USEPA - CLP
Form3
CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

CLIENT ID.
AOC13SB28AA

Lab Name: Columbia Analytical Services
Lab Code: CAS Case No.:
Client Name: ENSR/ AK STEEL
Matrix(Solid/Aqueous/Waste/Ash): solid
Sample Receipt Date: 1/13/2006
Ext. Date 1/16/2006
Inj. Vol(ul): 20.0 Inj. Vol(ul):1.0
Analysis Date: 20-Jan-06
Dilution Factor: 1
CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

Contract:
Lab ID: E0600019-002
Sample Wt/Vol: 11.568 g
Initial Calibration Date: 9/16/2004
Instrument ID: AutoSpec-Ultima
GC Column ID: DB-5
Sample Date Filename: U13943#1
Blank Data Filename: U13930#1
Cal. Ver. Date Filename: U13935#1
%Moisture: 12.68

TARGET ANALYTE	CONCENTRATION		TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	*		x 1.0	
12378-PeCDD	*		x 0.5	
123478-HxCDD	*		x 0.1	
123678-HxCDD	0.124		x 0.1	1.240E-02
123789-HxCDD	0.090		x 0.1	9.000E-03
1234678-HpCDD	3.365		x 0.01	3.365E-02
OCDD	15.690		x 0.001	1.569E-02
2378-TCDF	*		x 0.1	
12378-PeCDF	0.219		x 0.05	1.095E-02
23478-PeCDF	0.195		x 0.5	9.750E-02
123478-HxCDF	0.395		x 0.1	3.950E-02
123678-HxCDF	0.178		x 0.1	1.780E-02
123789-HxCDF	0.061		x 0.1	6.100E-03
234678-HxCDF	0.084		x 0.1	8.400E-03
1234678-HpCDF	1.663		x 0.01	1.663E-02
1234789-HpCDF	0.226		x 0.01	2.260E-03
OCDF	5.334		x 0.001	5.334E-03
			Total =	2.752E-01

(1) Taken from 'Interim Procudures Estimating Risk Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofutans (CDDs and CDFs)' and 1989 Update (EPA/625/3-89/016, March 1989) and 1989 Update.

The TCDF value is reported from the confirmation analysis (DB-225 column).

CAS, INC.
2378-TCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID
AOC13SB28AA

Lab Name: Columbia Analytical Services Episode No.:

Client Name: ENSR/AK STEEL Lab Sample ID: E0600019-002

Matrix (aqueous/solid/leachate): Solid Sample Wt/Vol: 11.568g or mL: g

Sample Receipt Date: 01/13/06 Initial Calibration Date: 08/06/03

Ext. Date: 01/16/06 Instrument ID: 70S

Analysis Date: 20-JAN-06 Time: 14:14:48 GC Column ID: DB-225

Ext. Vol(ul):20.0 Sample Data Filename: A21072#5

Inj. Vol(ul):1.0 Blank Data Filename: A21071#3

Dilution Factor: 1 Cal. Ver. Data Filename: A21071#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture: 12.68

ANALYTE	CONCENTRATION FOUND(1)	DETECTION LIMIT	Q	ION ABUND. RATIO	RRT	TEF
2,3,7,8-TCDF	*	0.898	U	*	*	*

INT. STANDARD	SPIKE CONCENT.(pg)	CONCENT. FOUND(pg)	RECOV. %	ION ABUND. RATIO	RRT
13C-2,3,7,8-TCDF	1000	597.67	59.77	0.78	1.06
CLEANUP STANDARD					
37Cl-2,3,7,8-TCDD	800	654.44	81.80		0.99

(1) '*' indicates non-detected.

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
AOC13SB1BA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-003

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.039 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U13944#1

Analysis Date: 20-JAN-06 Time: 01:01:03 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 12.65

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.066	U	*	*	0.98
1,2,3,7,8-PeCDD	1.560	0.082	J	1.69	1.000	0.91
1,2,3,4,7,8-HxCDD	0.715	0.115	JK	1.47	0.999	1.00
1,2,3,6,7,8-HxCDD	0.689	0.111	JK	1.47	0.999	1.04
1,2,3,7,8,9-HxCDD	1.285	0.110	J	1.23	1.004	1.06
1,2,3,4,6,7,8-HpCDD	17.525	0.194	B	0.98	1.000	0.92
OCDD	81.195	0.342	B	0.87	1.000	0.99
2,3,7,8-TCDF	~~4.689~~	~~0.042~~	~~C~~	0.76	1.001	0.82
1,2,3,7,8-PeCDF	1.950	0.080	J	1.48	1.000	0.84
2,3,4,7,8-PeCDF	5.399	0.077		1.61	1.026	0.87
1,2,3,4,7,8-HxCDF	7.520	0.166		1.17	1.000	1.13
1,2,3,6,7,8-HxCDF	6.988	0.173		1.23	1.004	1.08
1,2,3,7,8,9-HxCDF	*	0.213	U	*	*	0.88
2,3,4,6,7,8-HxCDF	8.692	0.185		1.16	1.018	1.01
1,2,3,4,6,7,8-HpCDF	19.116	0.069		1.04	1.000	1.36
1,2,3,4,7,8,9-HpCDF	2.212	0.096	J	1.03	1.031	0.97
OCDF	9.675	0.400	B	0.95	1.004	0.95
Total Tetra-Dioxins	4.750	0.066				
Total Penta-Dioxins	10.317	0.082				
Total Hexa-Dioxins	35.113	0.111				
Total Hepta-Dioxins	38.493	0.194				
Total Tetra-Furans	69.288	0.042				
Total Penta-Furans	287.207	0.077				
Total Hexa-Furans	205.090	0.166				
Total Hepta-Furans	40.715	0.069				

(1) Qualifiers: See flag definitions.

(2) RRTs and ion ratios are specified in Tables 11 and 8, Method 8290. 8290F1

FORM 2

PCDD/PCDF LABELED COMPOUND AND
CLEANUP STANDARD RECOVERIES

CLIENT ID.

AOC13SB1BA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-003

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.039 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column: DB-5

Ext. Vol(ul): 20.0 Inj. Vol(ul): 1.0 Sample Data Filename: U13944#1

Analysis Date: 20-JAN-06 Time: 01:01:03 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 12.65

	SPIKE CONC.(pg)	CONCENT. FOUND(pg)	RECOV. %	Q	ION ABUND. RATIO(2)	RRT (2)	MEAN RRF
LABELED COMPOUNDS							
13C-2,3,7,8-TCDD	1000	619.97	62.00		0.77	1.014	1.10
13C-1,2,3,7,8-PeCDD	1000	578.21	57.82		1.51	1.192	1.01
13C-1,2,3,6,7,8-HxCDD	2500	2362.76	94.51		1.24	0.996	0.98
13C-1,2,3,4,6,7,8-HpCDD	2500	1552.74	62.11		1.04	1.065	0.95
13C-OCDD	5000	2164.71	43.29		0.90	1.141	0.97
13C-2,3,7,8-TCDF	1000	591.90	59.19		0.75	0.978	1.52
13C-1,2,3,7,8-PeCDF	1000	562.89	56.29		1.53	1.149	1.41
13C-1,2,3,4,7,8-HxCDF	2500	3282.21	131.29		0.51	0.975	1.22
13C-1,2,3,4,6,7,8-HpCDF	2500	1938.93	77.56		0.43	1.043	0.96
CLEANUP STANDARD							
37Cl-2,3,7,8-TCDD	800	633.16	79.15			1.014	

(1) Contract-required limits for percent recovery are 40%-135% (section 8.4, Method 8290).

(2) Contract-required Reference Attributions for RRTs and ion abundance ratios are specified in Tables 11 and 8, respectively, Method 8290.

NOTE: There is no ion abundance ratio for 37Cl4-2378-TCDD (cleanup standard).

USEPA - CLP
Form3
CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

CLIENT ID.
AOC13SB1BA

Lab Name: Columbia Analytical Services
Lab Code: CAS Case No.:
Client Name: ENSR/ AK STEEL
Matrix(Solid/Aqueous/Waste/Ash): solid
Sample Receipt Date: 1/13/2006
Ext. Date 1/16/2006
Inj. Vol(ul): 20.0 Inj. Vol(ul):1.0
Analysis Date: 20-Jan-06
Dilution Factor: 1
CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

Contract:
Lab ID: E0600019-003
Sample Wt/Vol: 11.039 g
Initial Calibration Date: 9/16/2004
Instrument ID: AutoSpec-Ultima
GC Column ID: DB-5
Sample Date Filename: U13944#1
Blank Data Filename: U13930#1
Cal. Ver. Date Filename: U13935#1
%Moisture: 12.65

TARGET ANALYTE	CONCENTRATION			TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	*		x	1.0	
12378-PeCDD	1.560		x	0.5	7.800E-01
123478-HxCDD	0.715		x	0.1	7.150E-02
123678-HxCDD	0.689		x	0.1	6.890E-02
123789-HxCDD	1.285		x	0.1	1.285E-01
1234678-HpCDD	17.525		x	0.01	1.753E-01
OCDD	81.195		x	0.001	8.120E-02
2378-TCDF	2.498		x	0.1	2.498E-01
12378-PeCDF	1.950		x	0.05	9.750E-02
23478-PeCDF	5.399		x	0.5	2.700E+00
123478-HxCDF	7.520		x	0.1	7.520E-01
123678-HxCDF	6.988		x	0.1	6.988E-01
123789-HxCDF	*		x	0.1	
234678-HxCDF	8.692		x	0.1	8.692E-01
1234678-HpCDF	19.116		x	0.01	1.912E-01
1234789-HpCDF	2.212		x	0.01	2.212E-02
OCDF	9.675		x	0.001	9.675E-03
				Total =	6.895E+00

(1) Taken from 'Interim Procudures Estimating Risk Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofutans (CDDs and CDFs)' and 1989 Update (EPA/625/3-89/016, March 1989) and 1989 Update.

The TCDF value is reported from the confirmation analysis (DB-225 column).

CAS, INC.
2378-TCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID
AOC13SB1BA

Lab Name: Columbia Analytical Services Episode No.:

Client Name: ENSR/AK STEEL Lab Sample ID: E0600019-003

Matrix (aqueous/solid/leachate): Solid Sample Wt/Vol: 11.039g or mL: g

Sample Receipt Date: 01/13/06 Initial Calibration Date: 08/06/03

Ext. Date: 01/16/06 Instrument ID: 70S

Analysis Date: 20-JAN-06 Time: 14:49:27 GC Column ID: DB-225

Ext. Vol(ul):20.0 Sample Data Filename: A21072#6

Inj. Vol(ul):1.0 Blank Data Filename: A21071#3

Dilution Factor: 1 Cal. Ver. Data Filename: A21071#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture: 12.65

ANALYTE	CONCENTRATION FOUND(1)	DETECTION LIMIT	Q	ION ABUND. RATIO	RRT	TEF
2,3,7,8-TCDF	2.498	0.515		0.74	1.001	0.250

INT. STANDARD	SPIKE CONCENT.(pg)	CONCENT. FOUND(pg)	RECOV. %	ION ABUND. RATIO	RRT
13C-2,3,7,8-TCDF	1000	719.40	71.94	0.77	1.06
CLEANUP STANDARD					
37Cl-2,3,7,8-TCDD	800	720.04	90.00		0.99

(1) '*' indicates non-detected.

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
AOC13SB8AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-004

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.644 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U13945#1

Analysis Date: 20-JAN-06 Time: 01:47:48 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 13.95

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	0.126	0.040	JK	0.39	1.002	0.98
1,2,3,7,8-PeCDD	0.123	0.050	JK	1.91	1.001	0.91
1,2,3,4,7,8-HxCDD	*	0.024	U	*	*	1.00
1,2,3,6,7,8-HxCDD	0.353	0.023	J	1.26	1.000	1.04
1,2,3,7,8,9-HxCDD	0.248	0.023	JK	0.97	1.005	1.06
1,2,3,4,6,7,8-HpCDD	8.616	0.055	B	1.00	1.000	0.92
OCDD	53.882	0.090	B	0.86	1.000	0.99
2,3,7,8-TCDF	*	0.060	U	*	*	0.82
1,2,3,7,8-PeCDF	0.095	0.021	JK	2.54	1.000	0.84
2,3,4,7,8-PeCDF	0.303	0.021	J	1.65	1.026	0.87
1,2,3,4,7,8-HxCDF	0.576	0.046	JK	1.46	1.000	1.13
1,2,3,6,7,8-HxCDF	0.197	0.048	JK	1.55	1.003	1.08
1,2,3,7,8,9-HxCDF	*	0.059	U	*	*	0.88
2,3,4,6,7,8-HxCDF	*	0.051	U	*	*	1.01
1,2,3,4,6,7,8-HpCDF	2.386	0.044	J	0.96	1.000	1.36
1,2,3,4,7,8,9-HpCDF	*	0.062	U	*	*	0.97
OCDF	4.458	0.103	BJ	0.82	1.004	0.95
Total Tetra-Dioxins	0.413	0.040				
Total Penta-Dioxins	0.080	0.050				
Total Hexa-Dioxins	2.665	0.023				
Total Hepta-Dioxins	16.579	0.055				
Total Tetra-Furans	1.785	0.060				
Total Penta-Furans	2.346	0.021				
Total Hexa-Furans	2.165	0.046				
Total Hepta-Furans	4.734	0.044				

(1) Qualifiers: See flag definitions.

(2) RRTs and ion ratios are specified in Tables 11 and 8, Method 8290. 8290F1

FORM 2

PCDD/PCDF LABELED COMPOUND AND
CLEANUP STANDARD RECOVERIES

CLIENT ID.
AOC13SB8AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-004

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.644 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column: DB-5

Ext. Vol(ul): 20.0 Inj. Vol(ul): 1.0 Sample Data Filename: U13945#1

Analysis Date: 20-JAN-06 Time: 01:47:48 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 13.95

	SPIKE CONC.(pg)	CONCENT. FOUND(pg)	RECOV. %	Q	ION ABUND. RATIO(2)	RRT (2)	MEAN RRF
LABELED COMPOUNDS							
13C-2,3,7,8-TCDD	1000	491.93	49.19		0.78	1.011	1.10
13C-1,2,3,7,8-PeCDD	1000	522.13	52.21		1.50	1.191	1.01
13C-1,2,3,6,7,8-HxCDD	2500	2451.43	98.06		1.21	0.995	0.98
13C-1,2,3,4,6,7,8-HpCDD	2500	1744.14	69.77		1.05	1.067	0.95
13C-OCDD	5000	3257.21	65.14		0.89	1.143	0.97
13C-2,3,7,8-TCDF	1000	420.43	42.04		0.78	0.975	1.52
13C-1,2,3,7,8-PeCDF	1000	505.52	50.55		1.52	1.149	1.41
13C-1,2,3,4,7,8-HxCDF	2500	2428.86	97.15		0.51	0.971	1.22
13C-1,2,3,4,6,7,8-HpCDF	2500	1976.38	79.06		0.44	1.044	0.96
CLEANUP STANDARD							
37Cl-2,3,7,8-TCDD	800	530.48	66.31			1.011	

(1) Contract-required limits for percent recovery are 40%-135% (section 8.4, Method 8290).

(2) Contract-required Reference Attributions for RRTs and ion abundance ratios are specified in Tables 11 and 8, respectively, Method 8290.

NOTE: There is no ion abundance ratio for 37Cl4-2378-TCDD (cleanup standard).

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
AOC13SB8AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS Method: 8290 Lab Sample ID: E0600019-004

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.644 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U13945#1

Analysis Date: 20-JAN-06 Time: 01:47:48 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture: 13.95

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	0.126	X 1.0	1.26e-01
1,2,3,7,8-PeCDD	0.123	X 0.5	6.17e-02
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	0.353	X 0.1	3.53e-02
1,2,3,7,8,9-HxCDD	0.248	X 0.1	2.48e-02
1,2,3,4,6,7,8-HpCDD	8.616	X 0.01	8.62e-02
OCDD	53.882	X 0.001	5.39e-02
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	0.095	X 0.05	4.76e-03
2,3,4,7,8-PeCDF	0.303	X 0.5	1.51e-01
1,2,3,4,7,8-HxCDF	0.576	X 0.1	5.76e-02
1,2,3,6,7,8-HxCDF	0.197	X 0.1	1.97e-02
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	2.386	X 0.01	2.39e-02
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	4.458	X 0.001	4.46e-03
		Total:	6.49e-01

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs)' and 1989 Update(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
AOC13SB15AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-005

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.556 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U13946#1

Analysis Date: 20-JAN-06 Time: 02:34:34 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 9.09

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.022	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.028	U	*	*	0.91
1,2,3,4,7,8-HxCDD	*	0.027	U	*	*	1.00
1,2,3,6,7,8-HxCDD	0.054	0.026	JK	0.85	1.000	1.04
1,2,3,7,8,9-HxCDD	0.075	0.025	J	1.18	1.009	1.06
1,2,3,4,6,7,8-HpCDD	2.223	0.080	BJ	0.99	1.000	0.92
OCDD	15.047	0.106	B	0.88	1.000	0.99
2,3,7,8-TCDF	*	0.039	U	*	*	0.82
1,2,3,7,8-PeCDF	*	0.019	U	*	*	0.84
2,3,4,7,8-PeCDF	0.046	0.018	J	1.45	1.026	0.87
1,2,3,4,7,8-HxCDF	0.082	0.024	JK	1.60	1.000	1.13
1,2,3,6,7,8-HxCDF	*	0.026	U	*	*	1.08
1,2,3,7,8,9-HxCDF	*	0.031	U	*	*	0.88
2,3,4,6,7,8-HxCDF	*	0.027	U	*	*	1.01
1,2,3,4,6,7,8-HpCDF	0.407	0.047	J	0.93	1.000	1.36
1,2,3,4,7,8,9-HpCDF	*	0.066	U	*	*	0.97
OCDF	0.799	0.092	BJ	0.76	1.004	0.95
Total Tetra-Dioxins	*	0.022	U			
Total Penta-Dioxins	0.053	0.028				
Total Hexa-Dioxins	0.320	0.026				
Total Hepta-Dioxins	4.548	0.080				
Total Tetra-Furans	*	0.039	U			
Total Penta-Furans	0.192	0.018				
Total Hexa-Furans	0.125	0.024				
Total Hepta-Furans	0.961	0.047				

(1) Qualifiers: See flag definitions.

(2) RRTs and ion ratios are specified in Tables 11 and 8, Method 8290. 8290F1

FORM 2

PCDD/PCDF LABELED COMPOUND AND
CLEANUP STANDARD RECOVERIES

CLIENT ID.

AOC13SB15AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-005

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.556 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column: DB-5

Ext. Vol(ul): 20.0 Inj. Vol(ul): 1.0 Sample Data Filename: U13946#1

Analysis Date: 20-JAN-06 Time: 02:34:34 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 9.09

	SPIKE CONC.(pg)	CONCENT. FOUND(pg)	RECOV. %	Q	ION ABUND. RATIO(2)	RRT (2)	MEAN RRF
LABELED COMPOUNDS							
13C-2,3,7,8-TCDD	1000	631.34	63.13		0.77	1.010	1.10
13C-1,2,3,7,8-PeCDD	1000	592.03	59.20		1.56	1.192	1.01
13C-1,2,3,6,7,8-HxCDD	2500	1870.99	74.84		1.22	0.992	0.98
13C-1,2,3,4,6,7,8-HpCDD	2500	1128.71	45.15		1.04	1.069	0.95
13C-OCDD	5000	1855.44	37.11	Y	0.87	1.145	0.97
13C-2,3,7,8-TCDF	1000	492.47	49.25		0.78	0.975	1.52
13C-1,2,3,7,8-PeCDF	1000	561.42	56.14		1.51	1.150	1.41
13C-1,2,3,4,7,8-HxCDF	2500	1814.54	72.58		0.52	0.971	1.22
13C-1,2,3,4,6,7,8-HpCDF	2500	1341.21	53.65		0.43	1.046	0.96
CLEANUP STANDARD							
37Cl-2,3,7,8-TCDD	800	621.27	77.66			1.011	

(1) Contract-required limits for percent recovery are 40%-135% (section 8.4, Method 8290).

(2) Contract-required Reference Attributions for RRTs and ion abundance ratios are specified in Tables 11 and 8, respectively, Method 8290.

NOTE: There is no ion abundance ratio for 37Cl4-2378-TCDD (cleanup standard).

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
AOC13SB15AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS Method: 8290 Lab Sample ID: E0600019-005

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.556 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U13946#1

Analysis Date: 20-JAN-06 Time: 02:34:34 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture: 9.09

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	0.054	X 0.1	5.35e-03
1,2,3,7,8,9-HxCDD	0.075	X 0.1	7.47e-03
1,2,3,4,6,7,8-HpCDD	2.223	X 0.01	2.22e-02
OCDD	15.047	X 0.001	1.50e-02
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	0.046	X 0.5	2.30e-02
1,2,3,4,7,8-HxCDF	0.082	X 0.1	8.19e-03
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	0.407	X 0.01	4.07e-03
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.799	X 0.001	7.99e-04
		Total:	8.62e-02

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs)' and 1989 Update(EPA/625/3-89/016, March 1989.)

Form 1

CLIENT ID.

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

AOC13SB7BA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-006

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.813 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U13947#1

Analysis Date: 20-JAN-06 Time: 03:21:20 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 18.24

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	0.124	0.029	JK	0.32	1.001	0.98
1,2,3,7,8-PeCDD	0.391	0.033	JK	1.20	1.000	0.91
1,2,3,4,7,8-HxCDD	0.339	0.035	JK	1.43	0.999	1.00
1,2,3,6,7,8-HxCDD	0.765	0.034	J	1.18	1.000	1.04
1,2,3,7,8,9-HxCDD	0.876	0.034	J	1.24	1.009	1.06
1,2,3,4,6,7,8-HpCDD	5.683	0.063	B J	1.11	1.000	0.92
OCDD	12.521	0.109	B J	0.94	1.000	0.99
2,3,7,8-TCDF	~~2.953~~ 1.0551	~~0.055~~ 0.031	C	0.82	1.001	0.82
1,2,3,7,8-PeCDF	3.198	0.030	J	1.48	1.001	0.84
2,3,4,7,8-PeCDF	1.971	0.029	J	1.57	1.026	0.87
1,2,3,4,7,8-HxCDF	9.859	0.027		1.18	1.000	1.13
1,2,3,6,7,8-HxCDF	4.741	0.028		1.22	1.003	1.08
1,2,3,7,8,9-HxCDF	0.249	0.035	JK	1.49	1.037	0.88
2,3,4,6,7,8-HxCDF	1.366	0.030	J	1.32	1.017	1.01
1,2,3,4,6,7,8-HpCDF	14.585	0.061	J	1.00	1.000	1.36
1,2,3,4,7,8,9-HpCDF	2.834	0.085	J	1.14	1.032	0.97
OCDF	12.127	0.130	B J	0.85	1.003	0.95
Total Tetra-Dioxins	3.032	0.029				
Total Penta-Dioxins	2.446	0.033	J			
Total Hexa-Dioxins	5.125	0.034				
Total Hepta-Dioxins	10.680	0.063	J			
Total Tetra-Furans	12.934	0.055	J			
Total Penta-Furans	26.476	0.029	J			
Total Hexa-Furans	30.682	0.027				
Total Hepta-Furans	22.360	0.061	J			

(1) Qualifiers: See flag definitions.

(2) RRTs and ion ratios are specified in Tables 11 and 8, Method 8290. 8290F1

FORM 2

PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.

AOC13SB7BA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-006

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.813 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column: DB-5

Ext. Vol(ul): 20.0 Inj. Vol(ul): 1.0 Sample Data Filename: U13947#1

Analysis Date: 20-JAN-06 Time: 03:21:20 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 18.24

	SPIKE CONC. (pg)	CONCENT. FOUND (pg)	RECOV. %	Q	ION ABUND. RATIO(2)	RRT (2)	MEAN RRF
LABELED COMPOUNDS							
13C-2,3,7,8-TCDD	1000	405.69	40.57		0.77	1.010	1.10
13C-1,2,3,7,8-PeCDD	1000	402.46	40.25		1.52	1.191	1.01
13C-1,2,3,6,7,8-HxCDD	2500	1180.72	47.23		1.23	0.992	0.98
13C-1,2,3,4,6,7,8-HpCDD	2500	750.62	30.02	Y	1.02	1.068	0.95
13C-OCDD	5000	1340.01	26.80	Y	0.88	1.145	0.97
13C-2,3,7,8-TCDF	1000	335.98	33.60	Y	0.75	0.975	1.52
13C-1,2,3,7,8-PeCDF	1000	384.12	38.41	Y	1.53	1.149	1.41
13C-1,2,3,4,7,8-HxCDF	2500	1143.15	45.73		0.51	0.970	1.22
13C-1,2,3,4,6,7,8-HpCDF	2500	862.27	34.49	Y	0.43	1.046	0.96
CLEANUP STANDARD							
37Cl-2,3,7,8-TCDD	800	574.50	71.81			1.011	

(1) Contract-required limits for percent recovery are 40%-135% (section 8.4, Method 8290).

(2) Contract-required Reference Attributions for RRTs and ion abundance ratios are specified in Tables 11 and 8, respectively, Method 8290.

NOTE: There is no ion abundance ratio for 37Cl4-2378-TCDD (cleanup standard).

USEPA - CLP
Form3
CDD/CDF TOXICITY EQUIVALENCE SUMMARY
HIGH RESOLUTION

CLIENT ID.
AOC13SB7BA

Lab Name: Columbia Analytical Services
Lab Code: CAS Case No.:
Client Name: ENSR/ AK STEEL
Matrix(Solid/Aqueous/Waste/Ash): solid
Sample Receipt Date: 1/13/2006
Ext. Date 1/16/2006
Inj. Vol(ul): 20.0 Inj. Vol(ul):1.0
Analysis Date: 20-Jan-06
Dilution Factor: 1
CONCENTRATION UNITS: (pg/L or ng/Kg)

Contract:
Lab ID: E0600019-006
Sample Wt/Vol:11.813 g
Initial Calibration Date: 9/16/2004
Instrument ID:AutoSpec-Ultima
GC Column ID: DB-5
Sample Date Filename: U13947#1
Blank Data Filename: U13930#1
Cal. Ver. Date Filename: U13935#1
ng/Kg %Moisture: 18.24

TARGET ANALYTE	CONCENTRATION		TEF	TEF-ADJUSTED CONCENTRATION
2378-TCDD	0.124		x 1.0	1.240E-01
12378-PeCDD	0.391		x 0.5	1.955E-01
123478-HxCDD	0.339		x 0.1	3.390E-02
123678-HxCDD	0.765		x 0.1	7.650E-02
123789-HxCDD	0.876		x 0.1	8.760E-02
1234678-HpCDD	5.683		x 0.01	5.683E-02
OCDD	12.521		x 0.001	1.252E-02
2378-TCDF	1.058		x 0.1	1.058E-01
12378-PeCDF	3.198		x 0.05	1.599E-01
23478-PeCDF	1.971		x 0.5	9.855E-01
123478-HxCDF	9.859		x 0.1	9.859E-01
123678-HxCDF	4.741		x 0.1	4.741E-01
123789-HxCDF	0.249		x 0.1	2.490E-02
234678-HxCDF	1.366		x 0.1	1.366E-01
1234678-HpCDF	14.585		x 0.01	1.459E-01
1234789-HpCDF	2.834		x 0.01	2.834E-02
OCDF	9.675		x 0.001	9.675E-03
			Total =	3.643E+00

(1) Taken from 'Interim Procudures Estimating Risk Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofutans (CDDs and CDFs)' and 1989 Update (EPA/625/3-89/016, March 1989) and 1989 Update.

The TCDF value is reported from the confirmation analysis (DB-225 column).

CAS, INC.
2378-TCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID
AOC13SB7BA

Lab Name: Columbia Analytical Services Episode No.:

Client Name: ENSR / AK STEEL Lab Sample ID: E0600019-006

Matrix (aqueous/solid/leachate): Solid Sample Wt/Vol: 11.813g or mL: g

Sample Receipt Date: 01/13/06 Initial Calibration Date: 08/06/03

Ext. Date: 01/16/06 Instrument ID: 70S

Analysis Date: 9-FEB-06 Time: 13:14:31 GC Column ID: DB-225

Ext. Vol(ul):20.0 Sample Data Filename: A21097#3

Inj. Vol(ul):1.0 Blank Data Filename: A21097#2

Dilution Factor: 1 Cal. Ver. Data Filename: A21096#2

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture: 18.24

ANALYTE	CONCENTRATION FOUND(1)	DETECTION LIMIT	Q	ION ABUND. RATIO	RRT	TEF
2,3,7,8-TCDF	1.058	0.984	J	0.67	1.001	0.106

INT. STANDARD	SPIKE CONCENT.(pg)	CONCENT. FOUND(pg)	RECOV. %	ION ABUND. RATIO	RRT
13C-2,3,7,8-TCDF	1000	415.29	41.53	0.77	1.06
CLEANUP STANDARD					
37Cl-2,3,7,8-TCDD	800	661.80	82.72		0.99

(1) '*' indicates non-detected.

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
AOC13SB17AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-007

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.349 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U13948#1

Analysis Date: 20-JAN-06 Time: 04:08:06 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 20.29

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.021	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.038	U	*	*	0.91
1,2,3,4,7,8-HxCDD	*	0.040	U	*	*	1.00
1,2,3,6,7,8-HxCDD	*	0.038	U	*	*	1.04
1,2,3,7,8,9-HxCDD	*	0.038	U	*	*	1.06
1,2,3,4,6,7,8-HpCDD	0.285	0.052	BJ	0.90	1.000	0.92
OCDD	2.773	0.109	BJ	0.76	1.000	0.99
2,3,7,8-TCDF	*	0.049	U	*	*	0.82
1,2,3,7,8-PeCDF	*	0.021	U	*	*	0.84
2,3,4,7,8-PeCDF	*	0.020	U	*	*	0.87
1,2,3,4,7,8-HxCDF	*	0.023	U	*	*	1.13
1,2,3,6,7,8-HxCDF	*	0.024	U	*	*	1.08
1,2,3,7,8,9-HxCDF	*	0.030	U	*	*	0.88
2,3,4,6,7,8-HxCDF	*	0.026	U	*	*	1.01
1,2,3,4,6,7,8-HpCDF	0.122	0.047	J	0.99	1.000	1.36
1,2,3,4,7,8,9-HpCDF	*	0.066	U	*	*	0.97
OCDF	0.155	0.125	BJ	0.78	1.004	0.95
Total Tetra-Dioxins	*	0.021	U			
Total Penta-Dioxins	*	0.038	U			
Total Hexa-Dioxins	*	0.038	U			
Total Hepta-Dioxins	0.285	0.052	J			
Total Tetra-Furans	*	0.049	U			
Total Penta-Furans	*	0.020	U			
Total Hexa-Furans	*	0.023	U			
Total Hepta-Furans	0.122	0.047	J			

(1) Qualifiers: See flag definitions.

(2) RRTs and ion ratios are specified in Tables 11 and 8, Method 8290. 8290F1

FORM 2

PCDD/PCDF LABELED COMPOUND AND
CLEANUP STANDARD RECOVERIES

CLIENT ID.

AOC13SB17AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-007

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.349 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column: DB-5

Ext. Vol(ul): 20.0 Inj. Vol(ul): 1.0 Sample Data Filename: U13948#1

Analysis Date: 20-JAN-06 Time: 04:08:06 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 20.29

	SPIKE CONC.(pg)	CONCENT. FOUND(pg)	RECOV. %	Q	ION ABUND. RATIO(2)	RRT (2)	MEAN RRF
LABELED COMPOUNDS							
13C-2,3,7,8-TCDD	1000	578.48	57.85		0.77	1.011	1.10
13C-1,2,3,7,8-PeCDD	1000	584.54	58.45		1.54	1.192	1.01
13C-1,2,3,6,7,8-HxCDD	2500	1771.72	70.87		1.24	0.992	0.98
13C-1,2,3,4,6,7,8-HpCDD	2500	1104.78	44.19		1.04	1.068	0.95
13C-OCDD	5000	2075.15	41.50		0.89	1.145	0.97
13C-2,3,7,8-TCDF	1000	476.74	47.67		0.77	0.975	1.52
13C-1,2,3,7,8-PeCDF	1000	546.49	54.65		1.58	1.150	1.41
13C-1,2,3,4,7,8-HxCDF	2500	1680.78	67.23		0.51	0.970	1.22
13C-1,2,3,4,6,7,8-HpCDF	2500	1329.79	53.19		0.43	1.046	0.96
CLEANUP STANDARD							
37Cl-2,3,7,8-TCDD	800	589.59	73.70			1.011	

(1) Contract-required limits for percent recovery are 40%-135% (section 8.4, Method 8290).

(2) Contract-required Reference Attributions for RRTs and ion abundance ratios are specified in Tables 11 and 8, respectively, Method 8290.

NOTE: There is no ion abundance ratio for 37Cl4-2378-TCDD (cleanup standard).

Form 3

CLIENT ID.

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

AOC13SB17AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS Method: 8290 Lab Sample ID: E0600019-007

Client Name: ENSR / AK STEEL Sample Wt/Vol: 11.349 g or mL: g

Matrix (aqueous/solid/leachate): solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U13948#1

Analysis Date: 20-JAN-06 Time: 04:08:06 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13935#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture: 20.29

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.285	X 0.01	2.85e-03
OCDD	2.773	X 0.001	2.77e-03
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	0.122	X 0.01	1.22e-03
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.155	X 0.001	1.55e-04
		Total:	7.00e-03

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs)' and 1989 Update(EPA/625/3-89/016, March 1989.)

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
AOC13SB20AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-008

Client Name: ENSR/AK STEEL Sample Wt/Vol: 15.037 g or mL: g

Matrix (aqueous/solid/leachate): Solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U13956#1

Analysis Date: 20-JAN-06 Time: 12:17:28 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13950#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 4.90

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.020	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.031	U	*	*	0.91
1,2,3,4,7,8-HxCDD	*	0.023	U	*	*	1.00
1,2,3,6,7,8-HxCDD	*	0.023	U	*	*	1.04
1,2,3,7,8,9-HxCDD	*	0.022	U	*	*	1.06
1,2,3,4,6,7,8-HpCDD	0.233	0.026	BJK	1.45	1.000	0.92
OCDD	2.114	0.056	BJ	0.83	1.000	0.99
2,3,7,8-TCDF	*	0.036	U	*	*	0.82
1,2,3,7,8-PeCDF	*	0.019	U	*	*	0.84
2,3,4,7,8-PeCDF	*	0.018	U	*	*	0.87
1,2,3,4,7,8-HxCDF	*	0.019	U	*	*	1.13
1,2,3,6,7,8-HxCDF	*	0.020	U	*	*	1.08
1,2,3,7,8,9-HxCDF	*	0.024	U	*	*	0.88
2,3,4,6,7,8-HxCDF	*	0.021	U	*	*	1.01
1,2,3,4,6,7,8-HpCDF	0.095	0.032	JK	1.45	1.000	1.36
1,2,3,4,7,8,9-HpCDF	*	0.045	U	*	*	0.97
OCDF	0.203	0.054	BJ	0.94	1.004	0.95
Total Tetra-Dioxins	*	0.020	U			
Total Penta-Dioxins	*	0.031	U			
Total Hexa-Dioxins	0.129	0.023	J			
Total Hepta-Dioxins	0.392	0.026	J			
Total Tetra-Furans	*	0.036	U			
Total Penta-Furans	0.140	0.018	J			
Total Hexa-Furans	*	0.019	U			
Total Hepta-Furans	*	0.032	U			

(1) Qualifiers: See flag definitions.

(2) RRTs and ion ratios are specified in Tables 11 and 8, Method 8290. 8290F1

FORM 2

PCDD/PCDF LABELED COMPOUND AND
CLEANUP STANDARD RECOVERIES

CLIENT ID.

AOC13SB20AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS SDG No.: Method: 8290 Lab Sample ID: E0600019-008

Client Name: ENSR/AK STEEL Sample Wt/Vol: 15.037 g or mL: g

Matrix (aqueous/solid/leachate): Solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column: DB-5

Ext. Vol(ul): 20.0 Inj. Vol(ul): 1.0 Sample Data Filename: U13956#1

Analysis Date: 20-JAN-06 Time: 12:17:28 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13950#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture/Lipid: 4.90

	SPIKE CONC.(pg)	CONCENT. FOUND(pg)	RECOV. %	Q	ION ABUND. RATIO(2)	RRT (2)	MEAN RRF
LABELED COMPOUNDS							
13C-2,3,7,8-TCDD	1000	503.57	50.36		0.78	1.010	1.10
13C-1,2,3,7,8-PeCDD	1000	504.37	50.44		1.54	1.192	1.01
13C-1,2,3,6,7,8-HxCDD	2500	1418.62	56.74		1.22	0.992	0.98
13C-1,2,3,4,6,7,8-HpCDD	2500	1044.28	41.77		1.03	1.069	0.95
13C-OCDD	5000	2171.50	43.43		0.90	1.145	0.97
13C-2,3,7,8-TCDF	1000	399.96	40.00		0.77	0.975	1.52
13C-1,2,3,7,8-PeCDF	1000	471.69	47.17		1.54	1.150	1.41
13C-1,2,3,4,7,8-HxCDF	2500	1340.93	53.64		0.53	0.970	1.22
13C-1,2,3,4,6,7,8-HpCDF	2500	1139.29	45.57		0.45	1.046	0.96
CLEANUP STANDARD							
37Cl-2,3,7,8-TCDD	800	634.10	79.26			1.011	

(1) Contract-required limits for percent recovery are 40%-135% (section 8.4, Method 8290).

(2) Contract-required Reference Attributions for RRTs and ion abundance ratios are specified in Tables 11 and 8, respectively, Method 8290.

NOTE: There is no ion abundance ratio for 37Cl4-2378-TCDD (cleanup standard).

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
AOC13SB20AA

Lab Name: Columbia Analytical Services Episode No.:

Lab Code: CAS Method: 8290 Lab Sample ID: E0600019-008

Client Name: ENSR/AK STEEL Sample Wt/Vol: 15.037 g or mL: g

Matrix (aqueous/solid/leachate): Solid Initial Calibration Date: 09/16/04

Sample Receipt Date: 01/13/06 Instrument ID: AutoSpec-Ultima

Ext. Date: 01/16/06 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U13956#1

Analysis Date: 20-JAN-06 Time: 12:17:28 Blank Data Filename: U13930#1

Dilution Factor: 1 Cal. Ver. Data Filename: U13950#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Moisture: 4.90

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 0.5	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.233	X 0.01	2.33e-03
OCDD	2.114	X 0.001	2.11e-03
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	0.095	X 0.01	9.53e-04
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.203	X 0.001	2.03e-04
		Total:	5.60e-03

(1) Taken from 'Interim Procudures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxin and -Dibenzofurans (CDDs and CDFs)' and 1989 Update(EPA/625/3-89/016, March 1989.)

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Memorandum

Date: May 31, 2006

To: Matt Cousino/Pittsburgh

From: Deborah Truini/Westford

Subject: Data Validation, Inorganic Analyses
Remedial Investigation
Former Armco Hamilton Plant Site, New Miami, OH
CAS SDG R2528362

Distribution: D. McGrath/Westford

00076-069-720 File
AH013inodat

SUMMARY

Full validation was performed on the data for 16 sediment samples and one aqueous equipment blank sample analyzed for Target Analyte List (TAL) metals plus cyanide according to SW-846 methods 6010B, 7470A, 7471A, and 9012A. A limited validation was performed on the data for 16 sediment samples and one aqueous equipment blank sample for total organic carbon (TOC) by the Lloyd Kahn method. The samples were collected at the Former Armco Hamilton Plant site in New Miami, Ohio on November 8, 9, 10, and 11 2005 and were submitted to Columbia Analytical Services (CAS) in Rochester, NY for analysis. CAS processed the samples and reported the results under sample delivery group (SDG) R2528362.

The analytical data were evaluated with reference to the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (October 2004), and the quality control (QC) criteria specified in the Quality Assurance Project Plan (QAPP). The National Functional Guidelines were modified to accommodate the non-CLP methodology.

In general, the data are valid as reported and may be used for decision making purposes. No data were rejected. Selected data points were qualified due to nonconformances of certain QC criteria (see discussion below).

SAMPLES

The samples included in this review are listed below.

Sample IDs	Sample IDs
GMRSD1AA	GMRSD14AA
GMRSD2AA	GMRSD15AA
GMRSD3AA	GMRSD16AA
GMRSD4AA	GMRSD17AA

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Sample IDs	Sample IDs
GMRSD5AA	GMRSD18AA
GMRSD6AA	GMRSD19AA
GMRSD7AA	GMRSD16AB (field duplicate of GMRSD16AA)
GMRSD8AA	GMRSD8AC (aqueous equipment blank)
GMRSD9AA	

REVIEW ELEMENTS

Sample data were reviewed for the following parameters:

- Agreement of analyses conducted with chain-of-custody (COC) requests
- Holding times/sample preservation
- Calibrations
- Laboratory blanks/equipment blanks
- ICP interference check sample results
- Matrix spike (MS) results
- Laboratory duplicate results
- Field duplicate results
- ICP serial dilution results
- Laboratory control sample (LCS) results
- Sample quantitation/detection limit results

DISCUSSION

Agreement of Analyses Conducted With COC Requests

The sample reports were checked to verify that the results corresponded to analytical requests as designated on the COC. No discrepancies were found.

Holding Times/Sample Preservation

The cooler temperature (0 °C and 1°C) for several coolers received at CAS Rochester fell below the acceptance criteria of 4±2°C. No validation action was taken for this slight nonconformance. The remaining coolers were received at temperatures that were within criteria.

All samples were digested/distilled and analyzed within the method-specified holding times for TAL metals, cyanide, and TOC.

Chemical preservation was acceptable for aqueous blank GMRSD8AC for TAL metals, cyanide, and TOC.

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Calibrations

All criteria were met for the calibration curves and the initial and continuing calibration verification (ICV/CCV) standards with the following exceptions.

Analyte	CCV %R	QC Acceptance Range	Actions (Detects/Nondetects)
Cadmium	111.6	90-110%	J+/Accept result
Samples affected: GMRSD9AA, GMRSD14AA, GMRSD15AA, GMRSD16AA, GMRSD17AA, GMRSD18AA, GMRSD16AB			
Cadmium	110.8	90-110%	J+/Accept result
Samples affected: GMRSD16AB			

Although the analysis of a low-level check standard (CRI/CRA) is not required by SW-846 methods, the laboratory chose to analyze low-level check standards containing analytes at concentrations 1.0-10x the laboratory's practical quantitation limit (PQL). An acceptance limit of 100 ± 50 percent recovery (%R) for antimony, lead and thallium, and 100 ± 30 %R for the remaining metals were used to evaluate these standards. The standards met recovery criteria for all analytes with the following exceptions.

Analyte	%R	True Value (µg/L)	Affected samples
Zinc	132.1	20	GMRSD5AA, GMRSD19AA
Selenium	63.9	10	GMRSD8AC

Samples were qualified as follows:

Qualification based on CRDL	%R of Analyte in the CRDL			
Metals (except Sb, Pb, Tl) and Hg	<50%	50 to 69%	>130 to 180%	>180%
Sb, Pb, Tl	<30%	30 to 49%	>150 to 200%	>200%
Detected Results > 2x the CRDL	J-*	A	A	J+ or R*
Detected Results < 2x the CRDL	R	J-	J+	J+ or R*
Nondetects	R	UJ	A	A
*As defined in the NFG. professional judgment will be used.				

Laboratory Blanks/Equipment Blanks

Target analytes were not detected in the initial and continuing calibration blanks, laboratory preparation blanks, or aqueous equipment blank (GMRSD8AC).

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ICP Interference Check Sample (ICS) Results

The percent recoveries (%R) for all analytes in the ICS solution met the QC acceptance limits. Although barium was not spiked into the ICSA solution, it was detected at a concentration greater than the quantitation limit. The estimated interference on barium was calculated for those samples (all sediments with the exception of sample GMRSD9AA) in which the concentrations of the interferents (aluminum, calcium, iron, and/or magnesium) were present in the sample at concentrations comparable to or higher than those found in the ICSA solution. The positive barium results in samples GMRSD2AA, GMRSD8AA, GMRSD15AA, GMRSD16AA, GMRSD17AA, and GMRSD16AB were qualified as estimated (J+) due to potential positive spectral interference from the high concentration of calcium and/or iron native to the samples. These results may be biased high.

MS Results

The MS analysis was performed on sample GMRSD16AA for the TAL metals, cyanide, and TOC; on sample GMRSD8AA for cyanide; and for GMRSD4AA for TOC. The %Rs met QC acceptance criteria for sample results that were <4x the spike concentration with the following exceptions.

Analyte	MS %R	QC Acceptance Range	Actions (Detects/Nondetects)
TOC (GMRSD16AA)	0	42-151%	J-/UJ
TOC (GMRSD4AA)	185.3	42-151%	J+/Accept result
Samples affected: All sediment samples.			

Note that due to conflicting low and high MS recoveries, all sediment samples were qualified as estimated (J) for an undetermined bias.

Laboratory Duplicate Results

Laboratory duplicate analyses were performed on sample GMRSD16AA for the TAL metals, cyanide, and TOC; on sample GMRSD8AA for cyanide; and for GMRSD4AA for TOC. The relative percent differences (RPDs) met the QC acceptance criteria for TAL metals with the following exceptions.

Analyte	GMRSD16AA (mg/kg)	GMRSD16AA DUP (mg/kg)	RPD (%)	Actions (Detects/Nondetects)
Barium	19.0	33.3	55	J/UJ
Magnesium	40856	23900	52	J/UJ
Manganese	379	223	52	J/UJ
Affected samples: All sediment samples				

The detected barium results for GMRSD2AA, GMRSD8AA, GMRSD15AA, GMRSD16AA, GMRSD17AA, and GMRSD16AB were already qualified as (J+) due to potential positive spectral interference.. These results were therefore re-qualified as estimated (J) for laboratory duplicate imprecision and an undetermined bias.

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The RPDs met the QC acceptance criteria for cyanide and TOC with the following exceptions.

Analyte	GMRSD16AA (mg/kg)	GMRSD16AA DUP (mg/kg)	RPD	Actions (Detects/Nondetects)
TOC	24200	6710	113	J/UJ
Affected samples: All sediment samples				
Analyte	**GMRSD4AA (mg/kg)**	**GMRSD4AA DUP (mg/kg)**	**RPD**	**Actions (Detects/Nondetects)**
TOC	16200	23100	35	J/UJ
Affected samples: All sediment samples				

It should be noted that all sediment samples analyzed for TOC were already qualified as estimated (J) for MS recoveries; therefore no further validation actions were required on this basis.

Field Duplicate Results

Samples GMRSD16AA and GMRSD16AB were submitted as the field duplicate pair with this data set. The samples, the results for detected analytes and their RPDs are tabulated below.

Analyte	GMRSD16AA (mg/Kg)	GMRSD16AB (mg/Kg)	RPD
Aluminum	2300	2690	16
Arsenic	2.1	3.1	38
Barium	19.0	21.2	11
Calcium	90600	112000	21
Chromium	5.3	6.1	14
Copper	4.6	6.1	28
Iron	7000	7870	12
Lead	4.6	5.4	16
Magnesium	40900	28600	35
Manganese	379	289	27
Potassium	512	635	21
Sodium	135	143	6
Vanadium	9.5	10.8	13
Zinc	15.5	19.5	23
TOC	24200	27300	14

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Precision was deemed acceptable for all results with the exception of magnesium. The positive results for magnesium in all sediment samples were qualified as estimated (J). Although the RPD for arsenic exceeded the criterion, precision is considered acceptable for this analyte since the sample and/or field duplicate results are <10x SQL and the percent difference is <8x SQL.

It should be noted that all sediment samples analyzed for magnesium were already qualified as estimated (J) for laboratory duplicate imprecision; therefore no further validation actions were required on this basis.

ICP Serial Dilution Results

An ICP serial dilution analysis was performed on sample GMRSD16AA for TAL metals; on sample GMRSD19AA for cadmium only; and on sample GMRSD8AC for calcium, potassium, and sodium. The percent differences (%D) met the QC acceptance criteria of 10% (only applicable if the sample results are >50x SQL) with the following exceptions for sample GMRSD16AA.

Analyte	%D	Actions (Detects/Nondetects)
Chromium	11	J/UJ
Zinc	16	J/UJ
Affected samples: All sediment samples		

It should be noted that all sediment samples analyzed for TOC were already qualified as estimated (J) for MS recoveries; therefore no further validation actions were required on this basis.

LCS Results

All LCSs analyzed for TAL metals, cyanide, and TOC met the QC %R acceptance limits.

Sample Quantitation/Detection Limit Results

Result calculations were spot-checked; no discrepancies were noted.

Positive results for calcium, iron, and/or zinc were reported from the diluted analyses for the samples listed below due to elevated concentrations of these analytes present in the samples. Nondetect results for selenium and/or thallium were reported at elevated detection limits due to matrix interferences present in the samples.

Analyte	Sample ID	Dilution Factor
Calcium	All sediment samples	10x
Iron	All sediment samples	10x
Zinc	GMRSD5AA and GMRSD19AA	10x

The results for TAL metals, cyanide, and TOC were reported down to the SQL; nondetected results for these analytes were reported at the SQL and flagged with a "U".

Columbia Analytical Services

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
GMRSD2AA

ontract: R2528362

ab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

atrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851621

evel (low/med): LOW Date Received: 11/11/05

Solids: 83.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2460			P
7440-36-0	Antimony	7.2	U		P
7440-38-2	Arsenic	1.3			P
7440-39-3	Barium	13.5		~~J~~	P
7440-41-7	Beryllium	0.60	U		P
7440-43-9	Cadmium	0.60	U		P
7440-70-2	Calcium	182000			P
7440-47-3	Chromium	5.9		J	P
7440-48-4	Cobalt	6.0	U		P
7440-50-8	Copper	4.8			P
7439-89-6	Iron	7980			P
7439-92-1	Lead	3.8			P
7439-95-4	Magnesium	36700		~~J~~	P
7439-96-5	Manganese	259		~~J~~	P
7439-97-6	Mercury	0.04	U		CV
7440-02-0	Nickel	5.0			P
7440-09-7	Potassium	361			P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	181			P
7440-28-0	Thallium	6.0	U		P
7440-62-2	Vanadium	8.3			P
7440-66-6	Zinc	16.8		J	P

J

Color Before: BROWN Clarity Before: Texture: MEDIUM

C r After: YELLOW Clarity After: CLEAR Artifacts:

mments:

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METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD8AA

ontract: R2528362

ab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

atrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851627

evel (low/med): LOW Date Received: 11/10/05

Solids: 72.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2700			P
7440-36-0	Antimony	8.3	U		P
7440-38-2	Arsenic	1.9			P
7440-39-3	Barium	26.6		~~*J~~	P
7440-41-7	Beryllium	0.69	U		P
7440-43-9	Cadmium	0.69	U		P
7440-70-2	Calcium	93600			P
7440-47-3	Chromium	6.7		J	P
7440-48-4	Cobalt	6.9	U		P
7440-50-8	Copper	7.0			P
7439-89-6	Iron	6800			P
7439-92-1	Lead	5.8			P
7439-95-4	Magnesium	26300		*J	P
7439-96-5	Manganese	191		*J	P
7439-97-6	Mercury	0.04	U		CV
7440-02-0	Nickel	5.7			P
7440-09-7	Potassium	552			P
7782-49-2	Selenium	1.4	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	167			P
7440-28-0	Thallium	6.9	U		P
7440-62-2	Vanadium	8.3			P
7440-66-6	Zinc	25.3		J	P

J

Color Before: BROWN Clarity Before: Texture: MEDIUM

olor After: YELLOW Clarity After: CLEAR Artifacts:

omments:

Columbia Analytical Services

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
GMRSD15AA

Contract: R2528362

Lab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

Matrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851630

Level (low/med): LOW Date Received: 11/11/05

% Solids: 80.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2330			P
7440-36-0	Antimony	7.1	U		P
7440-38-2	Arsenic	1.7			P
7440-39-3	Barium	13.9		~~J~~	P
7440-41-7	Beryllium	0.59	U		P
7440-43-9	Cadmium	0.59	U		P
7440-70-2	Calcium	90900			P
7440-47-3	Chromium	7.1		J	P
7440-48-4	Cobalt	5.9	U		P
7440-50-8	Copper	6.9			P
7439-89-6	Iron	13400			P
7439-92-1	Lead	4.2			P
7439-95-4	Magnesium	27600		~~J~~	P
7439-96-5	Manganese	217		~~J~~	P
7439-97-6	Mercury	0.04	U		CV
7440-02-0	Nickel	6.3			P
7440-09-7	Potassium	373			P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	156			P
7440-28-0	Thallium	5.9	U		P
7440-62-2	Vanadium	12.9			P
7440-66-6	Zinc	19.4		J	P

J

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

Columbia Analytical Services

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
GMRSD16AA

Contract: R2528362

Lab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

Matrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851631

Level (low/med): LOW Date Received: 11/12/05

% Solids: 86.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2300			P
7440-36-0	Antimony	6.9	U		P
7440-38-2	Arsenic	2.1			P
7440-39-3	Barium	19.0		~~J~~	P J
7440-41-7	Beryllium	0.57	U		P
7440-43-9	Cadmium	0.57	U		P
7440-70-2	Calcium	90600			P
7440-47-3	Chromium	5.3		J	P
7440-48-4	Cobalt	5.7	U		P
7440-50-8	Copper	4.6			P
7439-89-6	Iron	7000			P
7439-92-1	Lead	4.6			P
7439-95-4	Magnesium	40900		J	P
7439-96-5	Manganese	379		J	P
7439-97-6	Mercury	0.04	U		CV
7440-02-0	Nickel	4.6	U		P
7440-09-7	Potassium	512			P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	1.1	U		P
7440-23-5	Sodium	135			P
7440-28-0	Thallium	5.7	U		P
7440-62-2	Vanadium	9.5			P
7440-66-6	Zinc	15.5		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

Columbia Analytical Services

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD16AB

Contract: R2528362

Lab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

Matrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 859611

Level (low/med): LOW Date Received: 11/12/05

% Solids: 82.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2690			P
7440-36-0	Antimony	7.3	U		P
7440-38-2	Arsenic	3.1			P
7440-39-3	Barium	21.2		~~J~~ H	P J
7440-41-7	Beryllium	0.61	U		P
7440-43-9	Cadmium	0.61	U		P
7440-70-2	Calcium	112000			P
7440-47-3	Chromium	6.1		J	P
7440-48-4	Cobalt	6.1	U		P
7440-50-8	Copper	6.1			P
7439-89-6	Iron	7870			P
7439-92-1	Lead	5.4			P
7439-95-4	Magnesium	28600		~~J~~	P
7439-96-5	Manganese	289		~~J~~	P
7439-97-6	Mercury	0.04	U		CV
7440-02-0	Nickel	4.9	U		P
7440-09-7	Potassium	635			P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	143			P
7440-28-0	Thallium	6.1	U		P
7440-62-2	Vanadium	10.8			P
7440-66-6	Zinc	19.5		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

Columbia Analytical Services

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD17AA

Contract: R2528362

Lab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

Matrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851632

Level (low/med): LOW Date Received: 11/12/05

% Solids: 74.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4170			P
7440-36-0	Antimony	7.9	U		P
7440-38-2	Arsenic	3.5			P
7440-39-3	Barium	44.8		~~J~~	P J
7440-41-7	Beryllium	0.66	U		P
7440-43-9	Cadmium	0.66	U		P
7440-70-2	Calcium	134000			P
7440-47-3	Chromium	8.9		J	P
7440-48-4	Cobalt	6.6	U		P
7440-50-8	Copper	11.1			P
7439-89-6	Iron	10800			P
7439-92-1	Lead	9.1			P
7439-95-4	Magnesium	46000		~~J~~	P
7439-96-5	Manganese	481		~~J~~ J	P
7439-97-6	Mercury	0.04	U		CV
7440-02-0	Nickel	9.2			P
7440-09-7	Potassium	663			P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	166			P
7440-28-0	Thallium	6.6	U		P
7440-62-2	Vanadium	10.3			P
7440-66-6	Zinc	39.8		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

Columbia Analytical Services

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD14AA

Contract: R2528362

Lab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

Matrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851629

Level (low/med): LOW Date Received: 11/11/05

% Solids: 73.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12500			P
7440-36-0	Antimony	7.9	U		P
7440-38-2	Arsenic	9.1			P
7440-39-3	Barium	93.1		*J	P
7440-41-7	Beryllium	0.66	U		P
7440-43-9	Cadmium	0.66	U		P
7440-70-2	Calcium	88000			P
7440-47-3	Chromium	26.8		J	P
7440-48-4	Cobalt	10.6			P
7440-50-8	Copper	38.5			P
7439-89-6	Iron	31200			P
7439-92-1	Lead	18.9			P
7439-95-4	Magnesium	27100		*J	P
7439-96-5	Manganese	564		*J	P
7439-97-6	Mercury	0.05			CV
7440-02-0	Nickel	27.9			P
7440-09-7	Potassium	2370			P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	1.3	U		P
7440-23-5	Sodium	166			P
7440-28-0	Thallium	6.6	U		P
7440-62-2	Vanadium	26.6			P
7440-66-6	Zinc	70.2		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

Columbia Analytical Services

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
GMRSD18AA

Contract: R2528362

Lab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

Matrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851633

Level (low/med): LOW Date Received: 11/12/05

% Solids: 62.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5230			P
7440-36-0	Antimony	9.4	U		P
7440-38-2	Arsenic	3.2			P
7440-39-3	Barium	70.7		~~*~~ J	P
7440-41-7	Beryllium	0.78	U		P
7440-43-9	Cadmium	0.78	U		P
7440-70-2	Calcium	86700			P
7440-47-3	Chromium	12.1		J	P
7440-48-4	Cobalt	7.8	U		P
7440-50-8	Copper	21.8			P
7439-89-6	Iron	12700			P
7439-92-1	Lead	15.1			P
7439-95-4	Magnesium	25900		~~*~~ J	P
7439-96-5	Manganese	279		~~*~~ J	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	9.9			P
7440-09-7	Potassium	904			P
7782-49-2	Selenium	1.6	U		P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	163			P
7440-28-0	Thallium	7.8	U		P
7440-62-2	Vanadium	15.5			P
7440-66-6	Zinc	59.3		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD19AA

ontract: R2528362

ab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

atrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851634

evel (low/med): LOW Date Received: 11/12/05

Solids: 50.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	22200			P
7440-36-0	Antimony	12.0	U		P
7440-38-2	Arsenic	15.4			P
7440-39-3	Barium	446		*J	P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	4.9			P
7440-70-2	Calcium	46400			P
7440-47-3	Chromium	224		J	P
7440-48-4	Cobalt	11.9			P
7440-50-8	Copper	275			P
7439-89-6	Iron	57700			P
7439-92-1	Lead	224			P
7439-95-4	Magnesium	13700		*J	P
7439-96-5	Manganese	488		*J	P
7439-97-6	Mercury	0.63			CV
7440-02-0	Nickel	73.7			P
7440-09-7	Potassium	2580			P
7782-49-2	Selenium	2.0	U		P
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	184			P
7440-28-0	Thallium	10.0	U		P
7440-62-2	Vanadium	44.1			P
7440-66-6	Zinc	686		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

olor After: YELLOW Clarity After: CLEAR Artifacts:

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
GMRSD1AA

ontract: R2528362

ab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

atrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851620

evel (low/med): LOW Date Received: 11/10/05

Solids: 72.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5680			P
7440-36-0	Antimony	8.3	U		P
7440-38-2	Arsenic	2.9			P
7440-39-3	Barium	99.1		*J	P
7440-41-7	Beryllium	0.69	U		P
7440-43-9	Cadmium	0.76			P
7440-70-2	Calcium	83200			P
7440-47-3	Chromium	34.8		J	P
7440-48-4	Cobalt	6.9	U		P
7440-50-8	Copper	21.9			P
7439-89-6	Iron	12700			P
7439-92-1	Lead	224			P
7439-95-4	Magnesium	24300		*J	P
7439-96-5	Manganese	285		*J	P
7439-97-6	Mercury	0.06			CV
7440-02-0	Nickel	10.9			P
7440-09-7	Potassium	933			P
7782-49-2	Selenium	1.4	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	185			P
7440-28-0	Thallium	6.9	U		P
7440-62-2	Vanadium	15.1			P
7440-66-6	Zinc	151		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

Columbia Analytical Services

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD3AA

ontract: R2528362

ab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

atrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851622

evel (low/med): LOW Date Received: 11/11/05

Solids: 67.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5570			P
7440-36-0	Antimony	8.8	U		P
7440-38-2	Arsenic	3.7			P
7440-39-3	Barium	56.2		*J	P
7440-41-7	Beryllium	0.73	U		P
7440-43-9	Cadmium	0.73	U		P
7440-70-2	Calcium	101000			P
7440-47-3	Chromium	12.6		J	P
7440-48-4	Cobalt	7.3	U		P
7440-50-8	Copper	14.9			P
7439-89-6	Iron	13800			P
7439-92-1	Lead	12.6			P
7439-95-4	Magnesium	28100		*J	P
7439-96-5	Manganese	295		*J	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	9.7			P
7440-09-7	Potassium	1030			P
7782-49-2	Selenium	1.5	U		P
7440-22-4	Silver	1.5	U		P
7440-23-5	Sodium	191			P
7440-28-0	Thallium	7.3	U		P
7440-62-2	Vanadium	16.9			P
7440-66-6	Zinc	59.6		J	P

Color Before: BROWN Clarity Before: Texture: FINE

C : After: YELLOW Clarity After: CLEAR Artifacts:

ments:

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
GMRSD4AA

'ontract: R2528362

ab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

atrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851623

evel (low/med): LOW Date Received: 11/11/05

Solids: 59.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5870			P
7440-36-0	Antimony	9.8	U		P
7440-38-2	Arsenic	4.3			P
7440-39-3	Barium	73.7		*J	P
7440-41-7	Beryllium	0.81	U		P
7440-43-9	Cadmium	0.81	U		P
7440-70-2	Calcium	95800			P
7440-47-3	Chromium	14.9		J	P
7440-48-4	Cobalt	8.1	U		P
7440-50-8	Copper	17.6			P
7439-89-6	Iron	17600			P
7439-92-1	Lead	18.3			P
7439-95-4	Magnesium	26600		*J	P
7439-96-5	Manganese	326		*J	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	10.9			P
7440-09-7	Potassium	1050			P
7782-49-2	Selenium	1.7			P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	207			P
7440-28-0	Thallium	8.1	U		P
7440-62-2	Vanadium	17.3			P
7440-66-6	Zinc	61.0		J	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

Columbia Analytical Services

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD5AA

Contract: R2528362

Lab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

Matrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851624

Level (low/med): LOW Date Received: 11/11/05

Solids: 71.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9600			P
7440-36-0	Antimony	8.4	U		P
7440-38-2	Arsenic	4.6			P
7440-39-3	Barium	523		J	P
7440-41-7	Beryllium	0.70	U		P
7440-43-9	Cadmium	1.8			P
7440-70-2	Calcium	111000			P
7440-47-3	Chromium	37.8		J	P
7440-48-4	Cobalt	7.0	U		P
7440-50-8	Copper	163			P
7439-89-6	Iron	23700			P
7439-92-1	Lead	372			P
7439-95-4	Magnesium	20200		J	P
7439-96-5	Manganese	349		J	P
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel	19.9			P
7440-09-7	Potassium	1020			P
7782-49-2	Selenium	1.4	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	318			P
7440-28-0	Thallium	7.0	U		P
7440-62-2	Vanadium	17.9			P
7440-66-6	Zinc	681		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

Columbia Analytical Services

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD6AA

Contract: R2528362

Lab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

Matrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851625

Level (low/med): LOW Date Received: 11/11/05

% Solids: 71.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6240			P
7440-36-0	Antimony	8.4	U		P
7440-38-2	Arsenic	2.5			P
7440-39-3	Barium	77.4		J	P
7440-41-7	Beryllium	0.70	U		P
7440-43-9	Cadmium	1.2			P
7440-70-2	Calcium	95100			P
7440-47-3	Chromium	21.6		J	P
7440-48-4	Cobalt	7.0	U		P
7440-50-8	Copper	24.7			P
7439-89-6	Iron	14100			P
7439-92-1	Lead	31.3			P
7439-95-4	Magnesium	24600		J	P
7439-96-5	Manganese	301		J	P
7439-97-6	Mercury	0.19			CV
7440-02-0	Nickel	12.5			P
7440-09-7	Potassium	881			P
7782-49-2	Selenium	1.8			P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	221			P
7440-28-0	Thallium	7.0	U		P
7440-62-2	Vanadium	14.3			P
7440-66-6	Zinc	107		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

Columbia Analytical Services

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD7AA

Contract: R2528362

Lab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

Matrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851626

Level (low/med): LOW Date Received: 11/11/05

% Solids: 62.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11100			P
7440-36-0	Antimony	9.3	U		P
7440-38-2	Arsenic	5.8			P
7440-39-3	Barium	112		*J	P
7440-41-7	Beryllium	0.78	U		P
7440-43-9	Cadmium	0.78	U		P
7440-70-2	Calcium	100000			P
7440-47-3	Chromium	19.7		J	P
7440-48-4	Cobalt	7.8	U		P
7440-50-8	Copper	26.2			P
7439-89-6	Iron	22700			P
7439-92-1	Lead	22.7			P
7439-95-4	Magnesium	27200		*J	P
7439-96-5	Manganese	502		*J	P
7439-97-6	Mercury	0.05			CV
7440-02-0	Nickel	16.8			P
7440-09-7	Potassium	1860			P
7782-49-2	Selenium	1.6	U		P
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	199			P
7440-28-0	Thallium	7.8	U		P
7440-62-2	Vanadium	25.4			P
7440-66-6	Zinc	96.8		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

olumbia Analytical Services

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD9AA

ontract: R2528362

ab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

atrix (soil/water): SOIL/SEDIMENT Lab Sample ID: 851628

evel (low/med): LOW Date Received: 11/11/05

Solids: 56.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18100			P
7440-36-0	Antimony	10.1	U		P
7440-38-2	Arsenic	10.6			P
7440-39-3	Barium	149		J	P
7440-41-7	Beryllium	0.84	U		P
7440-43-9	Cadmium	1.1		J+	P
7440-70-2	Calcium	63100			P
7440-47-3	Chromium	63.3		J	P
7440-48-4	Cobalt	9.2			P
7440-50-8	Copper	66.2			P
7439-89-6	Iron	34700			P
7439-92-1	Lead	54.2			P
7439-95-4	Magnesium	21000		J	P
7439-96-5	Manganese	434		J	P
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel	31.5			P
7440-09-7	Potassium	2820			P
7782-49-2	Selenium	1.7			P
7440-22-4	Silver	1.7	U		P
7440-23-5	Sodium	179			P
7440-28-0	Thallium	8.4	U		P
7440-62-2	Vanadium	39.4			P
7440-66-6	Zinc	210		J	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

omments:

Columbia Analytical Services

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GMRSD8AC

Contract: R2528362

Lab Code: Case No.: SAS No.: SDG NO.: GMRSD1AA

Matrix (soil/water): WATER Lab Sample ID: 851635

Level (low/med): LOW Date Received: 11/10/05

Concentration Units (ug/L or mg/kg dry weight): µG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	100	U		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	20.0	U		P
7440-41-7	Beryllium	5.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	500	U		P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	100	U		P
7439-92-1	Lead	5.0	U		P
7439-95-4	Magnesium	500	U		P
7439-96-5	Manganese	10.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	2000	U		P
7782-49-2	Selenium	10.0	U	J	P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	500	U		P
7440-28-0	Thallium	10.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	20.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD1AA

Date Sampled : 11/08/05 15:50 Order #: 851620 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/10/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	72.0	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	8.86	MG/KG	11/22/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	9140 J	MG/KG	11/15/05	10:17	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD2AA

Date Sampled : 11/09/05 12:45 Order #: 851621 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/11/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	83.8	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.19 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	9800 J	MG/KG	11/15/05	10:17	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD3AA

Date Sampled : 11/09/05 15:10 Order #: 851622 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/11/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	67.4	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.48 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	19200 J	MG/KG	11/15/05	10:17	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD4AA

Date Sampled : 11/09/05 16:30 Order #: 851623 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/11/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	59.6	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.68 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	16200 J	MG/KG	11/15/05	10:17	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD5AA

Date Sampled : 11/09/05 11:00 Order #: 851624 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/11/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	71.7	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.39 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	14100 J	MG/KG	11/15/05	10:17	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD6AA

Date Sampled : 11/09/05 14:00 **Order #:** 851625 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 11/11/05 **Submission #:** R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	71.8	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.39 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	33400 J	MG/KG	11/15/05	10:17	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD7AA

Date Sampled : 11/09/05 15:45 **Order #:** 851626 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 11/11/05 **Submission #:** R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	62.6	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.60 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	16200 J	MG/KG	11/18/05	10:40	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD8AA

Date Sampled : 11/08/05 14:10 **Order #:** 851627 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 11/10/05 **Submission #:** R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	72.3	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.38 U	MG/KG	11/22/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	12300	MG/KG	11/15/05	10:17	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD9AA

Date Sampled : 11/10/05 10:45 Order #: 851628 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/11/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	56.6	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.77 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	20200 J	MG/KG	11/18/05	10:40	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD14AA

Date Sampled : 11/10/05 12:30 Order #: 851629 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/11/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	73.5	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.36 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	3590	MG/KG	11/18/05	10:40	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD15AA

Date Sampled : 11/10/05 14:40 Order #: 851630 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/11/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	80.1	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.25 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	1470 J	MG/KG	11/18/05	10:40	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD16AA

Date Sampled : 11/11/05 10:30 Order #: 851631 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/12/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	86.7	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.15 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	24200 J	MG/KG	11/18/05	10:40	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD16AB

Date Sampled : 11/11/05 10:30 Order #: 859611 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/12/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	82.0	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.22 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	27800 J	MG/KG	11/18/05	10:40	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD17AA

Date Sampled : 11/11/05 11:30 Order #: 851632 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/12/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	74.9	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.34 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	9820 J	MG/KG	11/18/05	10:40	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD18AA

Date Sampled : 11/11/05 12:30 Order #: 851633 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/12/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	62.1	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	1.61 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	18900 J	MG/KG	11/18/05	10:40	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD19AA

Date Sampled : 11/11/05 13:00 Order #: 851634 Sample Matrix: SOIL/SEDIMENT
Date Received: 11/12/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.3M	1.0	50.1	%	11/30/05	12:45	1.0
TOTAL CYANIDE	9012.T	1.00	2.00 U	MG/KG	11/23/05	11:00	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	30500 J	MG/KG	11/18/05	10:40	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 01/11/06

ENSR International
Project Reference: AK STEEL - GREAT MIAMI RIVER SEDIMENTS
Client Sample ID : GMRSD8AC

Date Sampled : 11/08/05 13:10 Order #: 851635 Sample Matrix: WATER
Date Received: 11/10/05 Submission #: R2528362

ANALYTE	METHOD	PQL	RESULT	UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
TOTAL CYANIDE	9012.T	0.0100	0.0100 U	MG/L	11/17/05	07:35	1.0
TOTAL ORGANIC CARBON	TOC.LK	300	300 U	MG/L	11/15/05	10:17	1.0

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Memorandum

Date: June 15, 2006

To: Matt Cousino/Pittsburgh

From: Paula DiMattei/Westford

Subject: Data Validation, VOC and SVOC Analyses
Remedial Investigation
Former Armco Hamilton Plant Site, New Miami, OH
CAS SDG R2528608

Distribution: D. McGrath/Westford

00076-069-720 File
AH040vocsvocpld

SUMMARY

Limited validation was performed on the data for 18 soil samples and one aqueous equipment blank analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) by SW-846 method 8260B and TCL semivolatile organic compounds (SVOCs) by SW-846 method 8270C. The samples were collected at the Former Armco Hamilton Plant site in New Miami, Ohio on December 13 and 14, 2005 and were submitted to Columbia Analytical Services (CAS) in Rochester, NY for analysis. CAS processed the samples and reported the results under sample delivery group (SDG) R2528608.

The analytical data were evaluated with reference to the USEPA Region V Standard Operating Procedure for Validation of CLP Organic Data, the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (10/99), and the quality control (QC) criteria specified in the Quality Assurance Project Plan (QAPP). The Regional and National Functional Guidelines were modified to accommodate the non-CLP methodology.

In general, the data are valid as reported and may be used for decision making purposes. The nondetect 2,4-dinitrophenol and pentachlorophenol results in sample AOC12SB1BA were qualified as rejected (R) due to the very low (<10%) matrix spike duplicate recoveries. These results are not usable for project decisions. Selected other data points were qualified due to nonconformances of certain QC criteria (see discussion below).

SAMPLES

The samples included in this review are listed below.

Sample IDs	Sample IDs
AOC12SB4BA	AOC12SB6CA
AOC12SB4CA	AOC12SB2AC (Aqueous equipment blank)
AOC12SB4AA	AOC12SB5AA
AOC12SB2AA	AOC12SB5CA

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Sample IDs	Sample IDs
AOC12SB2BA	AOC12SB1AA
AOC12SB2CA	AOC12SB1CA
AOC12SB3AA	AOC12SB6AA
AOC12SB3BA	AOC12SB6BA
AOC12SB3CA	AOC12SB5BA
AOC12SB1BA	

REVIEW ELEMENTS

Sample data were reviewed for the following parameters:

- Agreement of analyses conducted with chain-of-custody (COC) requests
- Holding times/sample preservation
- Laboratory blanks/equipment blanks/field blanks
- Surrogate spike recoveries
- Matrix spike (MS)/matrix spike duplicate (MSD) results
- Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
- Field duplicate results
- Sample quantitation/detection limits

DISCUSSION

Agreement of Analyses Conducted With COC Requests

The sample reports were checked to verify that the results corresponded to analytical requests as designated on the COC. Sample AOC12SB1AA was received with limited volume. ENSR cancelled the SVOC analysis for this sample. This sample was subsequently re-sampled and reported in another SDG.

Holding Times/Sample Preservation

The cooler temperature (1°C or 0°C) for several coolers upon receipt at CAS Rochester exceeded the acceptance criteria of 4±2°C. The remaining coolers were received at cooler temperatures that were within criteria. No validation action was taken for this slight nonconformance.

VOC

All samples were preserved within 48 hours of sample receipt. The samples were analyzed within the method specified holding times.

SVOC

The samples were extracted and analyzed within the method specified holding times.

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Laboratory Blanks/Equipment Blanks/Field Blanks

VOC

The equipment blank (AOC12SB6AC) associated with the samples in this data set was analyzed in SDG R2529331. The following compounds were detected in the aqueous equipment blank. No validation actions were necessary since these results were for informational purposes only.

Compound	Concentration (µg/L)
Acetone	12
2-Butanone	2.6
Chloroform	0.94
Methylene chloride	1.8

Target compounds were not detected in the laboratory blanks associated with the low-level soil sample analyses. Carbon disulfide was detected in the method blank associated with the medium-level soil sample AOC12SB4BA; however, carbon disulfide was not reported from this analysis. No data validation actions were taken on this basis.

SVOC

Equipment blank samples AOC12SB2AC and AOC12SB6AC (analyzed in SDG R2529331) were associated with the samples in this data set. No target compounds were detected.

Naphthalene was detected in the method blanks associated with the soil samples in this data set. The presence of blank contamination indicates that false positives may exist for these compounds in the associated samples. Sample results that were also present in the associated method blank at concentration <5x the method blank concentration were qualified "B" by the laboratory. Sample results that were also present in the associated method blank at concentrations >5x the method blank concentration were not qualified by the laboratory. Action Levels (ALs) were established at 5x the concentration detected in the blanks for this blank contaminant. The following table summarizes the blank contamination detected in the laboratory method blanks associated with the soil samples; action levels; and the affected samples.

Compound	Concentration (µg/Kg)	AL (µg/Kg)	Associated Samples
Naphthalene	260	1300	AOC12SB4BA, AOC12SB4CA, AOC12SB4AA

Sample results were qualified as follows:

- If the sample result was < the sample quantitation limit (SQL) and < the AL, the result was reported as not detected (U) at the SQL.
- If the sample result was > SQL but < AL, the result was reported as not detected (U) at the reported concentration.
- If the sample result was > AL, the result was not qualified.

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Surrogate Spike Recoveries

VOC and SVOC

The surrogate recoveries (%Rs) were within the QC acceptance criteria in all sample analyses.

MS/MSD Results

VOC

MS/MSD analyses were performed on sample AOC12SB1BA. The %Rs of all reported spiked compounds were within QC acceptance criteria with the following exceptions. Note that the laboratory summary forms indicate multiple relative percent difference (RPD) nonconformances. However, upon further inspection, it was determined that the nonconforming RPDs were artifacts resulting from the fact that RPDs are traditionally calculated based on concentrations rather than recoveries. This approach assumes the MS and MSD spiked concentrations are identical and is consistent with the method requirements; however, because of the sampling methods, the sample aliquots may vary significantly resulting in different true concentrations for the MS and MSD. Therefore, the validator used professional judgment to recalculate the RPDs based on %Rs. All RPDs were found to be compliant; therefore no qualifications were required on this basis.

Compound	MS %R	MSD %R	RPD	QC limits		Action (Detects/ Nondetects)
				%R	RPD	
Acetone	172	173	ok	50-150	30	J/Accept result
1,3-Dichlorobenzene	ok	65	ok	70-130	30	J/UJ
1,4-Dichlorobenzene	ok	61	ok	70-130	30	J/UJ
1,2-Dichlorobenzene	ok	69	ok	70-130	30	J/UJ
cis-1,3-Dichloropropene	ok	63	ok	70-130	30	J/UJ
trans-1,3-Dichloropropene	ok	65	ok	70-130	30	J/UJ
1,2,4-Trichlorobenzene	48	ok	ok	70-130	30	J/UJ

SVOC

MS/MSD analyses were performed on sample AOC12SB1BA. The %Rs and RPDs of all reported spiked compounds were within QC acceptance criteria with the following exceptions.

Compound	MS %R	MSD %R	RPD	QC limits		Action (Detects/ Nondetects)
				%R	RPD	
Benzaldehyde	216	201	ok	40-150	30	J/Accept result
2,4-Dinitrophenol	ok	0	200	23-130	30	J/R
Hexachlorocyclopentadiene	ok	ok	35	9-102	30	J/UJ
4,6-Dinitro-2-methylphenol	28	13	75	38-119	30	J/UJ
Pentachlorophenol	ok	5	137	13-128	30	J/R

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LCS/LCSD Results

VOC

The %Rs of all spiked compounds were within the QC acceptance criteria for the LCS.

SVOC

The %R and RPDs of all spiked compounds were within the QC acceptance criteria for the LCS and LCSD with the following exceptions.

Compound	LCS/LCSD %R	QC limits %R	Action (Detects/Nondetects)
Caprolactam	24/28	40-150	J/UJ
Associated samples	AOC12SB2AC		

Field Duplicate Results

VOC and SVOC

A field duplicate pair was not submitted with the samples in this data set. No data validation actions were taken on this basis.

Sample Quantitation/Detection Limits

VOC

All samples were analyzed as low-level soil samples. SQLs for these samples were therefore not affected.

Sample AOC12SB4BA was initially analyzed as a low-level soil sample in which benzene and toluene were detected at concentrations greater than the calibration range. This sample was subsequently analyzed as a medium-level soil sample in which benzene and toluene were detected within the calibration range. The results of both of these analyses were combined by the data validator in order to report all positive results within the calibration range while also reporting the lowest detection limit achieved.

It should also be noted that the laboratory reported methyl acetate with an SQL of 10 µg/kg instead of the QAPP stipulated SQL of 5 µg/kg. No data validation action was taken other than this notation.

SVOC

CAS reported the SQL for benzaldehyde based on a low standard concentration of 10 ppb. However, the lowest reported calibration standard reported for the initial calibrations was 50 ppb. Therefore, the nondetect benzaldehyde results in all samples were raised accordingly (including the sample specific preparation factors) to reflect the actual concentration of the low standard (50 ppb) that was analyzed.

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The following samples were analyzed at the dilutions listed due to the high concentration of target and/or non-target compounds present in the samples. Quantitation limits were elevated accordingly.

Sample ID	Dilution Factor
AOC12SB2AA	5x
AOC12SB3CA	6x
AOC12SB5AA	3x
AOC12SB5CA	2x
AOC12SB1CA	3x

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB4BA

Date Sampled : 12/13/05 14:51 **Order #:** 855814 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/14/05 **Submission #:** R2528608 **Percent Solid:** 91.1

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/23/05			
ANALYTICAL DILUTION: 0.94			Dry Weight
ACETONE	20	49	UG/KG
BENZENE	5.0	1800 ~~300 E~~	UG/KG
BROMODICHLOROMETHANE	5.0	5.2 U	UG/KG
BROMOFORM	5.0	5.2 U	UG/KG
BROMOMETHANE	5.0	5.2 U	UG/KG
2-BUTANONE (MEK)	10	8.7 J	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	5.2 U	UG/KG
CARBON DISULFIDE	10	11	UG/KG
CARBON TETRACHLORIDE	5.0	5.2 U	UG/KG
CHLOROBENZENE	5.0	5.2 U	UG/KG
CHLOROETHANE	10	10 U	UG/KG
CHLOROFORM	5.0	5.2 U	UG/KG
CHLOROMETHANE	5.0	5.2 U	UG/KG
1,2-DIBROMO-3-CHLOROPROPANE	5.0	5.2 U	UG/KG
YCLOHEXANE	5.0	13	UG/KG
IBROMOCHLOROMETHANE	5.0	5.2 U	UG/KG
1,2-DIBROMOETHANE	5.0	5.2 U	UG/KG
1,3-DICHLOROBENZENE	5.0	5.2 U	UG/KG
1,4-DICHLOROBENZENE	5.0	5.2 U	UG/KG
1,2-DICHLOROBENZENE	5.0	5.2 U	UG/KG
DICHLORODIFLUOROMETHANE	5.0	5.2 U	UG/KG
1,1-DICHLOROETHANE	5.0	5.2 U	UG/KG
1,2-DICHLOROETHANE	5.0	5.2 U	UG/KG
1,1-DICHLOROETHENE	5.0	5.2 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	5.2 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	5.2 U	UG/KG
1,2-DICHLOROPROPANE	5.0	5.2 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	5.2 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	5.2 U	UG/KG
ETHYLBENZENE	5.0	14	UG/KG
2-HEXANONE	10	10 U	UG/KG
ISOPROPYLBENZENE	5.0	29	UG/KG
METHYL ACETATE	10	10 U	UG/KG
METHYLCYCLOHEXANE	5.0	24	UG/KG
METHYLENE CHLORIDE	5.0	5.2 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	10 U	UG/KG
STYRENE	5.0	5.2 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	5.2 U	UG/KG
TETRACHLOROETHENE	5.0	5.2 U	UG/KG
TOLUENE	5.0	1500 ~~310 E~~	UG/KG
2,4-TRICHLOROBENZENE	5.0	5.2 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	5.2 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	5.2 U	UG/KG
TRICHLOROETHENE	5.0	5.2 U	UG/KG

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB4BA

Date Sampled : 12/13/05 14:51 **Order #:** 855814 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/14/05 **Submission #:** R2528608 **Percent Solid:** 91.1

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/23/05			
ANALYTICAL DILUTION: 0.94			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	5.2 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	5.2 U	UG/KG
VINYL CHLORIDE	5.0	5.2 U	UG/KG
O-XYLENE	5.0	110	UG/KG
M+P-XYLENE	5.0	270	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	76	%
TOLUENE-D8	(75 - 128 %)	107	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	93	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB4BA

Date Sampled : 12/13/05 14:51 **Order #:** 855814 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/14/05 **Submission #:** R2528608 **Percent Solid:** 91.1

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/28/05			
ANALYTICAL DILUTION: 100.60			Dry Weight
ACETONE	20	2200 U	UG/KG
BENZENE	5.0	1300 D	UG/KG
BROMODICHLOROMETHANE	5.0	550 U	UG/KG
BROMOFORM	5.0	550 U	UG/KG
BROMOMETHANE	5.0	550 U	UG/KG
2-BUTANONE (MEK)	10	1100 U	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	550 U	UG/KG
CARBON DISULFIDE	10	120 JB	UG/KG
CARBON TETRACHLORIDE	5.0	550 U	UG/KG
CHLOROBENZENE	5.0	550 U	UG/KG
CHLOROETHANE	10	1100 U	UG/KG
CHLOROFORM	5.0	550 U	UG/KG
CHLOROMETHANE	5.0	550 U	UG/KG
',2-DIBROMO-3-CHLOROPROPANE	5.0	550 U	UG/KG
/CLOHEXANE	5.0	230 J	UG/KG
DIBROMOCHLOROMETHANE	5.0	550 U	UG/KG
1,2-DIBROMOETHANE	5.0	550 U	UG/KG
1,3-DICHLOROBENZENE	5.0	550 U	UG/KG
1,4-DICHLOROBENZENE	5.0	550 U	UG/KG
1,2-DICHLOROBENZENE	5.0	550 U	UG/KG
DICHLORODIFLUOROMETHANE	5.0	550 U	UG/KG
1,1-DICHLOROETHANE	5.0	550 U	UG/KG
1,2-DICHLOROETHANE	5.0	550 U	UG/KG
1,1-DICHLOROETHENE	5.0	550 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	550 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	550 U	UG/KG
1,2-DICHLOROPROPANE	5.0	550 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	550 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	550 U	UG/KG
ETHYLBENZENE	5.0	110 J	UG/KG
2-HEXANONE	10	1100 U	UG/KG
ISOPROPYLBENZENE	5.0	210 J	UG/KG
METHYL ACETATE	10	370 J	UG/KG
METHYLCYCLOHEXANE	5.0	580	UG/KG
METHYLENE CHLORIDE	5.0	550 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	1100 U	UG/KG
STYRENE	5.0	550 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	550 U	UG/KG
TETRACHLOROETHENE	5.0	550 U	UG/KG
LUENE	5.0	1500 D	UG/KG
,2,4-TRICHLOROBENZENE	5.0	550 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	550 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	550 U	UG/KG
TRICHLOROETHENE	5.0	550 U	UG/KG

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB4BA

Date Sampled : 12/13/05 14:51 **Order #:** 855814 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/14/05 **Submission #:** R2528608 **Percent Solid:** 91.1

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/28/05			
ANALYTICAL DILUTION: 100.60			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	550 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	550 U	UG/KG
VINYL CHLORIDE	5.0	550 U	UG/KG
O-XYLENE	5.0	600	UG/KG
M+P-XYLENE	5.0	1600	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	102	%
TOLUENE-D8	(75 - 128 %)	96	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	98	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB4CA

Date Sampled : 12/13/05 15:22 **Order #:** 855816 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/14/05 **Submission #:** R2528608 **Percent Solid:** 92.9

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/23/05			
ANALYTICAL DILUTION: 0.91			Dry Weight
ACETONE	20	40	UG/KG
BENZENE	5.0	2.0 J	UG/KG
BROMODICHLOROMETHANE	5.0	4.9 U	UG/KG
BROMOFORM	5.0	4.9 U	UG/KG
BROMOMETHANE	5.0	4.9 U	UG/KG
2-BUTANONE (MEK)	10	6.7 J	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	4.9 U	UG/KG
CARBON DISULFIDE	10	4.4 J	UG/KG
CARBON TETRACHLORIDE	5.0	4.9 U	UG/KG
CHLOROBENZENE	5.0	4.9 U	UG/KG
CHLOROETHANE	10	9.8 U	UG/KG
CHLOROFORM	5.0	4.9 U	UG/KG
CHLOROMETHANE	5.0	4.9 U	UG/KG
1,2-DIBROMO-3-CHLOROPROPANE	5.0	4.9 U	UG/KG
ICLOHEXANE	5.0	0.86 J	UG/KG
DIBROMOCHLOROMETHANE	5.0	4.9 U	UG/KG
1,2-DIBROMOETHANE	5.0	4.9 U	UG/KG
1,3-DICHLOROBENZENE	5.0	4.9 U	UG/KG
1,4-DICHLOROBENZENE	5.0	4.9 U	UG/KG
1,2-DICHLOROBENZENE	5.0	4.9 U	UG/KG
DICHLORODIFLUOROMETHANE	5.0	4.9 U	UG/KG
1,1-DICHLOROETHANE	5.0	4.9 U	UG/KG
1,2-DICHLOROETHANE	5.0	4.9 U	UG/KG
1,1-DICHLOROETHENE	5.0	4.9 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	4.9 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	4.9 U	UG/KG
1,2-DICHLOROPROPANE	5.0	4.9 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	4.9 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	4.9 U	UG/KG
ETHYLBENZENE	5.0	4.9 U	UG/KG
2-HEXANONE	10	9.8 U	UG/KG
ISOPROPYLBENZENE	5.0	4.9 U	UG/KG
METHYL ACETATE	10	1.0 J	UG/KG
METHYLCYCLOHEXANE	5.0	1.0 J	UG/KG
METHYLENE CHLORIDE	5.0	0.41 J	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	9.8 U	UG/KG
STYRENE	5.0	4.9 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	4.9 U	UG/KG
TETRACHLOROETHENE	5.0	4.9 U	UG/KG
LUENE	5.0	2.3 J	UG/KG
,2,4-TRICHLOROBENZENE	5.0	4.9 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	4.9 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	4.9 U	UG/KG
TRICHLOROETHENE	5.0	4.9 U	UG/KG

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB4CA

Date Sampled : 12/13/05 15:22 **Order #:** 855816 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/14/05 **Submission #:** R2528608 **Percent Solid:** 92.9

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/23/05			
ANALYTICAL DILUTION: 0.91			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	4.9 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	4.9 U	UG/KG
VINYL CHLORIDE	5.0	4.9 U	UG/KG
O-XYLENE	5.0	0.62 J	UG/KG
M+P-XYLENE	5.0	1.3 J	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	74	%
TOLUENE-D8	(75 - 128 %)	115	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	97	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB4CA

Date Sampled : 12/13/05 15:22 **Order #:** 855816 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/14/05 **Submission #:** R2528608 **Percent Solid:** 92.9

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/27/05			
ANALYTICAL DILUTION: 1.07			Dry Weight
ACETONE	20	50	UG/KG
BENZENE	5.0	1.8 J	UG/KG
BROMODICHLOROMETHANE	5.0	5.8 U	UG/KG
BROMOFORM	5.0	5.8 U	UG/KG
BROMOMETHANE	5.0	5.8 U	UG/KG
2-BUTANONE (MEK)	10	10 J	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	5.8 U	UG/KG
CARBON DISULFIDE	10	7.0 J	UG/KG
CARBON TETRACHLORIDE	5.0	5.8 U	UG/KG
CHLOROBENZENE	5.0	5.8 U	UG/KG
CHLOROETHANE	10	12 U	UG/KG
CHLOROFORM	5.0	5.8 U	UG/KG
CHLOROMETHANE	5.0	5.8 U	UG/KG
1,2-DIBROMO-3-CHLOROPROPANE	5.0	5.8 U	UG/KG
CLOHEXANE	5.0	1.9 J	UG/KG
DIBROMOCHLOROMETHANE	5.0	5.8 U	UG/KG
1,2-DIBROMOETHANE	5.0	5.8 U	UG/KG
1,3-DICHLOROBENZENE	5.0	5.8 U	UG/KG
1,4-DICHLOROBENZENE	5.0	5.8 U	UG/KG
1,2-DICHLOROBENZENE	5.0	5.8 U	UG/KG
DICHLORODIFLUOROMETHANE	5.0	5.8 U	UG/KG
1,1-DICHLOROETHANE	5.0	5.8 U	UG/KG
1,2-DICHLOROETHANE	5.0	5.8 U	UG/KG
1,1-DICHLOROETHENE	5.0	5.8 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	5.8 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	5.8 U	UG/KG
1,2-DICHLOROPROPANE	5.0	5.8 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	5.8 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	5.8 U	UG/KG
ETHYLBENZENE	5.0	0.58 J	UG/KG
2-HEXANONE	10	12 U	UG/KG
ISOPROPYLBENZENE	5.0	5.8 U	UG/KG
METHYL ACETATE	10	1.3 J	UG/KG
METHYLCYCLOHEXANE	5.0	2.5 J	UG/KG
METHYLENE CHLORIDE	5.0	5.8 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	12 U	UG/KG
STYRENE	5.0	5.8 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	5.8 U	UG/KG
TETRACHLOROETHENE	5.0	5.8 U	UG/KG
TOLUENE	5.0	2.9 J	UG/KG
2,4-TRICHLOROBENZENE	5.0	5.8 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	5.8 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	5.8 U	UG/KG
TRICHLOROETHENE	5.0	5.8 U	UG/KG

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB4CA

Date Sampled : 12/13/05 15:22 **Order #:** 855816 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/14/05 **Submission #:** R2528608 **Percent Solid:** 92.9

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/27/05			
ANALYTICAL DILUTION: 1.07			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	5.8 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	5.8 U	UG/KG
VINYL CHLORIDE	5.0	5.8 U	UG/KG
O-XYLENE	5.0	0.45 J	UG/KG
M+P-XYLENE	5.0	1.5 J	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	78	%
TOLUENE-D8	(75 - 128 %)	115	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	98	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB4AA

Date Sampled : 12/13/05 14:44 **Order #:** 855813 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/14/05 **Submission #:** R2528608 **Percent Solid:** 90.3

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/27/05			
ANALYTICAL DILUTION: 1.07			Dry Weight
ACETONE	20	11 J	UG/KG
BENZENE	5.0	1.2 J	UG/KG
BROMODICHLOROMETHANE	5.0	5.9 U	UG/KG
BROMOFORM	5.0	5.9 U	UG/KG
BROMOMETHANE	5.0	5.9 U	UG/KG
2-BUTANONE (MEK)	10	2.7 J	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	5.9 U	UG/KG
CARBON DISULFIDE	10	12 U	UG/KG
CARBON TETRACHLORIDE	5.0	5.9 U	UG/KG
CHLOROBENZENE	5.0	5.9 U	UG/KG
CHLOROETHANE	10	12 U	UG/KG
CHLOROFORM	5.0	5.9 U	UG/KG
CHLOROMETHANE	5.0	5.9 U	UG/KG
1,2-DIBROMO-3-CHLOROPROPANE	5.0	5.9 U	UG/KG
CYCLOHEXANE	5.0	0.63 J	UG/KG
DIBROMOCHLOROMETHANE	5.0	5.9 U	UG/KG
1,2-DIBROMOETHANE	5.0	5.9 U	UG/KG
1,3-DICHLOROBENZENE	5.0	5.9 U	UG/KG
1,4-DICHLOROBENZENE	5.0	5.9 U	UG/KG
1,2-DICHLOROBENZENE	5.0	5.9 U	UG/KG
DICHLORODIFLUOROMETHANE	5.0	5.9 U	UG/KG
1,1-DICHLOROETHANE	5.0	5.9 U	UG/KG
1,2-DICHLOROETHANE	5.0	5.9 U	UG/KG
1,1-DICHLOROETHENE	5.0	5.9 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	5.9 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	5.9 U	UG/KG
1,2-DICHLOROPROPANE	5.0	5.9 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	5.9 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	5.9 U	UG/KG
ETHYLBENZENE	5.0	5.9 U	UG/KG
2-HEXANONE	10	12 U	UG/KG
ISOPROPYLBENZENE	5.0	5.9 U	UG/KG
METHYL ACETATE	10	12 U	UG/KG
METHYLCYCLOHEXANE	5.0	0.74 J	UG/KG
METHYLENE CHLORIDE	5.0	5.9 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	12 U	UG/KG
STYRENE	5.0	5.9 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	5.9 U	UG/KG
TETRACHLOROETHENE	5.0	5.9 U	UG/KG
TOLUENE	5.0	5.9 U	UG/KG
1,2,4-TRICHLOROBENZENE	5.0	5.9 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	5.9 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	5.9 U	UG/KG
TRICHLOROETHENE	5.0	5.9 U	UG/KG

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB4AA

Date Sampled : 12/13/05 14:44 **Order #:** 855813 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/14/05 **Submission #:** R2528608 **Percent Solid:** 90.3

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/27/05			
ANALYTICAL DILUTION: 1.07			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	5.9 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	5.9 U	UG/KG
VINYL CHLORIDE	5.0	5.9 U	UG/KG
O-XYLENE	5.0	5.9 U	UG/KG
M+P-XYLENE	5.0	5.9 U	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	87	%
TOLUENE-D8	(75 - 128 %)	100	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	101	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB2AA

Date Sampled : 12/14/05 14:06 **Order #:** 855807 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 85.0

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/23/05			
ANALYTICAL DILUTION: 1.34			Dry Weight
ACETONE	20	11 J	UG/KG
BENZENE	5.0	3.2 J	UG/KG
BROMODICHLOROMETHANE	5.0	7.9 U	UG/KG
BROMOFORM	5.0	7.9 U	UG/KG
BROMOMETHANE	5.0	7.9 U	UG/KG
2-BUTANONE (MEK)	10	2.5 J	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	7.9 U	UG/KG
CARBON DISULFIDE	10	2.6 J	UG/KG
CARBON TETRACHLORIDE	5.0	7.9 U	UG/KG
CHLOROBENZENE	5.0	7.9 U	UG/KG
CHLOROETHANE	10	16 U	UG/KG
CHLOROFORM	5.0	7.9 U	UG/KG
CHLOROMETHANE	5.0	7.9 U	UG/KG
1,2-DIBROMO-3-CHLOROPROPANE	5.0	7.9 U	UG/KG
CYCLOHEXANE	5.0	1.6 J	UG/KG
DIBROMOCHLOROMETHANE	5.0	7.9 U	UG/KG
1,2-DIBROMOETHANE	5.0	7.9 U	UG/KG
1,3-DICHLOROBENZENE	5.0	7.9 U	UG/KG
1,4-DICHLOROBENZENE	5.0	7.9 U	UG/KG
1,2-DICHLOROBENZENE	5.0	7.9 U	UG/KG
DICHLORODIFLUOROMETHANE	5.0	7.9 U	UG/KG
1,1-DICHLOROETHANE	5.0	7.9 U	UG/KG
1,2-DICHLOROETHANE	5.0	7.9 U	UG/KG
1,1-DICHLOROETHENE	5.0	7.9 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	7.9 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	7.9 U	UG/KG
1,2-DICHLOROPROPANE	5.0	7.9 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	7.9 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	7.9 U	UG/KG
ETHYLBENZENE	5.0	7.9 U	UG/KG
2-HEXANONE	10	16 U	UG/KG
ISOPROPYLBENZENE	5.0	7.9 U	UG/KG
METHYL ACETATE	10	16 U	UG/KG
METHYLCYCLOHEXANE	5.0	1.9 J	UG/KG
METHYLENE CHLORIDE	5.0	0.85 J	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	16 U	UG/KG
STYRENE	5.0	7.9 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	7.9 U	UG/KG
TETRACHLOROETHENE	5.0	7.9 U	UG/KG
TOLUENE	5.0	1.9 J	UG/KG
1,2,4-TRICHLOROBENZENE	5.0	7.9 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	7.9 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	7.9 U	UG/KG
TRICHLOROETHENE	5.0	7.9 U	UG/KG

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB2AA

Date Sampled : 12/14/05 14:06 **Order #:** 855807 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 85.0

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/23/05			
ANALYTICAL DILUTION: 1.34			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	7.9 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	7.9 U	UG/KG
VINYL CHLORIDE	5.0	7.9 U	UG/KG
O-XYLENE	5.0	0.49 J	UG/KG
M+P-XYLENE	5.0	7.9 U	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	89	%
TOLUENE-D8	(75 - 128 %)	99	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	95	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB2BA

Date Sampled : 12/14/05 14:14 **Order #:** 855808 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 88.1

DATE ANALYZED : 12/23/05
ANALYTICAL DILUTION: 1.02

ANALYTE	PQL	RESULT	UNITS
			Dry Weight
ACETONE	20	27	UG/KG
BENZENE	5.0	1.4 J	UG/KG
BROMODICHLOROMETHANE	5.0	5.8 U	UG/KG
BROMOFORM	5.0	5.8 U	UG/KG
BROMOMETHANE	5.0	5.8 U	UG/KG
2-BUTANONE (MEK)	10	6.2 J	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	5.8 U	UG/KG
CARBON DISULFIDE	10	5.9 J	UG/KG
CARBON TETRACHLORIDE	5.0	5.8 U	UG/KG
CHLOROBENZENE	5.0	5.8 U	UG/KG
CHLOROETHANE	10	12 U	UG/KG
CHLOROFORM	5.0	5.8 U	UG/KG
CHLOROMETHANE	5.0	5.8 U	UG/KG
1,2-DIBROMO-3-CHLOROPROPANE	5.0	5.8 U	UG/KG
YCLOHEXANE	5.0	3.3 J	UG/KG
DIBROMOCHLOROMETHANE	5.0	5.8 U	UG/KG
1,2-DIBROMOETHANE	5.0	5.8 U	UG/KG
1,3-DICHLOROBENZENE	5.0	5.8 U	UG/KG
1,4-DICHLOROBENZENE	5.0	5.8 U	UG/KG
1,2-DICHLOROBENZENE	5.0	5.8 U	UG/KG
DICHLORODIFLUOROMETHANE	5.0	5.8 U	UG/KG
1,1-DICHLOROETHANE	5.0	5.8 U	UG/KG
1,2-DICHLOROETHANE	5.0	5.8 U	UG/KG
1,1-DICHLOROETHENE	5.0	5.8 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	5.8 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	5.8 U	UG/KG
1,2-DICHLOROPROPANE	5.0	5.8 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	5.8 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	5.8 U	UG/KG
ETHYLBENZENE	5.0	1.00 J	UG/KG
2-HEXANONE	10	12 U	UG/KG
ISOPROPYLBENZENE	5.0	5.8 U	UG/KG
METHYL ACETATE	10	12 U	UG/KG
METHYLCYCLOHEXANE	5.0	4.3 J	UG/KG
METHYLENE CHLORIDE	5.0	5.8 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	12 U	UG/KG
STYRENE	5.0	5.8 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	5.8 U	UG/KG
TETRACHLOROETHENE	5.0	5.8 U	UG/KG
TOLUENE	5.0	2.6 J	UG/KG
2,4-TRICHLOROBENZENE	5.0	5.8 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	5.8 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	5.8 U	UG/KG
TRICHLOROETHENE	5.0	5.8 U	UG/KG

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB2BA

Date Sampled : 12/14/05 14:14 **Order #:** 855808 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 88.1

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/23/05			
ANALYTICAL DILUTION: 1.02			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	5.8 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	5.8 U	UG/KG
VINYL CHLORIDE	5.0	5.8 U	UG/KG
O-XYLENE	5.0	0.65 J	UG/KG
M+P-XYLENE	5.0	1.4 J	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	94	%
TOLUENE-D8	(75 - 128 %)	95	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	94	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB2CA

Date Sampled : 12/14/05 14:41 **Order #:** 855809 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 95.9

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/24/05			
ANALYTICAL DILUTION: 1.98			Dry Weight
ACETONE	20	24 J	UG/KG
BENZENE	5.0	10 U	UG/KG
BROMODICHLOROMETHANE	5.0	10 U	UG/KG
BROMOFORM	5.0	10 U	UG/KG
BROMOMETHANE	5.0	10 U	UG/KG
2-BUTANONE (MEK)	10	6.7 J	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	10 U	UG/KG
CARBON DISULFIDE	10	4.4 J	UG/KG
CARBON TETRACHLORIDE	5.0	10 U	UG/KG
CHLOROBENZENE	5.0	10 U	UG/KG
CHLOROETHANE	10	21 U	UG/KG
CHLOROFORM	5.0	10 U	UG/KG
CHLOROMETHANE	5.0	10 U	UG/KG
1,2-DIBROMO-3-CHLOROPROPANE	5.0	10 U	UG/KG
YCLOHEXANE	5.0	2.6 J	UG/KG
DIBROMOCHLOROMETHANE	5.0	10 U	UG/KG
1,2-DIBROMOETHANE	5.0	10 U	UG/KG
1,3-DICHLOROBENZENE	5.0	10 U	UG/KG
1,4-DICHLOROBENZENE	5.0	10 U	UG/KG
1,2-DICHLOROBENZENE	5.0	10 U	UG/KG
DICHLORODIFLUOROMETHANE	5.0	10 U	UG/KG
1,1-DICHLOROETHANE	5.0	10 U	UG/KG
1,2-DICHLOROETHANE	5.0	10 U	UG/KG
1,1-DICHLOROETHENE	5.0	10 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	10 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	10 U	UG/KG
1,2-DICHLOROPROPANE	5.0	10 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	10 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	10 U	UG/KG
ETHYLBENZENE	5.0	1.8 J	UG/KG
2-HEXANONE	10	21 U	UG/KG
ISOPROPYLBENZENE	5.0	10 U	UG/KG
METHYL ACETATE	10	21 U	UG/KG
METHYLCYCLOHEXANE	5.0	3.4 J	UG/KG
METHYLENE CHLORIDE	5.0	1.8 J	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	21 U	UG/KG
STYRENE	5.0	10 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	10 U	UG/KG
TETRACHLOROETHENE	5.0	10 U	UG/KG
LUENE	5.0	4.2 J	UG/KG
,2,4-TRICHLOROBENZENE	5.0	10 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	10 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	10 U	UG/KG
TRICHLOROETHENE	5.0	10 U	UG/KG

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COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB2CA

Date Sampled : 12/14/05 14:41 **Order #:** 855809 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 95.9

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/24/05			
ANALYTICAL DILUTION: 1.98			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	10 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	10 U	UG/KG
VINYL CHLORIDE	5.0	10 U	UG/KG
O-XYLENE	5.0	1.3 J	UG/KG
M+P-XYLENE	5.0	2.5 J	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	95	%
TOLUENE-D8	(75 - 128 %)	96	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	95	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB3AA

Date Sampled : 12/14/05 13:00 **Order #:** 855810 **Sample Matrix:** SOIL/SEDIMEN
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 85.8

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/23/05			
ANALYTICAL DILUTION: 1.17			Dry Weight
ACETONE	20	78	UG/KG
BENZENE	5.0	6.4 J	UG/KG
BROMODICHLOROMETHANE	5.0	6.8 U	UG/KG
BROMOFORM	5.0	6.8 U	UG/KG
BROMOMETHANE	5.0	6.8 U	UG/KG
2-BUTANONE (MEK)	10	11 J	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	6.8 U	UG/KG
CARBON DISULFIDE	10	35	UG/KG
CARBON TETRACHLORIDE	5.0	6.8 U	UG/KG
CHLOROBENZENE	5.0	6.8 U	UG/KG
CHLOROETHANE	10	14 U	UG/KG
CHLOROFORM	5.0	6.8 U	UG/KG
CHLOROMETHANE	5.0	6.8 U	UG/KG
',2-DIBROMO-3-CHLOROPROPANE	5.0	6.8 U	UG/KG
YCLOHEXANE	5.0	6.8 U	UG/KG
DIBROMOCHLOROMETHANE	5.0	6.8 U	UG/KG
1,2-DIBROMOETHANE	5.0	6.8 U	UG/KG
1,3-DICHLOROBENZENE	5.0	6.8 U	UG/KG
1,4-DICHLOROBENZENE	5.0	6.8 U	UG/KG
1,2-DICHLOROBENZENE	5.0	6.8 U	UG/KG
DICHLORODIFLUOROMETHANE	5.0	6.8 U	UG/KG
1,1-DICHLOROETHANE	5.0	6.8 U	UG/KG
1,2-DICHLOROETHANE	5.0	6.8 U	UG/KG
1,1-DICHLOROETHENE	5.0	6.8 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	6.8 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	6.8 U	UG/KG
1,2-DICHLOROPROPANE	5.0	6.8 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	6.8 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	6.8 U	UG/KG
ETHYLBENZENE	5.0	4.2 J	UG/KG
2-HEXANONE	10	14 U	UG/KG
ISOPROPYLBENZENE	5.0	0.68 J	UG/KG
METHYL ACETATE	10	14 U	UG/KG
METHYLCYCLOHEXANE	5.0	8.7	UG/KG
METHYLENE CHLORIDE	5.0	6.8 U	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	14 U	UG/KG
STYRENE	5.0	6.8 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	6.8 U	UG/KG
TETRACHLOROETHENE	5.0	6.8 U	UG/KG
LUENE	5.0	9.3	UG/KG
,2,4-TRICHLOROBENZENE	5.0	6.8 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	6.8 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	6.8 U	UG/KG
TRICHLOROETHENE	5.0	6.8 U	UG/KG

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB3AA

Date Sampled : 12/14/05 13:00 **Order #:** 855810 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 85.8

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/23/05			
ANALYTICAL DILUTION: 1.17			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	6.8 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	6.8 U	UG/KG
VINYL CHLORIDE	5.0	6.8 U	UG/KG
O-XYLENE	5.0	2.0 J	UG/KG
M+P-XYLENE	5.0	4.0 J	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	88	%
TOLUENE-D8	(75 - 128 %)	96	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	90	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB3BA

Date Sampled : 12/14/05 13:07 **Order #:** 855811 **Sample Matrix:** SOIL/SEDIMENT
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 84.4

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/24/05			
ANALYTICAL DILUTION: 1.23			Dry Weight
ACETONE	20	88	UG/KG
BENZENE	5.0	1.2 J	UG/KG
BROMODICHLOROMETHANE	5.0	7.3 U	UG/KG
BROMOFORM	5.0	7.3 U	UG/KG
BROMOMETHANE	5.0	7.3 U	UG/KG
2-BUTANONE (MEK)	10	17	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	7.3 U	UG/KG
CARBON DISULFIDE	10	6.8 J	UG/KG
CARBON TETRACHLORIDE	5.0	7.3 U	UG/KG
CHLOROBENZENE	5.0	7.3 U	UG/KG
CHLOROETHANE	10	15 U	UG/KG
CHLOROFORM	5.0	7.3 U	UG/KG
CHLOROMETHANE	5.0	7.3 U	UG/KG
1,2-DIBROMO-3-CHLOROPROPANE	5.0	7.3 U	UG/KG
'CLOHEXANE	5.0	0.95 J	UG/KG
_IBROMOCHLOROMETHANE	5.0	7.3 U	UG/KG
1,2-DIBROMOETHANE	5.0	7.3 U	UG/KG
1,3-DICHLOROBENZENE	5.0	7.3 U	UG/KG
1,4-DICHLOROBENZENE	5.0	7.3 U	UG/KG
1,2-DICHLOROBENZENE	5.0	7.3 U	UG/KG
DICHLORODIFLUOROMETHANE	5.0	7.3 U	UG/KG
1,1-DICHLOROETHANE	5.0	7.3 U	UG/KG
1,2-DICHLOROETHANE	5.0	7.3 U	UG/KG
1,1-DICHLOROETHENE	5.0	7.3 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	7.3 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	7.3 U	UG/KG
1,2-DICHLOROPROPANE	5.0	7.3 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	7.3 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	7.3 U	UG/KG
ETHYLBENZENE	5.0	7.3 U	UG/KG
2-HEXANONE	10	15 U	UG/KG
ISOPROPYLBENZENE	5.0	7.3 U	UG/KG
METHYL ACETATE	10	1.3 J	UG/KG
METHYLCYCLOHEXANE	5.0	1.2 J	UG/KG
METHYLENE CHLORIDE	5.0	0.91 J	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	15 U	UG/KG
STYRENE	5.0	7.3 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	7.3 U	UG/KG
TETRACHLOROETHENE	5.0	7.3 U	UG/KG
TOLUENE	5.0	1.4 J	UG/KG
1,2,4-TRICHLOROBENZENE	5.0	7.3 U	UG/KG
1,1,1-TRICHLOROETHANE	5.0	7.3 U	UG/KG
1,1,2-TRICHLOROETHANE	5.0	7.3 U	UG/KG
TRICHLOROETHENE	5.0	7.3 U	UG/KG

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB3BA

Date Sampled : 12/14/05 13:07 **Order #:** 855811 **Sample Matrix:** SOIL/SEDIMEN
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 84.4

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/24/05			
ANALYTICAL DILUTION: 1.23			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	7.3 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	7.3 U	UG/KG
VINYL CHLORIDE	5.0	7.3 U	UG/KG
O-XYLENE	5.0	7.3 U	UG/KG
M+P-XYLENE	5.0	7.3 U	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	94	%
TOLUENE-D8	(75 - 128 %)	97	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	92	%

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB3CA

Date Sampled : 12/14/05 13:45 **Order #:** 855812 **Sample Matrix:** SOIL/SEDIMEN
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 93.5

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/24/05			
ANALYTICAL DILUTION: 1.08			Dry Weight
ACETONE	20	21 J	UG/KG
BENZENE	5.0	5.0 J	UG/KG
BROMODICHLOROMETHANE	5.0	5.8 U	UG/KG
BROMOFORM	5.0	5.8 U	UG/KG
BROMOMETHANE	5.0	5.8 U	UG/KG
2-BUTANONE (MEK)	10	4.2 J	UG/KG
METHYL-TERT-BUTYL ETHER	5.0	5.8 U	UG/KG
CARBON DISULFIDE	10	3.2 J	UG/KG
CARBON TETRACHLORIDE	5.0	5.8 U	UG/KG
CHLOROBENZENE	5.0	34	UG/KG
CHLOROETHANE	10	12 U	UG/KG
CHLOROFORM	5.0	5.8 U	UG/KG
CHLOROMETHANE	5.0	5.8 U	UG/KG
1,2-DIBROMO-3-CHLOROPROPANE	5.0	5.8 U	UG/KG
YCLOHEXANE	5.0	2.8 J	UG/KG
IBROMOCHLOROMETHANE	5.0	5.8 U	UG/KG
1,2-DIBROMOETHANE	5.0	5.8 U	UG/KG
1,3-DICHLOROBENZENE	5.0	24	UG/KG
1,4-DICHLOROBENZENE	5.0	4.9 J	UG/KG
1,2-DICHLOROBENZENE	5.0	0.63 J	UG/KG
DICHLORODIFLUOROMETHANE	5.0	5.8 U	UG/KG
1,1-DICHLOROETHANE	5.0	5.8 U	UG/KG
1,2-DICHLOROETHANE	5.0	5.8 U	UG/KG
1,1-DICHLOROETHENE	5.0	5.8 U	UG/KG
CIS-1,2-DICHLOROETHENE	5.0	5.8 U	UG/KG
TRANS-1,2-DICHLOROETHENE	5.0	5.8 U	UG/KG
1,2-DICHLOROPROPANE	5.0	5.8 U	UG/KG
CIS-1,3-DICHLOROPROPENE	5.0	5.8 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	5.0	5.8 U	UG/KG
ETHYLBENZENE	5.0	2.8 J	UG/KG
2-HEXANONE	10	12 U	UG/KG
ISOPROPYLBENZENE	5.0	5.8 U	UG/KG
METHYL ACETATE	10	12 U	UG/KG
METHYLCYCLOHEXANE	5.0	4.1 J	UG/KG
METHYLENE CHLORIDE	5.0	1.1 J	UG/KG
4-METHYL-2-PENTANONE (MIBK)	10	12 U	UG/KG
STYRENE	5.0	5.8 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	5.0	5.8 U	UG/KG
TETRACHLOROETHENE	5.0	5.8 U	UG/KG
TOLUENE	5.0	17	UG/KG
,4-TRICHLOROBENZENE	5.0	0.79 J	UG/KG
1,1,1-TRICHLOROETHANE	5.0	5.8 U	UG/KG
,1,2-TRICHLOROETHANE	5.0	5.8 U	UG/KG
TRICHLOROETHENE	5.0	5.8 U	UG/KG

COLUMBIA ANALYTICAL SERVICES

VOLATILE ORGANICS
METHOD 8260B
Reported: 02/27/06

ENSR International
Project Reference: AK STEEL AOC 12
Client Sample ID : AOC12SB3CA

Date Sampled : 12/14/05 13:45 **Order #:** 855812 **Sample Matrix:** SOIL/SEDIMEN
Date Received: 12/15/05 **Submission #:** R2528608 **Percent Solid:** 93.5

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 12/24/05			
ANALYTICAL DILUTION: 1.08			Dry Weight
TRICHLOROFLUOROMETHANE	5.0	5.8 U	UG/KG
1,1,2-TRICHLORO1,2,2-TRIFLUOROETHA	5.0	5.8 U	UG/KG
VINYL CHLORIDE	5.0	5.8 U	UG/KG
O-XYLENE	5.0	2.4 J	UG/KG
M+P-XYLENE	5.0	6.2	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
4-BROMOFLUOROBENZENE	(65 - 129 %)	97	%
TOLUENE-D8	(75 - 128 %)	96	%
DIBROMOFLUOROMETHANE	(62 - 133 %)	93	%