.0050	-5.2983	-0.0868	
20	WP-6798															
21	C-992															
22	WP-6458															
23	WP-7393	13.5000	0.6480	-0.4339	-0.2363											
24	WP-12651						< 0.5000	< 0.0050	-5.2983	0.5000		13.0000	< 0.0050	-5.2983	-0.0868	
25	C-1454															
26	C-1448															
27	C-1456															
28	C-1458															
29	WP-11504											0.0080	< 0.0050	-5.2983	-0.0868	
30	WP-13041											0.0100	< 0.0050	-5.2983	-0.0868	
31	WP-14700						0.0080	< 0.0050	-5.2983	0.5000		0.5080	< 0.0050	-5.2983	-0.0868	
32	WP-6766											11.7000	< 0.0050	-5.2983	-0.0868	
33	WP-8036											0.2390	< 0.0050	-5.2983	-0.0868	
34	WP-7280											< 0.5000	< 0.0050	-5.2983	-0.0868	
35	WP-6969											0.3300	< 0.0050	-5.2983	-0.0868	
36	WP-1672						< 0.0050	< 0.0017	-6.3771	-1.5000		2.3000	< 0.0013	-6.6454	-2.3541	Yes
37	C-491															
38	C-484															
39	C-470															
40	C-480															
41	C-489															
42	C-495															
43	C-1002															
44	WP-12111											0.4230	< 0.0050	-5.2983	-0.0868	
45	C-896															
46	C-906															
47	C-912															

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Barium Raw	Barium Treated	Barium (LN)	Z-Test	Outlier? (Yes)	Beryllium Raw	Beryllium Treated	Beryllium (LN)	Z-Test	Outlier? (Yes)	Cadmium Raw		Cadmium Treated	Cadmium (LN)	Z-Test	Outlier? (Yes)
48	C-918																
49	C-925																
50	C-935																
51	C-1198																
52	C-1203																
53	C-1281																
54	C-1299																
55	C-980																
56	R-1731																
57	R-1731																
58	R-1731																
59	R-1731																
60	R-1731																
61	R-1731																
62	R-1731																
63	GNB-1	10.2000	2.5000	0.9163	0.5302							2.3200	<	0.0050	-5.2983	-0.0868	
64	GNB-2	82.0000	8.4000	2.1282	1.2183							0.0470	<	0.0050	-5.2983	-0.0868	
65	GNB-3	24.1000	8.9000	2.1861	1.2511							0.0400	<	0.0050	-5.2983	-0.0868	
66	GNB-4	16.9000	2.4000	0.8755	0.5070							1.0600	<	0.0050	-5.2983	-0.0868	
67	GNB-5	13.4000	2.6000	0.9555	0.5525							1.4600	<	0.0050	-5.2983	-0.0868	
68	GNB-6	11.4000	2.6000	0.9555	0.5525							1.2700	<	0.0050	-5.2983	-0.0868	
	# of Obs:	13	13	13			4	4	4			28		28	28		
	# of NDs:	0	1				2	4				5		27			
	Minimum:	0.2450	0.0100				0.0050	0.0017				0.0080		0.0013			
	Mean:	14.9504	2.3856	-0.0176			0.1323	0.0042	-5.5680			45.0678		0.0076	-5.2467		
	Maximum:	82.0000	8.9000				0.5000	0.0050				1220.00		0.0815			
	Std:	21.3831	2.9435	1.7614			0.2452	0.0017	0.5394			230.2874		0.0145	0.5941		
	C99:																
	VF:																

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Chromium Raw	Chromium Treated	Chromium (LN)	Z-Test	Outlier? (Yes)	Lead Raw	Lead Treated	Lead (LN)	Z-Test	Outlier? (Yes)	Nickel Raw	Nickel Treated	Nickel (LN)	Z-Test	Outlier? (Yes)
1	C-825															
2	WP-11262	40.6000	2.0400	0.7129	2.2012	Yes						0.0442	< 0.0150	-4.1997	-0.3174	
3	WP-10073	284.0000	1.0100	0.0100	1.8891							0.3630	< 0.0150	-4.1997	-0.3174	
4	C-833															
5	C-832															
6	C-828															
7	C-830															
8	WP-10076	317.0000	1.4000	0.3365	2.0341	Yes	< 0.2960	< 0.0296	-3.5200	-0.7165		0.6070	< 0.0150	-4.1997	-0.3174	
9	WP-10081	1580.00	< 0.0028	-5.8781	-0.7250		< 0.2960	< 0.0296	-3.5200	-0.7165		3.0400	< 0.0150	-4.1997	-0.3174	
10	WP-7397						50.7000	< 0.0296	-3.5200	-0.7165		0.2180	< 0.0150	-4.1997	-0.3174	
11	WP-6458						0.2880	< 0.0296	-3.5200	-0.7165		0.0694	< 0.0150	-4.1997	-0.3174	
12	WP-1731	< 0.6100	< 0.0057	-5.1673	-0.4094		13.0000	< 0.0217	-3.8304	-0.9588		< 8.8000	< 0.0880	-2.4304	1.7202	
13	WP-12967						390.0000	< 0.0300	-3.5066	-0.7060		0.1450	< 0.0100	-4.6052	-0.7844	
14	WP-1772	0.0070	< 0.0050	-5.2983	-0.4676		114.0000	< 0.0300	-3.5066	-0.7060		0.2340	0.0500	-2.9957	1.0692	
15	WP-10078	0.6390	0.0987	-2.3157	0.8566		2690.00	< 0.0296	-3.5200	-0.7165		0.0686	< 0.0150	-4.1997	-0.3174	
16	WP-7124	< 0.0280	< 0.0028	-5.8781	-0.7250		900.0000	1.1400	0.1310	2.1328	Yes	< 0.1500	< 0.0150	-4.1997	-0.3174	
17	C-473															
18	WP-6795	0.0390	< 0.0028	-5.8781	-0.7250		4430.00	< 0.0296	-3.5200	-0.7165		0.1660	< 0.0150	-4.1997	-0.3174	
19	WP-6797						77.2000	< 0.0296	-3.5200	-0.7165						
20	WP-6798						8.6700	0.4400	-0.8210	1.3898						
21	C-992															
22	WP-6458						0.2880	< 0.0296	-3.5200	-0.7165		0.0694	< 0.0150	-4.1997	-0.3174	
23	WP-7393						50.7000	< 0.0296	-3.5200	-0.7165		0.2180	< 0.0150	-4.1997	-0.3174	
24	WP-12651	< 0.5000	0.0150	-4.1997	0.0201		220.0000	0.3100	-1.1712	1.1165		< 1.0000	< 0.0100	-4.6052	-0.7844	
25	C-1454															
26	C-1448															
27	C-1456															
28	C-1458															
29	WP-11504	0.0100	< 0.0050	-5.2983	-0.4676		1400.00	0.4690	-0.7572	1.4396						
30	WP-13041	0.0110	< 0.0050	-5.2983	-0.4676		1900.00	1.0900	0.0862	2.0977	Yes	0.1010	< 0.0100	-4.6052	-0.7844	
31	WP-14700						0.0610	< 0.0300	-3.5066	-0.7060		0.0760	0.0080	-4.8283	-1.0413	
32	WP-6766	< 0.2800	< 0.0028	-5.8781	-0.7250		338.0000	0.1490	-1.9038	0.5448		< 1.5000	< 0.0150	-4.1997	-0.3174	
33	WP-8036	< 0.0280	< 0.0028	-5.8781	-0.7250		783.0000	< 0.0296	-3.5200	-0.7165		< 0.1500	0.0347	-3.3610	0.6485	
34	WP-7280	< 0.2800	< 0.0028	-5.8781	-0.7250		1280.00	0.6450	-0.4385	1.6883		< 1.5000	< 0.0150	-4.1997	-0.3174	
35	WP-6969	0.0922	< 0.0028	-5.8781	-0.7250		18.8000	0.0377	-3.2781	-0.5277		2.2200	0.0951	-2.3528	1.8096	
36	WP-1672	0.0240	< 0.0057	-5.1673	-0.4094		3.8000	< 0.0217	-3.8304	-0.9588		1.0000	0.2810	-1.2694	3.0574	Yes
37	C-491															
38	C-484															
39	C-470															
40	C-480															
41	C-489															
42	C-495															
43	C-1002															
44	WP-12111						246.0000	< 0.0300	-3.5066	-0.7060		0.0740	< 0.0100	-4.6052	-0.7844	
45	C-896															
46	C-906															
47	C-912															

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Chromium Raw		Chromium Treated	Chromium (LN)	Z-Test	Outlier? (Yes)	Lead Raw		Lead Treated	Lead (LN)	Z-Test	Outlier? (Yes)	Nickel Raw	Nickel Treated	Nickel (LN)	Z-Test	Outlier? (Yes)
48	C-918																	
49	C-925																	
50	C-935																	
51	C-1198																	
52	C-1203																	
53	C-1281																	
54	C-1299																	
55	C-980																	
56	R-1731																	
57	R-1731																	
58	R-1731																	
59	R-1731																	
60	R-1731																	
61	R-1731																	
62	R-1731																	
63	GNB-1							874.0000	<	0.1000	-2.3026	0.2336						
64	GNB-2	0.7500	<	0.0200	-3.9120	0.1479		5.0000	<	0.1000	-2.3026	0.2336						
65	GNB-3	0.2100	<	0.0200	-3.9120	0.1479												
66	GNB-4							282.0000		0.3000	-1.2040	1.0909						
67	GNB-5							215.0000		0.1000	-2.3026	0.2336						
68	GNB-6							898.0000	<	0.1000	-2.3026	0.2336						
	# of Obs:	19		19	19			29		29	29			23	23	23		
	# of NDs:	6		14				2		19				6	18			
	Minimum:	0.0070		0.0028				0.0610		0.0217				0.0442	0.0080			
	Mean:	117.1110		0.2447	-4.2451			592.7276		0.1876	-2.6019			0.9484	0.0344	-3.9241		
	Maximum:	1580.00		2.0400				4430.00		1.1400				8.8000	0.2810			
	Std:	366.5614		0.5781	2.2524			989.2288		0.3024	1.2814			1.8854	0.0586	0.8683		
	C99:																	
	VF:																	

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Selenium Raw	Selenium Treated	Selenium (LN)	Z-Test	Outlier? (Yes)	Silver Raw	Silver Treated	Silver (LN)	Z-Test	Outlier? (Yes)	Thallium Raw	Thallium Treated	Thallium (LN)	Z-Test	Outlier? (Yes)
1	C-825															
2	WP-11262															
3	WP-10073	< 0.3840	< 0.0384	-3.2597	-0.8460		< 0.0910	< 0.0046	-5.3817	-0.4580		< 1.1000	< 0.1100	-2.2073	0.1613	
4	C-833															
5	C-832															
6	C-828															
7	C-830															
8	WP-10076	< 0.3840	< 0.0384	-3.2597	-0.8460		< 0.0910	< 0.0046	-5.3817	-0.4580		< 1.1000	< 0.1100	-2.2073	0.1613	
9	WP-10081	< 0.3840	< 0.0384	-3.2597	-0.8460		< 0.0910	< 0.0046	-5.3817	-0.4580		< 1.1000	< 0.1100	-2.2073	0.1613	
10	WP-7397	< 0.3840	< 0.0384	-3.2597	-0.8460		< 0.0910	< 0.0046	-5.3817	-0.4580						
11	WP-6458											0.1440	< 0.0780	-2.5510	-0.3564	
12	WP-1731	< 2.7100	0.1164	-2.1507	1.7842		< 5.7700	< 0.0577	-2.8525	2.5669	Yes	< 7.8000	0.8137	-0.2062	3.1749	Yes
13	WP-12967															
14	WP-1772											0.0990	< 0.0500	-2.9957	-1.0260	
15	WP-10078						< 0.0091	< 0.0046	-5.3817	-0.4580		0.7140	< 0.1100	-2.2073	0.1613	
16	WP-7124	< 0.3840	0.1320	-2.0250	2.0825	Yes	< 0.0910	< 0.0046	-5.3817	-0.4580		< 0.7800	< 0.0780	-2.5510	-0.3564	
17	C-473															
18	WP-6795	< 0.3840	< 0.0384	-3.2597	-0.8460		< 0.0910	< 0.0046	-5.3817	-0.4580		< 0.7800	< 0.0780	-2.5510	-0.3564	
19	WP-6797						< 0.0091	< 0.0046	-5.3817	-0.4580						
20	WP-6798						< 0.0091	< 0.0046	-5.3817	-0.4580						
21	C-992															
22	WP-6458											0.1440	< 0.0780	-2.5510	-0.3564	
23	WP-7393						< 0.0091	< 0.0046	-5.3817	-0.4580						
24	WP-12651	< 5.0000	< 0.0500	-2.9957	-0.2199		< 5.0000	< 0.0500	-2.9957	2.3956	Yes	< 7.0000	< 0.0700	-2.6593	-0.5193	
25	C-1454															
26	C-1448															
27	C-1456															
28	C-1458															
29	WP-11504															
30	WP-13041															
31	WP-14700											0.0780	< 0.0500	-2.9957	-1.0260	
32	WP-6766	< 3.8400	0.0756	-2.5823	0.7606		< 0.9100	0.0090	-4.7105	0.3447		< 7.8000	0.2260	-1.4872	1.2457	
33	WP-8036	< 0.3840	< 0.0384	-3.2597	-0.8460		< 0.0910	0.0079	-4.8409	0.1888		< 0.7800	< 0.0780	-2.5510	-0.3564	
34	WP-7280	< 3.8400	< 0.0384	-3.2597	-0.8460		< 0.4600	< 0.0046	-5.3817	-0.4580		< 7.8000	< 0.0780	-2.5510	-0.3564	
35	WP-6969						< 0.0091	< 0.0046	-5.3817	-0.4580						
36	WP-1672	0.5600	0.0697	-2.6636	0.5679							0.7700	< 0.0780	-2.5510	-0.3564	
37	C-491															
38	C-484															
39	C-470															
40	C-480															
41	C-489															
42	C-495															
43	C-1002															
44	WP-12111															
45	C-896															
46	C-906															
47	C-912															

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Selenium Raw	Selenium Treated	Selenium (LN)	Z-Test	Outlier? (Yes)	Silver Raw	Silver Treated	Silver (LN)	Z-Test	Outlier? (Yes)	Thallium Raw	Thallium Treated	Thallium (LN)	Z-Test	Outlier? (Yes)
48	C-918															
49	C-925															
50	C-935															
51	C-1198															
52	C-1203															
53	C-1281															
54	C-1299															
55	C-980															
56	R-1731															
57	R-1731															
58	R-1731															
59	R-1731															
60	R-1731															
61	R-1731															
62	R-1731															
63	GNB-1	0.1100 <	0.0500	-2.9957	-0.2199											
64	GNB-2															
65	GNB-3															
66	GNB-4	0.1100	0.0500	-2.9957	-0.2199											
67	GNB-5	0.1300	0.0600	-2.8134	0.2125											
68	GNB-6	0.1000	0.0900	-2.4079	1.1741											
	# of Obs:	16	16	16			16	16	16			16	16	16		
	# of NDs:	11	9				16	14				10	14			
	Minimum:	0.1000	0.0384				0.0091	0.0046				0.0780	0.0500			
	Mean:	1.1930	0.0602	-2.9030			0.8014	0.0112	-4.9988			2.3743	0.1372	-2.3144		
	Maximum:	5.00	0.1320				5.7700	0.0577				7.80	0.8137			
	Std:	1.6424	0.0296	0.4216			1.8095	0.0167	0.8361			3.1405	0.1849	0.6640		
	C99:															
	VF:															

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Vanadium Raw	Vanadium Treated	Vanadium (LN)	Z-Test	Outlier? (Yes)	Zinc Raw	Zinc Treated	Zinc (LN)	Z-Test	Outlier? (Yes)
1	C-825										
2	WP-11262										
3	WP-10073										
4	C-833										
5	C-832										
6	C-828										
7	C-830										
8	WP-10076										
9	WP-10081										
10	WP-7397										
11	WP-6458										
12	WP-1731										
13	WP-12967						44.2000	< 0.5000	-0.6931	0.0533	
14	WP-1772										
15	WP-10078										
16	WP-7124										
17	C-473										
18	WP-6795										
19	WP-6797										
20	WP-6798										
21	C-992										
22	WP-6458										
23	WP-7393										
24	WP-12651						3100.00	< 0.5000	-0.6931	0.0533	
25	C-1454										
26	C-1448										
27	C-1456										
28	C-1458										
29	WP-11504						0.2950	0.0630	-2.7646	-0.9076	
30	WP-13041						1.2000	< 0.5000	-0.6931	0.0533	
31	WP-14700						3.1300	0.0320	-3.4420	-1.2218	
32	WP-6766										
33	WP-8036										
34	WP-7280										
35	WP-6969										
36	WP-1672	< 3.0000	0.5661	-0.5690			170.0000	27.7400	3.3229	1.9162	
37	C-491										
38	C-484										
39	C-470										
40	C-480										
41	C-489										
42	C-495										
43	C-1002										
44	WP-12111						2.2200	< 0.5000	-0.6931	0.0533	
45	C-896										
46	C-906										
47	C-912										

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Vanadium Raw	Vanadium Treated	Vanadium (LN)	Z-Test	Outlier? (Yes)	Zinc Raw	Zinc Treated	Zinc (LN)	Z-Test	Outlier? (Yes)
48	C-918										
49	C-925										
50	C-935										
51	C-1198										
52	C-1203										
53	C-1281										
54	C-1299										
55	C-980										
56	R-1731										
57	R-1731										
58	R-1731										
59	R-1731										
60	R-1731										
61	R-1731										
62	R-1731										
63	GNB-1										
64	GNB-2										
65	GNB-3										
66	GNB-4										
67	GNB-5										
68	GNB-6										
	# of Obs:	1	1	1			7	7	7		
	# of NDs:	1	0				0	4			
	Minimum:	3.0000	0.5661				0.2950	0.0320			
	Mean:	3.0000	0.5661	-0.5690			474.4350	4.2621	-0.8081		
	Maximum:	3.0000	0.5661				3100.00	27.7400			
	Std:						1159.4000	10.3550	2.1557		
	C99:										
	VF:										

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Mercury Raw	Mercury Treated	(LN)	Z-Test	Outlier? (Yes)
1	C-825					
2	WP-11262					
3	WP-10073					
4	C-833					
5	C-832					
6	C-828					
7	C-830					
8	WP-10076					
9	WP-10081					
10	WP-7397					
11	WP-6458					
12	WP-1731					
13	WP-12967					
14	WP-1772					
15	WP-10078					
16	WP-7124					
17	C-473					
18	WP-6795					
19	WP-6797					
20	WP-6798					
21	C-992					
22	WP-6458					
23	WP-7393					
24	WP-12651					
25	C-1454					
26	C-1448					
27	C-1456					
28	C-1458					
29	WP-11504					
30	WP-13041					
31	WP-14700					
32	WP-6766					
33	WP-8036					
34	WP-7280					
35	WP-6969					
36	WP-1672	< 0.0200	< 0.0080	-4.8283	-0.7071	
37	C-491					
38	C-484					
39	C-470					
40	C-480					
41	C-489					
42	C-495					
43	C-1002					
44	WP-12111					
45	C-896					
46	C-906					
47	C-912					

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L)
-- Identification of Outliers

Samples	Waste	Raw		Mercury Treated	(LN)	Z-Test	Outlier? (Yes)
48	C-918						
49	C-925						
50	C-935						
51	C-1198						
52	C-1203						
53	C-1281						
54	C-1299						
55	C-980						
56	R-1731						
57	R-1731						
58	R-1731						
59	R-1731						
60	R-1731						
61	R-1731						
62	R-1731						
63	GNB-1	0.1100	<	0.0500	-2.9957	0.7071	
64	GNB-2						
65	GNB-3						
66	GNB-4						
67	GNB-5						
68	GNB-6						
	# of Obs:	2		2	2		
	# of NDs:	1		2			
	Minimum:	0.0200		0.0080			
	Mean:	0.0650		0.0290	-3.9120		
	Maximum:	0.1100		0.0500			
	Std:	0.0636		0.0297	1.2958		
	C99:						
	VF:						

ATTACHMENT 3

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- Minus Incomplete Data, Points Showing No Treatment (Effluent>Influent), and Statistical Outliers

Samples	Waste	Antimony Raw	Antimony Treated	Antimony (LN)	Arsenic Raw	Arsenic Treated	Arsenic (LN)	Barium Raw	Barium Treated	Barium (LN)	Beryllium Raw	Beryllium Treated	Beryllium (LN)	Cadmium Raw	Cadmium Treated	Cadmium (LN)
1	C-825															
2	WP-11262							1.4000	0.3930	-0.9339				0.0118	< 0.0050	-5.2983
3	WP-10073	3.4800	0.0428	-3.1512	0.4420	< 0.0304	-3.4933	3.7200	0.3690	-0.9970				< 0.0500	< 0.0050	-5.2983
4	C-833															
5	C-832															
6	C-828															
7	C-830															
8	WP-10076	3.1300	0.0499	-2.9977	0.4340	< 0.0304	-3.4933							< 0.0500	< 0.0050	-5.2983
9	WP-10081	16.1000	0.0382	-3.2649	2.0300	< 0.0304	-3.4933							0.0979	< 0.0050	-5.2983
10	WP-7397	0.8100	0.0411	-3.1917				13.5000	0.6480	-0.4339				0.0081	< 0.0050	-5.2983
11	WP-6458															
12	WP-1731				< 2.5200	< 0.0176	-4.0399									
13	WP-12967	0.4210	0.0590	-2.8302				1.6700	1.1800	0.1655				1.7900	< 0.0050	-5.2983
14	WP-1772										0.0160	< 0.0050	-5.2983	4.1500	< 0.0050	-5.2983
15	WP-10078				0.4890	< 0.0304	-3.4933							0.4110	< 0.0050	-5.2983
16	WP-7124				1.3100	0.0534	-2.9299	2.3200	0.3650	-1.0079				< 0.0500	< 0.0050	-5.2983
17	C-473															
18	WP-6795				0.5000	< 0.0304	-3.4933							< 0.0500	< 0.0050	-5.2983
19	WP-6797													0.0154	< 0.0050	-5.2983
20	WP-6798				0.1310	< 0.0304	-3.4933									
21	C-992															
22	WP-6458															
23	WP-7393	0.8100	0.0411	-3.1917				13.5000	0.6480	-0.4339						
24	WP-12651	< 3.0000	< 0.0300	-3.5066	< 3.0000	< 0.0300	-3.5066				< 0.5000	< 0.0050	-5.2983	13.0000	< 0.0050	-5.2983
25	C-1454															
26	C-1448															
27	C-1456															
28	C-1458															
29	WP-11504													0.0080	< 0.0050	-5.2983
30	WP-13041				0.5220	< 0.0300	-3.5066							0.0100	< 0.0050	-5.2983
31	WP-14700	0.4340	0.0440	-3.1236							0.0080	< 0.0050	-5.2983	0.5080	< 0.0050	-5.2983
32	WP-6766				< 3.0400	0.0563	-2.8771							11.7000	< 0.0050	-5.2983
33	WP-8036				< 3.0400	< 0.0304	-3.4933							0.2390	< 0.0050	-5.2983
34	WP-7280				< 3.0400	< 0.0304	-3.4933							< 0.5000	< 0.0050	-5.2983
35	WP-6969													0.3300	< 0.0050	-5.2983
36	WP-1672				1.1000	< 0.0176	-4.0399				< 0.0050	< 0.0017	-6.3771			
37	C-491															
38	C-484															
39	C-470															
40	C-480															
41	C-489															
42	C-495															
43	C-1002															
44	WP-12111	0.2440	< 0.0300	-3.5066										0.4230	< 0.0050	-5.2983
45	C-896															
46	C-906															
47	C-912															

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- Minus Incomplete Data, Points Showing No Treatment (Effluent>Influent), and Statistical Outliers

		Antimony			Arsenic			Barium			Beryllium			Cadmium		
Samples	Waste	Raw	Treated	(LN)	Raw	Treated	(LN)	Raw	Treated	(LN)	Raw	Treated	(LN)	Raw	Treated	(LN)
48	C-918															
49	C-925															
50	C-935															
51	C-1198															
52	C-1203															
53	C-1281															
54	C-1299															
55	C-980															
56	R-1731															
57	R-1731															
58	R-1731															
59	R-1731															
60	R-1731															
61	R-1731															
62	R-1731															
63	GNB-1				0.1980	< 0.0050	-5.2983	10.2000	2.5000	0.9163				2.3200	< 0.0050	-5.2983
64	GNB-2				0.8110	< 0.0050	-5.2983	82.0000	8.4000	2.1282				0.0470	< 0.0050	-5.2983
65	GNB-3				0.4000	< 0.0050	-5.2983	24.1000	8.9000	2.1861				0.0400	< 0.0050	-5.2983
66	GNB-4				0.1850	< 0.0050	-5.2983	16.9000	2.4000	0.8755				1.0600	< 0.0050	-5.2983
67	GNB-5				0.1590	< 0.0050	-5.2983	13.4000	2.6000	0.9555				1.4600	< 0.0050	-5.2983
68	GNB-6				0.1480	< 0.0050	-5.2983	11.4000	2.6000	0.9555				1.2700	< 0.0050	-5.2983
	# of Obs:	9	9	9	20	20	20	12	12	12	4	4	4	26	26	26
	# of NDs:	1	2		5	18		0	0		2	4		5	26	
	Minimum:	0.2440	0.0300		0.1310	0.0050		1.4000	0.3650		0.0050	0.0017		0.0080	0.0050	
	Mean:	3.1588	0.0418	-3.1960	1.1750	0.0239	-4.0318	16.1758	2.5836	0.3647	0.1323	0.0042	-5.5680	1.5230	0.0050	-5.2983
	Maximum:	16.1000	0.0590		3.0400	0.0563		82.0000	8.9000		0.5000	0.0050		13.00	0.0050	
	Std:	5.0256	0.0091	0.2174	1.1382	0.0155	0.8898	21.8519	2.9826	1.1454	0.2452	0.0017	0.5394	3.3305	0.0000	0.0000
	VF:		1.63			5.90			8.04			2.80			2.80	
	TS:		**0.068**			**0.141**			**21**			**0.012**			**0.014**	

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- Minus Incomplete Data, Points Showing No Treatment (Effluent>Influent), and Statistical Outliers

Samples	Waste	Chromium Raw	Chromium Treated	Chromium (LN)	Lead Raw	Lead Treated	Lead (LN)	Nickel Raw	Nickel Treated	Nickel (LN)	Selenium Raw	Selenium Treated	Selenium (LN)	Silver Raw	Silver Treated	Silver (LN)
1	C-825															
2	WP-11262							0.0442	< 0.0150	-4.1997						
3	WP-10073	284.0000	1.0100	0.0100				0.3630	< 0.0150	-4.1997	< 0.3840	< 0.0384	-3.2597	< 0.0910	< 0.0046	-5.3817
4	C-833															
5	C-832															
6	C-828															
7	C-830															
8	WP-10076				< 0.2960	< 0.0296	-3.5200	0.6070	< 0.0150	-4.1997	< 0.3840	< 0.0384	-3.2597	< 0.0910	< 0.0046	-5.3817
9	WP-10081	1580.00	< 0.0028	-5.8781	< 0.2960	< 0.0296	-3.5200	3.0400	< 0.0150	-4.1997	< 0.3840	< 0.0384	-3.2597	< 0.0910	< 0.0046	-5.3817
10	WP-7397				50.7000	< 0.0296	-3.5200	0.2180	< 0.0150	-4.1997	< 0.3840	< 0.0384	-3.2597	< 0.0910	< 0.0046	-5.3817
11	WP-6458				0.2880	< 0.0296	-3.5200	0.0694	< 0.0150	-4.1997						
12	WP-1731	< 0.6100	< 0.0057	-5.1673	13.0000	< 0.0217	-3.8304	< 8.8000	< 0.0880	-2.4304	< 2.7100	0.1164	-2.1507			
13	WP-12967				390.0000	< 0.0300	-3.5066	0.1450	< 0.0100	-4.6052						
14	WP-1772	0.0070	< 0.0050	-5.2983	114.0000	< 0.0300	-3.5066	0.2340	0.0500	-2.9957						
15	WP-10078	0.6390	0.0987	-2.3157	2690.00	< 0.0296	-3.5200	0.0686	< 0.0150	-4.1997				< 0.0091	< 0.0046	-5.3817
16	WP-7124	< 0.0280	< 0.0028	-5.8781				< 0.1500	< 0.0150	-4.1997				< 0.0910	< 0.0046	-5.3817
17	C-473															
18	WP-6795	0.0390	< 0.0028	-5.8781	4430.00	< 0.0296	-3.5200	0.1660	< 0.0150	-4.1997	< 0.3840	< 0.0384	-3.2597	< 0.0910	< 0.0046	-5.3817
19	WP-6797				77.2000	< 0.0296	-3.5200							< 0.0091	< 0.0046	-5.3817
20	WP-6798				8.6700	0.4400	-0.8210							< 0.0091	< 0.0046	-5.3817
21	C-992															
22	WP-6458				0.2880	< 0.0296	-3.5200	0.0694	< 0.0150	-4.1997						
23	WP-7393				50.7000	< 0.0296	-3.5200	0.2180	< 0.0150	-4.1997				< 0.0091	< 0.0046	-5.3817
24	WP-12651	< 0.5000	0.0150	-4.1997	220.0000	0.3100	-1.1712	< 1.0000	< 0.0100	-4.6052	< 5.0000	< 0.0500	-2.9957			
25	C-1454															
26	C-1448															
27	C-1456															
28	C-1458															
29	WP-11504	0.0100	< 0.0050	-5.2983	1400.00	0.4690	-0.7572									
30	WP-13041	0.0110	< 0.0050	-5.2983				0.1010	< 0.0100	-4.6052						
31	WP-14700				0.0610	< 0.0300	-3.5066	0.0760	0.0080	-4.8283						
32	WP-6766	< 0.2800	< 0.0028	-5.8781	338.0000	0.1490	-1.9038	< 1.5000	< 0.0150	-4.1997	< 3.8400	0.0756	-2.5823	< 0.9100	0.0090	-4.7105
33	WP-8036	< 0.0280	< 0.0028	-5.8781	783.0000	< 0.0296	-3.5200	< 0.1500	0.0347	-3.3610	< 0.3840	< 0.0384	-3.2597	< 0.0910	0.0079	-4.8409
34	WP-7280	< 0.2800	< 0.0028	-5.8781	1280.00	0.6450	-0.4385	< 1.5000	< 0.0150	-4.1997	< 3.8400	< 0.0384	-3.2597	< 0.4600	< 0.0046	-5.3817
35	WP-6969	0.0922	< 0.0028	-5.8781	18.8000	0.0377	-3.2781	2.2200	0.0951	-2.3528				< 0.0091	< 0.0046	-5.3817
36	WP-1672	0.0240	< 0.0057	-5.1673	3.8000	< 0.0217	-3.8304				0.5600	0.0697	-2.6636			
37	C-491															
38	C-484															
39	C-470															
40	C-480															
41	C-489															
42	C-495															
43	C-1002															
44	WP-12111				246.0000	< 0.0300	-3.5066	0.0740	< 0.0100	-4.6052						
45	C-896															
46	C-906															
47	C-912															

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- Minus Incomplete Data, Points Showing No Treatment (Effluent>Influent), and Statistical Outliers

		Chromium			Lead			Nickel			Selenium			Silver		
Samples	Waste	Raw	Treated	(LN)	Raw	Treated	(LN)	Raw	Treated	(LN)	Raw	Treated	(LN)	Raw	Treated	(LN)
48	C-918															
49	C-925															
50	C-935															
51	C-1198															
52	C-1203															
53	C-1281															
54	C-1299															
55	C-980															
56	R-1731															
57	R-1731															
58	R-1731															
59	R-1731															
60	R-1731															
61	R-1731															
62	R-1731															
63	GNB-1				874.0000 <	0.1000	-2.3026				0.1100 <	0.0500	-2.9957			
64	GNB-2	0.7500 <	0.0200	-3.9120	5.0000 <	0.1000	-2.3026									
65	GNB-3	0.2100 <	0.0200	-3.9120												
66	GNB-4				282.0000	0.3000	-1.2040				0.1100	0.0500	-2.9957			
67	GNB-5				215.0000	0.1000	-2.3026				0.1300	0.0600	-2.8134			
68	GNB-6				898.0000 <	0.1000	-2.3026				0.1000	0.0900	-2.4079			
	# of Obs:	17	17	17	27	27	27	22	22	22	15	15	15	14	14	14
	# of NDs:	6	14		2	19		6	18		10	9		14	12	
	Minimum:	0.0070	0.0028		0.0610	0.0217		0.0442	0.0080		0.1000	0.0384		0.0091	0.0046	
	Mean:	109.8534	0.0712	-4.8062	532.9296	0.1189	-2.8026	0.9461	0.0232	-4.0448	1.2469	0.0554	-2.9615	0.1466	0.0052	-5.2951
	Maximum:	1580.00	1.0100		4430.00	0.6450		8.8000	0.0951		5.00	0.1164		0.9100	0.0090	
	Std:	385.0248	0.2430	1.5889	990.3406	0.1654	1.0776	1.9297	0.0239	0.6626	1.6853	0.0234	0.3629	0.2476	0.0014	0.2215
	VF:		4.66			6.28			3.53			2.18			1.63	
	TS:		**0.33**			**0.75**			**0.082**			**0.12**			**0.0084**	

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- Minus Incomplete Data, Points Showing No Treatment (Effluent>Influent), and Statistical Outliers

Samples	Waste	Thallium Raw		Thallium Treated	Thallium (LN)	Vanadium Raw		Vanadium Treated	Vanadium (LN)	Zinc Raw		Zinc Treated	Zinc (LN)	Mercury Raw		Mercury Treated	Mercury (LN)
1	C-825																
2	WP-11262																
3	WP-10073	<	1.1000	< 0.1100	-2.2073												
4	C-833																
5	C-832																
6	C-828																
7	C-830																
8	WP-10076	<	1.1000	< 0.1100	-2.2073												
9	WP-10081	<	1.1000	< 0.1100	-2.2073												
10	WP-7397																
11	WP-6458		0.1440	< 0.0780	-2.5510												
12	WP-1731																
13	WP-12967									44.2000	<	0.5000	-0.6931				
14	WP-1772		0.0990	< 0.0500	-2.9957												
15	WP-10078		0.7140	< 0.1100	-2.2073												
16	WP-7124	<	0.7800	< 0.0780	-2.5510												
17	C-473																
18	WP-6795	<	0.7800	< 0.0780	-2.5510												
19	WP-6797																
20	WP-6798																
21	C-992																
22	WP-6458		0.1440	< 0.0780	-2.5510												
23	WP-7393																
24	WP-12651	<	7.0000	< 0.0700	-2.6593					3100.00	<	0.5000	-0.6931				
25	C-1454																
26	C-1448																
27	C-1456																
28	C-1458																
29	WP-11504									0.2950		0.0630	-2.7646				
30	WP-13041									1.2000	<	0.5000	-0.6931				
31	WP-14700		0.0780	< 0.0500	-2.9957					3.1300		0.0320	-3.4420				
32	WP-6766	<	7.8000	0.2260	-1.4872												
33	WP-8036	<	0.7800	< 0.0780	-2.5510												
34	WP-7280	<	7.8000	< 0.0780	-2.5510												
35	WP-6969																
36	WP-1672		0.7700	< 0.0780	-2.5510	<	3.0000	0.5661	-0.5690					<	0.0200	< 0.0080	-4.8283
37	C-491																
38	C-484																
39	C-470																
40	C-480																
41	C-489																
42	C-495																
43	C-1002																
44	WP-12111									2.2200	<	0.5000	-0.6931				
45	C-896																
46	C-906																
47	C-912																

Evaluation of TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- Minus Incomplete Data, Points Showing No Treatment (Effluent>Influent), and Statistical Outliers

Samples	Waste	Thallium Raw	Thallium Treated	Thallium (LN)	Vanadium Raw	Vanadium Treated	Vanadium (LN)	Zinc Raw	Zinc Treated	Zinc (LN)	Mercury Raw	Mercury Treated	Mercury (LN)
48	C-918												
49	C-925												
50	C-935												
51	C-1198												
52	C-1203												
53	C-1281												
54	C-1299												
55	C-980												
56	R-1731												
57	R-1731												
58	R-1731												
59	R-1731												
60	R-1731												
61	R-1731												
62	R-1731												
63	GNB-1										0.1100	< 0.0500	-2.9957
64	GNB-2												
65	GNB-3												
66	GNB-4												
67	GNB-5												
68	GNB-6												
	# of Obs:	15	15	15	1	1	1	6	6	6	2	2	2
	# of NDs:	9	14		1	0		0	4		1	2	
	Minimum:	0.0780	0.0500		3.0000	0.5661		0.2950	0.0320		0.0200	0.0080	
	Mean:	2.0126	0.0921	-2.4550	3.0000	0.5661	-0.5690	525.1742	0.3492	-1.4965	0.0650	0.0290	-3.9120
	Maximum:	7.80	0.2260		3.0000	0.5661		3100.00	0.5000		0.1100	0.0500	
	Std:	2.8851	0.0419	0.3658				1261.5167	0.2339	1.2629	0.0636	0.0297	1.2958
	VF:		2.19			2.80 *			**12.16**			2.80 *	
	TS:		**0.20**			**1.59**			**4.25**			**0.081**	

ATTACHMENT 4

Calculation of Treatment Standards for TC Metals in Stabilized Wastes
Performance Data from Rollins Environmental and GNB

	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Number of Samples	9	20	12	4	26	17	27	2	22	15	14	15	1	6
Percent Recovery (PR) %	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Accuracy Correction factor (ACF)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mean of Corrected Data	0.042	0.024	2.6	0.0042	0.005	0.071	0.12	0.029	0.023	0.055	0.0052	0.092	0.57	0.35
Variability Factor (VF)	1.63	5.9	8.04	2.8	2.8	4.66	6.28	2.8	3.53	2.18	1.63	2.19	2.8	12.2
Formula for Calculating Treatment Standard	EXP(y+2.33*sy)	EXP(y+2.33*sy)	EXP(y+2.33*sy)	Value*2.8	Value*2.8	EXP(y+2.33*sy)	EXP(y+2.33*sy)	value*2.8	EXP(y+2.33*sy)	EXP(y+2.33*sy)	EXP(y+2.33*sy)	EXP(y+2.33*sy)	value*2.8	EXP(y+2.33*sy)
Treatment Standard (TS) (mg/L)	0.068	0.14	21	0.012	0.014	0.33	0.75	0.081	0.081	0.12	0.0085	0.20	1.6	4.3

ATTACHMENT 5

Comparison of Treatment Standards
Calculated for Stabilized Waste *Vs.* HTMR Residues (mg/L)

Constituents	TS - Stabilization	TS - HTMR	New TS 1/
Antimony	0.068	0.043	0.07 2/
Arsenic	0.14	0.026	NC
Barium	21	3.3	21
Beryllium	0.012	0.018	0.02 2/
Cadmium	0.014	0.20	0.20
Chromium	0.33	0.85	0.85
Lead	0.75	0.12	0.75
Mercury	0.081	--	NC
Nickel	0.081	13.6	13.6
Selenium	0.12	0.29	NC
Silver	0.0085	0.11	0.11
Thallium	0.20	--	0.20
Vanadium	1.6	0.015	1.6
Zinc	4.3	3.8	4.3

1/ The new treatment standard was estabilished by selecting the higher of the two treatment standards calculated for stabilized wastes and HTMR residues.

2/ The new treatment standard was rounded up.

NC A final treatment standard already exists for this constituent.

ATTACHMENT 6

ICF

Calculations

SUBJECT: Calculation of Treatment Standard for Cr.

Job Number _____
File Number _____
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By _____ Date _____
App _____ Date _____

I. Data Reduction

Rollins Environmental and GNB provided a total of 61 samples of stabilized waste that had been analyzed for TCLP concentrations of chromium. Of the 61 samples, 42 were removed because:

(1) the [influent] was not provided, or
(2) [influent] $\geq$ [effluent].

The attached spreadsheet lists all of the treatment data provided by Rollins Environmental and GNB for Chromium.

II. Outlier Analysis

The 19 remaining data points were evaluated using the Z-score test to determine whether each individual data point was significantly different from the data set. Because the outlier test assumes that the data are normally distributed, it was necessary to transform the data by computing the logrithm of each data point before performing the outlier test. The Z-score is calculated by dividing the differen. between the data point and the average of the data set by the standard deviation. For data, that are normally distributed, 99.5% (or 2 standard deviations) of the measurements will have Z-scores between -2.0 and +2.0. A data point outside of this range is not considered to be representative of the population from which the data are drawn.

The Z-score calculations are presented below in Table 1. The standard deviation of the logtransformed data was calculated using the following, general equation:

$$\sigma = \sqrt{\frac{\sum_{i=1}^{N} \cdot (x_i - \bar{x})^2}{N-1}}$$

ICF

Calculations

SUBJECT:

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TABLE-1 (mg/L)

[Eff]	Ln [Eff] (X_i)	$X_i - \bar{X}$	$(X_i - \bar{X})^2$	Z-score $(X_i - \bar{X})/\sigma$	Outlier Yes/No
2.04	0.713	4.95	24.5	2.2	Yes
1.01	0.010	4.25	18.1	1.89	No
1.4	0.336	4.58	21	2.03	Yes
<0.0028	-5.88	-1.64	2.69	-0.73	No
<0.0057	-5.17	-0.93	0.86	-0.41	No
<0.005	-5.3	-1.06	1.12	-0.47	No
0.0987	-2.31	1.93	3.72	0.86	No
<0.0028	-5.88	-1.64	2.69	-0.73	No
<0.0028	-5.88	-1.64	2.69	-0.73	No
0.015	-4.2	0.04	0.016	0.018	No
<0.005	-5.3	-1.06	1.12	-0.47	No
<0.005	-5.3	-1.06	1.12	-0.47	No
<0.0028	-5.88	-1.64	2.69	-0.73	No
<0.0028	-5.88	-1.64	2.69	-0.73	No
<0.0028	-5.88	-1.64	2.69	-0.73	No
<0.0028	-5.88	-1.64	2.69	-0.73	No
<0.0057	-5.17	-0.93	0.865	-0.41	No
<0.02	-3.91	-0.33	0.109	0.15	No
<0.02	-3.91	0.33	0.109	0.15	No
	$\Sigma = -80.67$		$\Sigma = 91.5$		
	$\bar{X} = -4.24$				

$$\sigma = \sqrt{\frac{91.5}{19-1}} = \sqrt{5.08} = \underline{\underline{2.25}}$$

ICF

Calculations

SUBJECT:

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Based on the results of the Z-score test, 2 additional values were removed from the data set.

III. Calculation of Variability Factor (VF)

The standard deviation of the log transformed data was recalculated using the final data set of 17 points.

[EFF]	LN [EFF] (x_i)	$x_i - \bar{x}$	$(x_i - \bar{x})^2$
1.01	0.01	4.81	23.1
<0.0028	-5.88	-1.08	1.17
<0.0057	-5.17	-0.37	0.137
<0.005	-5.3	-0.5	0.25
0.0987	-2.31	2.49	6.2
<0.0028	-5.88	-1.08	1.17
<0.0028	-5.88	-1.08	1.17
0.015	-4.2	0.6	0.36
<0.005	-5.3	-0.5	0.25
<0.005	-5.3	-0.5	0.25
<0.0028	-5.88	-1.08	1.17
<0.0028	-5.88	-1.08	1.17
<0.0028	-5.88	-1.08	1.17
<0.0028	-5.88	-1.08	1.17
<0.0057	-5.17	-0.37	0.137
<0.02	-3.91	0.89	0.792
<0.02	-3.91	0.89	0.792
Σ 1.21	$\Sigma = -81.72$		$\Sigma = 40.46$
$\bar{X} = 0.0712$	$\bar{X}_i = -4.81$		

$$\sigma = \sqrt{\frac{40.46}{17-1}} = \sqrt{2.5} = \underline{\underline{1.59}}$$

ICF

Calculations

SUBJECT:

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The VF was then calculated using Eq. 1 from page D-1 of App. D of the 1991 Background Document:

$$VF_{99} = \frac{C_{99}}{mean} = \frac{Exp(y + 2.33\sigma)}{mean}$$

$$VF = \frac{Exp(-4.81 + 2.33 \cdot 1.59)}{0.071} = \frac{Exp(-1.1053)}{0.071} = \frac{0.331}{0.071}$$

$$\boxed{VF = 4.66}$$

IV. Accuracy Correction Factor (ACF)

Matrix spike recovery data were not provided ∴ ACF = 1.

V. Calculation of Treatment Standard (T.S.)

The treatment standard is calculated as follows:

$$T.S. = [ave] \times VF \times ACF$$

$$T.S. = 0.071 \times 4.66 \times 1$$

$$\boxed{TS = 0.33 \text{ mg/L}}$$

TCLP Data Provided By Rollins Environmental and GNB (mg/L) -- Raw Data for Chromium

Samples	Waste	Chromium Raw		Chromium Treated	Chromium (LN)
1	C-825			0.4030	-0.9088
2	WP-11262	40.6000		2.0400	0.7129
3	WP-10073	284.0000		1.0100	0.0100
4	C-833			0.1250	-2.0794
5	C-832			0.6200	-0.4780
6	C-828			0.1570	-1.8515
7	C-830			0.1710	-1.7661
8	WP-10076	317.0000		1.4000	0.3365
9	WP-10081	1580.00	<	0.0028	-5.8781
10	WP-7397	0.0056		0.0939	-2.3655
11	WP-6458	< 0.0028	<	0.0028	-5.8781
12	WP-1731	< 0.6100	<	0.0057	-5.1673
13	WP-12967	< 0.0050	<	0.0050	-5.2983
14	WP-1772	0.0070	<	0.0050	-5.2983
15	WP-10078	0.6390		0.0987	-2.3157
16	WP-7124	< 0.0280	<	0.0028	-5.8781
17	C-473		<	0.0028	-5.8781
18	WP-6795	0.0390	<	0.0028	-5.8781
19	WP-6797	< 0.0028	<	0.0028	-5.8781
20	WP-6798	< 0.0018	<	0.0028	-5.8781
21	C-992			0.0340	-3.3814
22	WP-6458	< 0.0028	<	0.0028	-5.8781
23	WP-7393	0.0056		0.0939	-2.3655
24	WP-12651	< 0.5000		0.0150	-4.1997
25	C-1454		<	0.0050	-5.2983
26	C-1448		<	0.0050	-5.2983
27	C-1456			0.0090	-4.7105
28	C-1458		<	0.0050	-5.2983
29	WP-11504	0.0100	<	0.0050	-5.2983
30	WP-13041	0.0110	<	0.0050	-5.2983
31	WP-14700	< 0.0050		0.2320	-1.4610
32	WP-6766	< 0.2800	<	0.0028	-5.8781
33	WP-8036	< 0.0280	<	0.0028	-5.8781
34	WP-7280	< 0.2800	<	0.0028	-5.8781
35	WP-6969	0.0922	<	0.0028	-5.8781
36	WP-1672	0.0240	<	0.0057	-5.1673
37	C-491		<	0.0028	-5.8781
38	C-484		<	0.0028	-5.8781
39	C-470			0.0227	-3.7854
40	C-480			0.0573	-2.8595
41	C-489			0.0104	-4.5659
42	C-495			0.0046	-5.3817
43	C-1002			0.0800	-2.5257
44	WP-12111	< 0.0050	<	0.0050	-5.2983
45	C-896		<	0.0050	-5.2983
46	C-906		<	0.0050	-5.2983
47	C-912		<	0.0050	-5.2983
48	C-918			1.6600	0.5068
49	C-925		<	0.0050	-5.2983
50	C-935		<	0.0050	-5.2983
51	C-1198		<	0.0050	-5.2983
52	C-1203		<	0.0050	-5.2983
53	C-1281		<	0.0050	-5.2983
54	C-1299		<	0.0050	-5.2983
55	C-980		<	0.0050	-5.2983
56	R-1731	0.1730			
57	R-1731	0.2150			
58	R-1731	0.0846			
59	R-1731	< 0.2800			
60	R-1731	< 0.2800			
61	R-1731	0.0037			
62	R-1731	0.1730			
63	GNB-1	< 0.0200	<	0.0200	-3.9120
64	GNB-2	0.7500	<	0.0200	-3.9120
65	GNB-3	0.2100	<	0.0200	-3.9120
66	GNB-4	< 0.0200	<	0.0200	-3.9120
67	GNB-5	< 0.0200	<	0.0200	-3.9120
68	GNB-6	< 0.0200	<	0.0200	-3.9120