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Tables

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Table 1. Sample Quantities and Quality Control Frequencies, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Parameter	Estimated Environmental Sample Quantity	Field QC Analyses						Laboratory QC Sample						Total
		Trip Blank		Rinse Blank		Field Duplicate		Matrix Spike		Matrix Spike Duplicate		Lab Duplicate		
		Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	
Surface Water														
Volatile Organic Compounds (SW846-8280B)	15	1/cooler	1	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	20
Semivolatile Organic Compounds (SW846-8270C)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Organochlorine Pesticides (USEPA 8081A)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
PCBs (USEPA 8082)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Herbicides (USEPA 8151A)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
PCDD/PCDFs SW-846(8290)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Total Metals (including Mercury) (SW846-6020, 7470A)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Cyanide, Total (USEPA 9012A)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Sulfide, Total (USEPA 9034)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Dioxathion/Dioxenethion (BATCO 088.1)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Groundwater														
Volatile Organic Compounds (SW846-8260B)	10	1/cooler	1	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	15
Semivolatile Organic Compounds (SW846-8270C)	10	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	14
Organochlorine Pesticides (USEPA 8081A)	10	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	14
PCBs (USEPA 8082)	10	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	14
Herbicides (USEPA 8151A)	10	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	14
PCDD/PCDFs SW-846(8290)	10	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	14
Total Metals (including Mercury) (SW846-6020, 7470A)	10	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	14
Cyanide, Total (USEPA 9012A)	10	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	14
Sulfide, Total (USEPA 9034)	10	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	14
Dioxathion/Dioxenethion (BATCO 088.1)	10	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	14
Drinking Water														
Volatile Organic Compounds (USEPA 524.2, 504.1 and SW-846 8260)	40	1/cooler	1	1/day	2	1/20	2	1/20	2	1/20	2	NA	–	49
Semivolatile Organic Compounds (EPA 525.2 and SW846-8270C)	40	NA	–	1/day	2	1/20	2	1/20	2	1/20	2	NA	–	48
Organochlorine Pesticides (USEPA 508 and SW-846 8081A)	40	NA	–	1/day	2	1/20	2	1/20	2	1/20	2	NA	–	48
PCBs (USEPA 508)	40	NA	–	1/day	2	1/20	2	1/20	2	1/20	2	NA	–	48
Herbicides (USEPA 515.1)	40	NA	–	1/day	2	1/20	2	1/20	2	1/20	2	NA	–	48
PCDD/PCDFs (USEPA 1613)	40	NA	–	1/day	2	1/20	2	1/20	2	1/20	2	NA	–	48
Total Metals (including Mercury) (EPA 200.8, 200.7, 245, and SW846-6020)	40	NA	–	1/day	2	1/20	2	1/20	2	1/20	2	NA	–	48
Cyanide, Total (USEPA 4500)	40	NA	–	1/day	2	1/20	2	1/20	2	1/20	2	NA	–	48
Sulfide, Total (USEPA 4500)	40	NA	–	1/day	2	1/20	2	1/20	2	1/20	2	NA	–	48
Dioxathion/Dioxenethion (BATCO 088.1)	40	NA	–	1/day	2	1/20	2	1/20	2	1/20	2	NA	–	48

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Table 1. Sample Quantities and Quality Control Frequencies, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Parameter	Estimated Environmental Sample Quantity	Field QC Analyses						Laboratory QC Sample						Total
		Trip Blank		Rinse Blank		Field Duplicate		Matrix Spike		Matrix Spike Duplicate		Lab Duplicate		
		Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	
Sediment														
Volatile Organic Compounds (SW846-8260B)	15	1/cooler	1	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	20
Semivolatile Organic Compounds (SW846-8270C)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Organochlorine Pesticides (USEPA 8081A)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
PCBs (USEPA 8082)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Herbicides (USEPA 8151A)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
PCDD/PCDFs SW-846 (8290)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Total Metals (Including Mercury) (SW846-6020, 7470A)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Cyanide, Total (USEPA 9012A)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Sulfide, Total (USEPA 9034)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Dioxathion/Dioxenethion (BATCO 088.1)	15	NA	–	1/day	1	1/20	1	1/20	1	1/20	1	NA	–	19
Soil Gas/Indoor Air														
Volatile Organic Compounds (USEPA TO-15)	30	NA	–	NA	–	1/20	1	NA	–	NA	–	1/20	2	33

Note: Sample Counts are an approximation.
BATCO Bonner Analytical Testing Company
Freq Frequency.
N/A Not Applicable.
No. Number.
PCDD Polychlorinated dibenzodioxins.
1/day One rinse blank per day or one per 20 samples, whichever is more frequent. Rinse blanks not required when dedicated sampling equipment is used.
PCDF Polychlorinated dibenzofurans.
PCBs Polychlorinated biphenyls.
QC Quality Control.
TBD To Be Determined.
USEPA U.S. Environmental Protection Agency.

Note : Where applicable the drinking water methods are being used to analyze compounds associated with the APP IX compound list. If the APP IX compound is not part of the Drinking water method being utilized the appropriate SW-846 method will be utilized to complete the analysis of that compound. Compounds that are bolded are part of the EPA's 500 series drinking water method but are not part of the APP IX compound list.

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Table 2. Analytical Quality Control Limits[1], Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

	Accuracy - % Recovery			Precision - RPD		
Parameter	Surrogate	MS/MSD	LCS	MS/MSD	Lab Duplicate	Field Duplicate
Surface Water/Groundwater						
Volatile Organic Compounds	70-130	60-135	70-140	30	–	50
Semivolatile Organic Compounds	25-135	50-130	60-130	50	–	50
Organochlorine Pesticides	38-130	40-150	30-150	50	–	50
PCBs	38-130	40-150	30-150	50	–	50
Herbicides	52-151	60-130	60-130	50	–	50
PCDD/PCDFs	40-135	65-147	65-147	20	–	50
Total Metals (including Mercury)	–	75-125	80-120	20	–	50
Cyanide, Total	–	75-125	85-115	20	–	50
Sulfide, Total	–	75-125	75-125	30	–	50
Dioxathion	40-97	69-104	69-104	25	–	50
Dioxenethion	40-97	63-100	63-100	25	–	50
Drinking Water						
Volatile Organic Compounds	70-130	60-135	70-140	30	–	50
Semivolatile Organic Compounds	25-135	50-130	60-130	50	–	50
Organochlorine Pesticides	38-130	40-150	30-150	50	–	50
PCBs	38-130	40-150	30-150	50	–	50
Herbicides	52-151	60-130	60-130	50	–	50
PCDD/PCDFs	40-135	65-147	65-147	20	–	50
Total Metals (including Mercury)	–	75-125	80-120	20	–	50
Cyanide, Total	–	75-125	85-115	20	–	50
Sulfide, Total	–	75-125	75-125	30	–	50
Dioxathion	40-97	69-104	69-104	25	–	50
Dioxenethion	40-97	63-100	63-100	25	–	50
Sediment						
Volatile Organic Compounds	65-130	60-140	60-135	50	–	100
Semivolatile Organic Compounds	45-130	30-130	20-130	50	–	100
Organochlorine Pesticides	45-130	30-130	20-130	50	–	100
PCBs	45-130	30-130	20-130	50	–	100
Herbicides	35-137	30-130	30-130	50	–	100
PCDD/PCDFs	40-135	58-143	58-143	50	–	100
Total Metals (including Mercury)	–	75-125	75-125	35	–	100
Cyanide, Total	–	75-125	75-125	35	–	100
Sulfide, Total	–	50-150	50-150	50	–	100
Dioxathion	40-97	69-104	69-104	35	–	100
Dioxenethion	40-97	63-100	63-100	35	–	100
Soil Gas/Indoor Air						
Volatile Organics	60-140	–	70-130	–	–	50

Note:

[1]The listed QC limits are based on SW-846 guidance and are advisory. The actual limits are determined based on laboratory performance. Frequent failure to meet the QC limits; however, warrant investigation of the laboratory.

LCS Laboratory Control Sample.
MS Matrix Spike.
MSD Matrix Spike Duplicate.
PCBs Polychlorinated biphenyls.
PCDD Polychlorinated dibenzodioxins.
PCDF Polychlorinated dibenzofurans.

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Table 3a. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan,
Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Analyte[1]	CAS Number	Groundwater/Surface Water					
		Tier 1 TRG (ug/L)	RSL Tapwater (ug/L)	Laboratory MDL (ug/L)	Laboratory RL (ug/L)	Low Level Laboratory MDL ug/L	Low Level Laboratory RL ug/L
Volatile Organic Compounds (Method 8260)							
Ethylbenzene	100-41-4	700	1.5	0.11	1	--	--
Styrene	100-42-5	100	1600	0.11	1	--	--
cis-1,3-Dichloropropene	10061-01-5	0.084	NE	0.11	1	--	--
trans-1,3-Dichloropropene	10061-02-6	0.084	NE	0.21	1	--	--
1,2-Dibromoethane	106-93-4	0.05	0.0065	0.25	1	--	--
Acrolein	107-02-8	0.042	0.042	7.4	20	--	--
3-Chloro-1-propene	107-05-1	NE	0.65	0.2	1	--	--
1,2-Dichloroethane	107-06-2	5	0.15	0.1	1	--	--
Propionitrile	107-12-0	NE	NE	4.8	20	--	--
Acrylonitrile	107-13-1	0.037	0.045	7.2	20	--	--
Vinyl acetate	108-05-4	412	410	0.28	2	--	--
4-Methyl-2-pentanone (MIBK)	108-10-1	139	2000	1	10	--	--
Toluene	108-88-3	1000	2300	0.33	1	--	--
Chlorobenzene	108-90-7	100	91	0.25	1	--	--
trans-1,4-Dichloro-2-butene	110-57-6	NE	0.0012	0.5	2	--	--
Chlorodibromomethane	124-48-1	0.126	0.15	0.1	1	--	--
Methacrylonitrile	126-98-7	1.04	1	3.3	20	--	--
2-Chloro-1,3-butadiene	126-99-8	14.3	0.018	0.3	1	--	--
Tetrachloroethene	127-18-4	5.0	0.11	0.15	1	--	--
Xylenes, Total	1330-20-7	10000	200	0.2	2	--	--
cis-1,2-Dichloroethene	156-59-2	70	73	0.15	1	--	--
trans-1,2-Dichloroethene	156-60-5	100	110	0.2	1	--	--
Carbon tetrachloride	58-23-5	5.0	0.44	0.5	1	--	--
2-Hexanone	591-78-6	1460	47	1	10	--	--
1,1,1,2-Tetrachloroethane	630-20-6	0.406	0.52	0.33	1	--	--
Acetone	67-64-1	608	22000	5	25	--	--
Chloroform	67-66-3	0.155	0.19	0.14	1	--	--
Benzene	71-43-2	5.0	0.41	0.25	1	--	--
1,1,1-Trichloroethane	71-55-6	200	9100	0.5	1	--	--
Bromomethane	74-83-9	8.52	8.7	0.8	1	--	--
Chloromethane	74-87-3	1.43	190	0.33	1	--	--
Iodomethane	74-88-4	NE	NE	1	5	--	--
Dibromomethane	74-95-3	60.8	8.2	0.2	1	--	--
Chloroethane	75-00-3	3.64	21000	1	1	--	--
Vinyl chloride	75-01-4	2.0	0.016	0.18	1	--	--
Acetonitrile	75-05-8	125	130	10	40	--	--
Methylene Chloride	75-09-2	5.0	4.8	1	5	--	--
Carbon disulfide	75-15-0	1043	1000	0.6	2	--	--
Bromoform	75-25-2	8.48	8.5	0.5	1	--	--
Dichlorobromomethane	75-27-4	0.168	0.12	0.25	1	--	--
1,1-Dichloroethane	75-34-3	798	2.4	0.25	1	--	--
1,1-Dichloroethene	75-35-4	7	340	0.11	1	--	--
Trichlorofluoromethane	75-69-4	1288	1300	0.25	1	--	--
Dichlorodifluoromethane	75-71-8	348	200	0.25	1	--	--
Pentachloroethane	76-01-7	NE	0.75	1.2	5	--	--
Isobutyl alcohol	78-83-1	1825	11000	11	40	--	--
1,2-Dichloropropane	78-87-5	5	0.39	0.13	1	--	--
2-Butanone (MEK)	78-93-3	1906	7100	1	10	--	--
1,1,2-Trichloroethane	79-00-5	5.0	0.24	0.13	1	--	--
Trichloroethene	79-01-6	5.0	2	0.13	1	--	--
1,1,2,2-Tetrachloroethane	79-34-5	0.053	0.087	0.18	1	--	--
Methyl methacrylate	80-62-6	1419	1400	0.48	1	--	--
1,2-Dibromo-3-Chloropropane	96-12-8	0.20	0.00032	0.44	1	--	--
1,2,3-Trichloropropane	96-18-4	0.0062	0.00072	0.41	1	--	--
Ethyl methacrylate	97-63-2	548	530	0.25	1	--	--

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Table 3a. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Analyte[1]	CAS Number	Groundwater/Surface Water					
		Tier 1 TRG (ug/L)	RSL Tapwater (ug/L)	Laboratory MDL (ug/L)	Laboratory RL (ug/L)	Low Level Laboratory MDL ug/L	Low Level Laboratory RL ug/L
Semivolatile Organic Compounds (Method 8270)							
4-Nitroaniline	100-01-8	NE	3.4	5	50	0.5	5
4-Nitrophenol	100-02-7	292	NE	1.9	50	0.5	5
Benzyl alcohol	100-51-6	10950	3700	1.1	10	0.14	1
N-Nitrosopiperidine	100-75-4	NE	0.0072	0.88	10	0.1	1
4-Bromophenyl phenyl ether	101-55-3	NE	NE	0.77	10	0.12	1
2,4-Dimethylphenol	105-67-9	730	NE	4	10	0.69	2
N-Nitrosomethylethylamine	10595-95-6	0.003	0.0031	3.3	10	0.1	2
1,4-Dichlorobenzene	106-46-7	75	0.43	0.54	10	0.10	1.0
4-Chloroaniline	106-47-8	146	0.34	2.2	20	0.36	2
p-Phenylene diamine	106-50-3	6935	8900	10	2000	16	200
bis(chloroisopropyl) ether	108-60-1	0.26	0.32	0.78	10	0.1	1
Phenol	108-95-2	21900	11000	0.83	10	0.13	1
2-Picoline	109-06-8	NE	NE	1.4	10	0.15	2
Pyridine	110-86-1	36.5	37	2.3	50	0.73	5
Bis(2-chloroethyl)ether	111-44-4	0.009	0.012	1.1	10	0.1	1
Bis(2-chloroethoxy)methane	111-91-1	NE	110	0.94	10	0.1	1
Bis(2-ethylhexyl) phthalate	117-81-7	8	4.8	1.8	10	0.64	2
Di-n-octyl phthalate	117-84-0	20	NE	1.4	10	0.17	1
Hexachlorobenzene	118-74-1	1.0	0.042	0.79	10	0.1	1
3,3'-Dimethylbenzidine	119-93-7	0.007	0.0061	10	20	5	20
Anthracene	120-12-7	43.4	11000	0.69	10	0.1	0.2
Isosafrole	120-58-1	NE	NE	0.5	10	0.1	1
1,2,4-Trichlorobenzene	120-82-1	70	2.3	0.56	10	0.10	1.0
2,4-Dichlorophenol	120-83-2	110	110	1.1	10	0.1	1
2,4-Dinitrotoluene	121-14-2	73	0.22	1.2	10	0.12	1
alpha,alpha-Dimethyl phenethylamine	122-09-8	NE	NE	35	2000	3.4	10
1,4-Dioxane	123-91-1	6.09	0.67	3.4	10	0.31	2.0
o,o',o'-Triethylphosphorothioate	126-68-1	NE	NE	1	10	0.13	1
Pyrene	129-00-0	183	1100	0.63	10	0.1	0.2
1,4-Naphthoquinone	130-15-4	NE	NE	0.62	10	0.5	1
Dimethyl phthalate	131-11-3	365000	NE	0.99	10	0.1	1
Dibenzofuran	132-64-9	24.3	37	0.79	10	0.1	1
1-Naphthylamine	134-32-7	NE	NE	1.1	10	1.3	5
Aramite, Total	140-57-8	NE	2.7	0.91	10	0.11	1.5
3 & 4 Methylphenol	15831-10-4	1825	NE	1.3	10	0.66	2
Hexachloropropene	1888-71-7	11.0	NE	1.4	10	0.1	1
Benzo[g,h,i]perylene	191-24-2	1095	NE	0.87	10	0.1	0.2
Indeno[1,2,3-cd]pyrene	193-39-5	0.092	0.029	1	10	0.1	0.2
Benzo[b]fluoranthene	205-99-2	0.092	0.029	2.6	10	0.1	0.2
Fluoranthene	206-44-0	1460	1500	0.74	10	0.1	0.2
Benzo[k]fluoranthene	207-08-9	0.92	0.29	1.2	10	0.1	0.2
Acenaphthylene	208-96-8	2190	NE	0.85	10	0.1	0.2
Chrysene	218-01-9	9.17	2.9	0.51	10	0.045	0.2
Diallate	2303-16-4	NE	1.1	0.78	10	0.1	1
Pronamide	23950-58-5	NE	2700	0.89	10	0.12	1
Thionazin	297-97-2	NE	NE	0.91	10	0.20	1.0
Methyl parathion	298-00-0	9.13	9.1	0.88	10	0.13	1.0
Phorate	298-02-2	NE	7.3	0.87	10	0.20	1.0
Disulfoton	298-04-4	1.46	1.5	0.79	10	0.10	1.0
Sulfotepp	3689-24-5	NE	18	0.53	10	0.14	1
Benzo[a]pyrene	50-32-8	0.20	0.0029	0.71	10	0.1	0.2
2,4-Dinitrophenol	51-28-5	73	73	10	50	1.1	10
Famphur	52-85-7	NE	NE	1.1	10	0.16	1.0
4,6-Dinitro-2-methylphenol	534-52-1	3.65	2.9	10	50	0.13	5
Dibenz(a,h)anthracene	53-70-3	0.009	0.0029	1	10	0.1	0.2
2-Acetylaminofluorene	53-96-3	NE	0.018	1.6	10	0.1	1
1,3-Dichlorobenzene	541-73-1	5.48	NE	0.59	10	0.10	1.0
N-Nitrosodiethylamine	55-18-5	0.0004	0.00014	0.93	10	0.1	1
Ethyl Parathion	56-38-2	219	220	1.3	10	0.10	2.0
3-Methylcholanthrene	56-49-5	NE	0.00098	1.4	10	0.5	1
Benzo[a]anthracene	56-55-3	0.092	0.029	0.55	10	0.1	0.2
4-Nitroquinoline-1-oxide	56-57-5	NE	NE	10	20	1.1	2

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Table 3a. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan,
Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Analyte[1]	CAS Number	Groundwater/Surface Water					
		Tier 1 TRG (ug/L)	RSL Tapwater (ug/L)	Laboratory MDL (ug/L)	Laboratory RL (ug/L)	Low Level Laboratory MDL ug/L	Low Level Laboratory RL ug/L
Semivolatile Organic Compounds (Method 8270)							
7,12-Dimethylbenz(a)anthracene	57-97-6	NE	0.000086	1.2	10	0.2	1
2,3,4,6-Tetrachlorophenol	58-90-2	1095	1100	0.72	10	0.1	1
4-Chloro-3-methylphenol	59-50-7	73000	3700	1	10	0.12	1
N-Nitrosomorpholine	59-89-2	NE	0.01	0.84	10	0.1	1
p-Dimethylamino azobenzene	60-11-7	NE	0.015	0.79	10	0.15	5
Dimethoate	60-51-5	NE	7.3	0.75	10	0.12	2.0
2,6-Dinitrotoluene	606-20-2	36.5	37	1.1	10	0.13	1
Pentachlorobenzene	608-93-5	29.2	29	0.52	10	0.1	1
N-Nitrosodi-n-propylamine	621-64-7	0.0096	0.0098	0.72	10	0.13	1
Phenacetin	62-44-2	NE	31	1.4	10	0.1	1
Ethyl methanesulfonate	62-50-0	NE	NE	0.96	10	0.1	2
Aniline	62-53-3	11.7	12	2.1	20	0.97	2
N-Nitrosodimethylamine	62-75-9	0.0013	0.00042	2.8	10	0.25	1
Methyl methanesulfonate	66-27-3	NE	0.68	0.8	10	0.1	2
Hexachloroethane	67-72-1	4.8	4.8	0.76	10	0.5	1
4-Chlorophenyl phenyl ether	7005-72-3	NE	NE	0.84	10	0.1	1
Hexachlorophene	70-30-4	11.0	11	27	5000	25	500
Hexachlorocyclopentadiene	77-47-4	50	220	2.5	10	0.5	2
Isophorone	78-59-1	70.5	71	0.9	10	0.1	1
Pentachloronitrobenzene	82-68-8	0.258	0.26	0.78	10	0.5	1
Acenaphthene	83-32-9	365	2200	0.76	10	0.1	0.2
Diethyl phthalate	84-66-2	29200	29000	0.88	10	0.11	1
Di-n-butyl phthalate	84-74-2	3650	3700	0.83	10	0.39	1
Phenanthrene	85-01-8	1095	NE	0.77	10	0.1	0.2
Butyl benzyl phthalate	85-68-7	2890	35	1.2	10	0.12	1
N-Nitrosodiphenylamine	86-30-6	13.7	14	0.92	10	0.37	1
Fluorene	86-73-7	243	1500	0.96	10	0.1	0.2
2,6-Dichlorophenol	87-65-0	NE	NE	0.73	10	0.1	1
Hexachlorobutadiene	87-68-3	0.859	0.86	0.62	10	0.10	1.0
Pentachlorophenol	87-86-5	1.0	0.17	2	50	0.40	5.0
2,4,6-Trichlorophenol	88-06-2	6.09	6.1	0.85	10	0.17	1
2-Nitroaniline	88-74-4	0.417	370	1.3	50	0.16	1
2-Nitrophenol	88-75-5	0.418	NE	0.76	10	0.1	1
Dinoseb	88-85-7	7.0	37	5	10	0.15	2.0
Naphthalene	91-20-3	6.20	0.14	0.7	10	0.10	0.20
2-Methylnaphthalene	91-57-6	122	150	0.78	10	0.10	0.20
2-Chloronaphthalene	91-58-7	487	2900	0.8	10	0.1	1
2-Naphthylamine	91-59-8	NE	0.037	1.5	10	1.3	5
Methapyrilene	91-80-5	NE	NE	2.7	2000	1.3	200
3,3'-Dichlorobenzidine	91-94-1	0.15	0.15	30	60	2	20
N-Nitrosodi-n-butylamine	924-16-3	0.0019	0.0024	0.96	10	0.1	1
1,1'-Biphenyl	92-52-4	304	0.83	0.58	10	–	–
4-Aminobiphenyl	92-67-1	NE	0.0032	1.2	10	0.31	5
N-Nitrosopyrrolidine	930-55-2	0.032	0.032	1	10	0.1	1
Safrole, Total	94-59-7	NE	0.098	0.8	10	0.1	1
2-Methylphenol	95-48-7	1825	1800	0.89	10	0.74	2
1,2-Dichlorobenzene	95-50-1	600	370	0.53	10	0.10	1.0
2-Toluidine	95-53-4	0.28	NE	1.4	10	0.13	1
2-Chlorophenol	95-57-8	30.4	180	0.87	10	0.12	1
1,2,4,5-Tetrachlorobenzene	95-94-3	11.0	11	0.76	10	0.1	1
2,4,5-Trichlorophenol	95-95-4	3650	3700	1.2	10	0.12	1
Acetophenone	98-86-2	0.0416	3700	0.57	10	0.1	1
Nitrobenzene	98-95-3	3.53	0.12	0.73	10	0.1	1
3-Nitroaniline	99-09-2	NE	NE	5	50	0.16	5
1,3,5-Trinitrobenzene	99-35-4	1095	1100	2	10	0.5	1
N-Nitro-o-toluidine	99-55-8	2.03	7.5	1.5	10	0.1	1
1,3-Dinitrobenzene	99-65-0	3.65	3.7	0.6	10	0.1	1

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Table 3a. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Analyte[1]	CAS Number	Groundwater/Surface Water					
		Tier 1 TRG (ug/L)	RSL Tapwater (ug/L)	Laboratory MDL (ug/L)	Laboratory RL (ug/L)	Low Level Laboratory MDL ug/L	Low Level Laboratory RL ug/L
Organochlorine Pesticides (USEPA 8081A)							
Aldrin	309-00-2	0.004	0.004	0.007	0.05	–	–
alpha-BHC	319-84-6	0.011	0.011	0.0057	0.05	–	–
beta-BHC	319-85-7	0.037	0.037	0.0087	0.05	–	–
Chlordane	57-74-9	2	0.19	0.1	0.5	–	–
Chlorobenzilate	510-15-6	0.248	0.81	0.5	0.5	–	–
4,4'-DDD	72-54-8	0.279	0.28	0.0065	0.1	–	–
4,4'-DDE	72-55-9	0.197	0.2	0.0077	0.1	–	–
4,4'-DDT	50-29-3	0.197	0.2	0.0097	0.1	–	–
delta-BHC	319-86-8	NE	NE	0.0048	0.05	–	–
Dieldrin	60-57-1	0.004	0.0042	0.0091	0.1	–	–
Endosulfan I	959-98-8	219	NE	0.0042	0.05	–	–
Endosulfan II	33213-65-9	219	NE	0.0098	0.1	–	–
Endosulfan sulfate	1031-07-8	NE	NE	0.0068	0.1	–	–
Endrin	72-20-8	2.0	11	0.0097	0.1	–	–
Endrin aldehyde	7421-93-4	NE	NE	0.018	0.1	–	–
Endrin ketone	53494-70-5	NE	NE	0.0084	0.1	–	–
gamma-BHC (Lindane)	58-89-9	0.20	0.061	0.0059	0.05	–	–
Heptachlor	76-44-8	0.40	0.015	0.007	0.05	–	–
Heptachlor epoxide	1024-57-3	0.20	0.0074	0.006	0.05	–	–
Isodrin	465-73-6	NE	NE	0.05	0.05	–	–
Kepone	143-50-0	NE	0.0067	1	1	–	–
Methoxychlor	72-43-5	40	180	0.013	0.1	–	–
Toxaphene	8001-35-2	3.0	0.061	0.5	5	–	–
PCBs (USEPA 8082)							
PCB-1016	12674-11-2	0.96	0.96	0.071	1	–	–
PCB-1221	11104-28-2	0.033	0.0068	0.28	2	–	–
PCB-1232	11141-16-5	0.033	0.0068	0.11	1	–	–
PCB-1242	53469-21-9	0.033	0.034	0.18	1	–	–
PCB-1248	12672-29-6	0.033	0.034	0.38	1	–	–
PCB-1254	11097-69-1	0.033	0.034	0.26	1	–	–
PCB-1260	11096-82-5	0.033	0.034	0.2	1	–	–
PCBs, Total	1336-36-3	0.500	0.17	0.38	1	–	–
Herbicides (USEPA 8151A)							
2,4-D	94-75-7	70	370	0.037	0.5	–	–
Silvex (2,4,5-TP)	93-72-1	50	290	0.062	0.5	–	–
2,4,5-T	93-76-5	385	370	0.082	0.5	–	–
Dioxathion/Dioxenethion (BATCO 088.1)							
cis-Dioxathion	78-34-2	54.8	NE	NA	0.48	–	–
trans-Dioxathion	78-34-2	54.8	NE	NA	0.31	–	–
Dioxenethion	–	NE	NE	NA	0.22	–	–

Analyte[1]	CAS Number	Groundwater/Surface Water					
		Tier 1 TRG (pg/L)	RSL Tapwater (pg/L)	Laboratory MDL (pg/L)	Laboratory RL (pg/L)	Low Level Laboratory MDL (pg/L)	Low Level Laboratory RL(pg/L)
Dioxins and Furans (8290) (pg/L)							
2,3,7,8-TCDD	51207-31-9	4.5	NE	2.1	10	–	–
1,2,3,7,8-PeCDD	40321-76-4	0.89	NE	2.6	50	–	–
1,2,3,4,7,8-HxCDD	39227-28-6	4.5	NE	1.3	50	–	–
1,2,3,8,7,8-HxCDD	57653-85-7	10.8	NE	1.8	50	–	–
1,2,3,7,8,9-HxCDD	19408-74-3	10.8	NE	1.6	50	–	–
1,2,3,4,6,7,8-HpCDD	35822-46-9	44.6	NE	1.5	50	–	–
OCDD	3268-87-9	446	NE	3.1	100	–	–
2,3,7,8-TCDF	51207-31-9	4.5	NE	3.4	10	–	–
1,2,3,7,8-PeCDF	57117-41-6	8.9	NE	1.3	50	–	–
2,3,4,7,8-PeCDF	57117-31-4	0.89	NE	1.2	50	–	–
1,2,3,4,7,8-HxCDF	70648-26-9	4.5	NE	1.4	50	–	–
1,2,3,6,7,8-HxCDF	57117-44-9	4.5	NE	1.2	50	–	–
2,3,4,6,7,8-HxCDF	60851-34-5	4.5	NE	1.1	50	–	–
1,2,3,7,8,9-HxCDF	72918-21-9	4.5	NE	1.9	50	–	–
1,2,3,4,6,7,8-HpCDF	55673-89-7	NE	NE	1.7	50	–	–
1,2,3,4,7,8,9-HpCDF	67562-39-4	NE	NE	2.1	50	–	–
OCDF	39001-02-0	446	NE	1.3	100	–	–

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Table 3a. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Analyte[1]	CAS Number	Groundwater/Surface Water					
		Tier 1 TRG (ug/L)	RSL Tapwater (ug/L)	Laboratory MDL (ug/L)	Laboratory RL (ug/L)	Low Level Laboratory MDL ug/L	Low Level Laboratory RL ug/L
Total Metals (including Mercury) (SW846-6020, 7470A)							
Antimony	7440-36-0	8.0	15	2	5	--	--
Arsenic	7440-38-2	50	0.045	1.3	2.5	--	--
Barium	7440-39-3	2000	7300	1.4	5	--	--
Beryllium	7440-41-7	4.0	73	0.15	0.5	--	--
Cadmium	7440-43-9	5.0	18	0.13	0.5	--	--
Chromium	7440-47-3	100	?	2.5	5	--	--
Cobalt	7440-48-4	2190.0	11	0.12	0.5	--	--
Copper	7440-50-8	1300	1500	1.1	5	--	--
Lead	7439-92-1	15	?	0.5	1.5	--	--
Mercury	7439-97-6	2	0.63	0.091	0.2	--	--
Nickel	7440-02-0	730	730	2	5	--	--
Selenium	7782-49-2	50	180	1.1	2.5	--	--
Silver	7440-22-4	183	180	0.18	1	--	--
Thallium	7440-28-0	2.0	0.37	0.25	1	--	--
Tin	7440-31-5	21900	22000	1.4	5	--	--
Vanadium	7440-62-2	256	180	3.2	10	--	--
Zinc	7440-66-6	10950	11000	8.4	20	--	--
Cyanide, Total (USEPA 9012A)							
Cyanide, Total	57-12-5	200	730	0.005	0.01	--	--
Sulfide, Total (USEPA 9034)							
Sulfide, Total	18496-25-8	NE	NE	NA	1	--	--

Notes:

[1]USEPA. Office of Solid Waste and Emergency Response. *Test Methods for Evaluating Solid Waste. SW-846 3rd ed. Washington, D.C. 1996.*

**TRG=MDEQ Tier 1 Target Remedial Goals per the Final Regulations Governing Brownfields Voluntary Cleanup and Redevelopment in Mississippi (MDBQ, March 2002)

BATCO Bonner Analytical Testing Company.
HpCDF Heptachlorodibenzofuran.
HxCDF Hexachlorodibenzofuran.
MDL Method detection limit.
MEK Methyl ethyl ketone.
MIBK Methyl isobutyl ketone.
NA Not applicable.
NE RSL or TRG not yet established for the compound.
OCDD Octachlorodibenzodioxin.
OCDF Octachlorodibenzofuran.
PeCDD Pentachlorodibenzo-p-dioxin.
PeCDF Pentachlorodibenzofuran .
pg/L picograms per liter.
TCDD Tetrachlorodibenzodioxin.
TCDF Tetrafuran.
ug/L Micrograms per liter.
USEPA U.S. Environmental Protection Agency.

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Table 3b. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Analyte[1]	CAS Number	Drinking Water			
		Tier 1 TRG (µg/L)	RSL Tap (µg/L)	Laboratory MDL (µg/L)	Laboratory RL (µg/L)
Volatile Organic Compounds (Method 524.2)					
1,1,1,2-Tetrachloroethane	630-20-6	0.406	0.52	0.16	0.5
1,1,1-Trichloroethane	71-55-6	200	9,100	0.27	0.5
1,1,2,2-Tetrachloroethane	79-34-5	0.053	0.067	0.18	0.5
1,1,2-Trichloroethane	79-00-5	5.0	0.24	0.22	0.5
1,1-Dichloroethane	75-34-3	798	2.4	0.39	0.5
1,1-Dichloroethene	75-35-4	7.0	340	0.32	0.5
1,2,3-Trichloropropane	96-18-4	0.0062	0.00072	0.18	0.5
1,2-Dichloroethane	107-06-2	5.0	0.15	0.17	0.5
1,2-Dichloropropane	78-87-5	5.0	0.39	0.45	0.5
Benzene	71-43-2	5.0	0.41	0.18	0.5
Bromoform	75-25-2	8.48	8.5	0.39	0.5
Bromomethane	74-83-9	8.52	8.7	0.45	1
Carbon tetrachloride	56-23-5	5.0	0.44	0.22	0.5
Chlorobenzene	108-90-7	100	91	0.27	0.5
Chlorodibromomethane	124-48-1	0.126	0.15	0.43	0.5
Chloroethane	75-00-3	3.64	21000	0.33	1
Chloroform	67-66-3	0.155	0.19	0.29	0.5
Chloromethane	74-87-3	1.43	190	0.32	0.5
cis-1,2-Dichloroethene	156-59-2	70	73	0.37	0.5
cis-1,3-Dichloropropene	10061-01-5	0.084	NA	0.32	0.5
Dibromomethane	74-95-3	60.8	8.2	0.38	0.5
Dichlorobromomethane	75-27-4	0.168	0.12	0.54	1
Ethylbenzene	100-41-4	700	1.5	0.12	0.5
Methylene Chloride	75-09-2	5.0	4.8	0.36	0.5
Styrene	100-42-5	100	1,600	0.28	0.5
Tetrachloroethene	127-18-4	5.0	0.11	0.3	0.5
Toluene	108-88-3	1,000	2,300	0.23	0.5
trans-1,2-Dichloroethene	156-60-5	100	110	0.24	0.5
trans-1,3-Dichloropropene	10061-02-6	0.084	NA	0.48	0.5
Trichloroethene	79-01-6	5.0	2.0	0.37	0.5
Vinyl chloride	75-01-4	2.0	0.016	0.33	0.5
Xylenes, Total	1330-20-7	10,000	200	0.33	0.5
1,1-Dichloropropene	**563-58-6**	NE	11	0.19	0.5
1,2,4-Trichlorobenzene	**120-82-1**	70	2.3	0.18	0.5
1,2-Dichlorobenzene	**95-50-1**	600	370	0.17	0.5
1,3-Dichlorobenzene	**541-73-1**	5.48	NA	0.14	0.5
1,3-Dichloropropane	**142-28-9**	NE	730	0.43	0.5
1,4-Dichlorobenzene	**106-46-7**	75	0.43	0.18	0.5
2,2-Dichloropropane	**594-20-7**	NE	NA	0.31	0.5
2-Chlorotoluene	**95-49-8**	122	730	0.17	0.5
4-Chlorotoluene	**106-43-4**	NE	730	0.16	0.5
Bromobenzene	**108-86-1**	NE	88	0.42	0.5
Ethylene Dibromide	**106-93-4**	0.050	0.0065	0.0077	0.02
Methyl tert-butyl ether	**1634-04-4**	40	12	0.26	0.5
m-Xylene & p-Xylene	**179601-23-1**	10,000	200	0.42	0.5
o-Xylene	**95-47-6**	10,000	200	0.27	0.5
Volatile Organic Compounds (Method 8260)					
1,2-Dibromoethane	106-93-4	0.050	0.0065	0.25	1
Acrolein	107-02-8	0.042	0.042	7.4	20
3-Chloro-1-propene	107-05-1	NE	0.65	0.2	1
Propionitrile	107-12-0	NE	NA	4.6	20
Acrylonitrile	107-13-1	0.037	0.045	7.2	20
Vinyl acetate	108-05-4	412	410	0.28	2
4-Methyl-2-pentanone (MIBK)	108-10-1	139	2,000	1	10
trans-1,4-Dichloro-2-butene	110-57-6	NE	0.0012	0.5	2
Methacrylonitrile	126-98-7	1.04	1	3.3	20
2-Chloro-1,3-butadiene	126-99-8	14.3	0.016	0.3	1
2-Hexanone	591-78-6	1,460	47	1	10
Acetone	67-64-1	608	22,000	5	25
Iodomethane	74-88-4	NE	NA	1	5
Acetonitrile	75-05-8	125	130	10	40
Carbon disulfide	75-15-0	1,043	1,000	0.6	2

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Table 3b. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan,
Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Analyte[1]	CAS Number	Drinking Water			
		Tier 1 TRG (µg/L)	RSL Tap (µg/L)	Laboratory MDL (µg/L)	Laboratory RL (µg/L)
Volatile Organic Compounds (Method 8260)					
Trichlorofluoromethane	75-69-4	1,288	1,300	0.25	1
Dichlorodifluoromethane	75-71-8	348	200	0.25	1
Pentachloroethane	76-01-7	NE	0.75	1.2	5
Isobutyl alcohol	78-83-1	1,825	11,000	11	40
2-Butanone (MEK)	78-93-3	1,906	7,100	1	10
Methyl methacrylate	80-62-6	1,419	1,400	0.48	1
Ethyl methacrylate	97-63-2	548	530	0.25	1
Volatile Organic Compounds (Method 504.1)					
1,2-Dibromo-3-Chloropropane	96-12-8	0.2	0.00032	0.0032	0.02
Ethylene Dibromide	**106-93-4**	0.050	0.0065	0.0077	0.02
Semivolatile Organic Compounds (Method 525.2)					
Benzo[a]pyrene	50-32-8	0.20	0.0029	0.029	0.2
Bis(2-ethylhexyl) phthalate	117-81-7	6.0	4.8	0.6	2
Hexachlorobenzene	118-74-1	1.0	0.042	0.041	0.2
Hexachlorocyclopentadiene	77-47-4	50	220	0.042	2
Alachlor	**15972-60-8**	2.0	1.2	0.033	0.2
Atrazine	**1912-24-9**	3.0	0.29	0.022	0.2
Di(2-ethylhexyl)adipate	**103-23-1**	400	56	0.6	1.5
Methoxychlor	**72-43-5**	40	180	0.043	0.5
Simazine	**122-34-9**	4.0	0.56	0.035	0.5
Semivolatile Organic Compounds (Method 8270)					
4-Nitroaniline	100-01-6	NE	3.4	5	50
4-Nitrophenol	100-02-7	292	NA	1.9	50
Benzyl alcohol	100-51-6	10,950	3,700	1.1	10
N-Nitrosopiperidine	100-75-4	NE	0.0072	0.88	10
4-Bromophenyl phenyl ether	101-55-3	NE	NA	0.77	10
2,4-Dimethylphenol	105-67-9	730	730	4	10
N-Nitrosomethylethylamine	10595-95-6	0.003	0.0031	3.3	10
1,4-Dichlorobenzene	106-46-7	75	0.43	0.54	10
4-Chloroaniline	106-47-8	146	0.34	2.2	20
p-Phenylene diamine	106-50-3	6,935	6,900	10	2000
bis(chloroisopropyl) ether	108-60-1	0.26	0.32	0.78	10
Phenol	108-95-2	21,900	11,000	0.83	10
2-Picoline	109-06-8	NE	NA	1.4	10
Pyridine	110-86-1	36.5	37	2.3	50
Bis(2-chloroethyl)ether	111-44-4	0.009	0.012	1.1	10
Bis(2-chloroethoxy)methane	111-91-1	NE	110	0.94	10
Di-n-octyl phthalate	117-84-0	20	0.042	1.4	10
3,3'-Dimethylbenzidine	119-93-7	0.007	0.0061	10	20
Anthracene	120-12-7	43.4	11,000	0.69	10
Isosafrole	120-58-1	NE	NA	0.5	10
1,2,4-Trichlorobenzene	120-82-1	70	2.3	0.56	10
2,4-Dichlorophenol	120-83-2	110	110	1.1	10
2,4-Dinitrotoluene	121-14-2	73	0.22	1.2	10
alpha,alpha-Dimethyl phenethylamine	122-09-8	NE	NA	35	2000
1,4-Dioxane	123-91-1	6.09	0.67	3.4	10
o,o',o'-Triethylphosphorothioate	126-68-1	NE	NA	1	10
Pyrene	129-00-0	183	1,100	0.63	10
1,4-Naphthoquinone	130-15-4	NE	NA	0.62	10
Dimethyl phthalate	131-11-3	365,000	NA	0.99	10
Dibenzofuran	132-64-9	24.3	37	0.79	10
1-Naphthylamine	134-32-7	NE	NA	1.1	10
Aramite, Total	140-57-8	NE	2.7	0.91	10
3 & 4 Methylphenol	15831-10-4	1,825	NA	1.3	10

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Table 3b. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Analyte[1]	CAS Number	Drinking Water			
		Tier 1 TRG (µg/L)	RSL Tap (µg/L)	Laboratory MDL (µg/L)	Laboratory RL (µg/L)
Semivolatile Organic Compounds (Method 8270) continued					
Hexachloropropene	1888-71-7	11.0	NA	1.4	10
Benzo[g,h,i]perylene	191-24-2	1,095	NA	0.87	10
Indeno[1,2,3-cd]pyrene	193-39-5	0.092	0.029	1	10
Benzo[b]fluoranthene	205-99-2	0.092	0.029	2.6	10
Fluoranthene	206-44-0	1,460	1,500	0.74	10
Benzo[k]fluoranthene	207-08-9	0.92	0.29	1.2	10
Acenaphthylene	208-96-8	2,190	NA	0.85	10
Chrysene	218-01-9	9.17	2.9	0.51	10
Diallate	2303-16-4	NE	1.1	0.78	10
Pronamide	23950-58-5	NE	2,700	0.89	10
Thionazin	297-97-2	NE	NA	0.91	10
Methyl parathion	298-00-0	9.13	9.1	0.88	10
Phorate	298-02-2	NE	7.3	0.87	10
Disulfoton	298-04-4	1.46	1.5	0.79	10
Sulfotepp	3689-24-5	NE	18	0.53	10
2,4-Dinitrophenol	51-28-5	73	73	10	50
Famphur	52-85-7	NE	NA	1.1	10
4,6-Dinitro-2-methylphenol	534-52-1	3.65	2.9	10	50
Dibenz(a,h)anthracene	53-70-3	0.009	0.0029	1	10
2-Acetylaminofluorene	53-96-3	NE	0.018	1.6	10
1,3-Dichlorobenzene	541-73-1	5.48	0.43	0.59	10
N-Nitrosodiethylamine	55-18-5	0.0004	0.00014	0.93	10
Ethyl Parathion	56-38-2	219	220	1.3	10
3-Methylcholanthrene	56-49-5	NE	0.00098	1.4	10
Benzo[a]anthracene	56-55-3	0.092	0.029	0.55	10
4-Nitroquinoline-1-oxide	56-57-5	NE	NA	10	20
7,12-Dimethylbenz(a)anthracene	57-97-6	NE	0.000086	1.2	10
2,3,4,6-Tetrachlorophenol	58-90-2	1,095	1,100	0.72	10
4-Chloro-3-methylphenol	59-50-7	73,000	3,700	1	10
N-Nitrosomorpholine	59-89-2	NE	0.01	0.84	10
p-Dimethylamino azobenzene	60-11-7	NE	0.015	0.79	10
Dimethoate	60-51-5	NE	7.3	0.75	10
2,6-Dinitrotoluene	606-20-2	36.5	37	1.1	10
Pentachlorobenzene	608-93-5	29.2	29	0.52	10
N-Nitrosodi-n-propylamine	621-64-7	0.0096	0.0096	0.72	10
Phenacetin	62-44-2	NE	31	1.4	10
Ethyl methanesulfonate	62-50-0	NE	NA	0.96	10
Aniline	62-53-3	11.7	12	2.1	20
N-Nitrosodimethylamine	62-75-9	0.0013	0.00042	2.8	10
Methyl methanesulfonate	66-27-3	NE	0.68	0.6	10
Hexachloroethane	67-72-1	4.8	9.8	0.76	10
4-Chlorophenyl phenyl ether	7005-72-3	NE	NA	0.84	10
Hexachlorophene	70-30-4	11.0	11	27	5000
Isophorone	78-59-1	70.5	71	0.9	10
Pentachloronitrobenzene	82-68-8	0.258	0.26	0.78	10
Acenaphthene	83-32-9	365	2,200	0.76	10
Diethyl phthalate	84-66-2	29,200	29,000	0.88	10
Di-n-butyl phthalate	84-74-2	3,650	3,700	0.83	10
Phenanthrene	85-01-8	1,095	NA	0.77	10
Butyl benzyl phthalate	85-68-7	2,690	35	1.2	10
N-Nitrosodiphenylamine	86-30-6	13.7	14	0.92	10
Fluorene	86-73-7	243	1,500	0.96	10
2,6-Dichlorophenol	87-65-0	NE	NA	0.73	10
Hexachlorobutadiene	87-68-3	0.859	0.86	0.62	10
2,4,6-Trichlorophenol	88-06-2	6.09	6.1	0.85	10
2-Nitroaniline	88-74-4	0.417	370	1.3	50
2-Nitrophenol	88-75-5	0.416	NA	0.76	10
Dinoseb	88-85-7	7.0	37	5	10
Naphthalene	91-20-3	6.20	0.14	0.7	10
2-Methylnaphthalene	91-57-6	122	150	0.78	10
2-Chloronaphthalene	91-58-7	487	2,900	0.8	10
2-Naphthylamine	91-59-8	NE	0.037	1.5	10

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Table 3b. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Analyte[1]	CAS Number	Drinking Water			
		Tier 1 TRG (µg/L)	RSL Tap (µg/L)	Laboratory MDL (µg/L)	Laboratory RL (µg/L)
Semivolatile Organic Compounds (Method 8270) continued					
Methapyrilene	91-80-5	NE	NA	2.7	2000
3,3'-Dichlorobenzidine	91-94-1	0.15	0.15	30	60
N-Nitrosodi-n-butylamine	924-16-3	0.0019	0.0024	0.96	10
1,1'-Biphenyl	92-52-4	304	0.83	0.58	10
4-Aminobiphenyl	92-67-1	NE	0.0032	1.2	10
N-Nitrosopyrrolidine	930-55-2	0.032	0.032	1.0	10
Safrole, Total	94-59-7	NE	0.098	0.8	10
2-Methylphenol	95-48-7	1,825	1,800	0.89	10
1,2-Dichlorobenzene	95-50-1	600	370	0.53	10
2-Toluidine	95-53-4	0.28	NA	1.4	10
2-Chlorophenol	95-57-8	30.4	180	0.87	10
1,2,4,5-Tetrachlorobenzene	95-94-3	11.0	11	0.76	10
2,4,5-Trichlorophenol	95-95-4	3,650	3,700	1.2	10
Acetophenone	98-86-2	0.0416	3,700	0.57	10
Nitrobenzene	98-95-3	3.53	0.12	0.73	10
3-Nitroaniline	99-09-2	NE	NA	5.0	50
1,3,5-Trinitrobenzene	99-35-4	1,095	1,100	2.0	10
N-Nitro-o-toluidine	99-55-8	2.03	7.5	1.5	10
1,3-Dinitrobenzene	99-65-0	3.65	3.7	0.60	10
Organochlorine Pesticides (USEPA 8081A)					
Aldrin	309-00-2	0.004	0.004	0.007	0.05
alpha-BHC	319-84-6	0.011	0.011	0.0057	0.05
beta-BHC	319-85-7	0.037	0.037	0.0067	0.05
Chlorobenzilate	510-15-6	0.248	0.61	0.5	0.5
4,4'-DDD	72-54-8	0.279	0.28	0.0065	0.1
4,4'-DDE	72-55-9	0.197	0.2	0.0077	0.1
4,4'-DDT	50-29-3	0.197	0.2	0.0097	0.1
delta-BHC	319-86-8	NE	NA	0.0048	0.05
Dieldrin	60-57-1	0.004	0.0042	0.0091	0.1
Endosulfan I [a]	959-98-8	219	NA	0.0042	0.05
Endosulfan II [a]	33213-65-9	219	NA	0.0098	0.1
Endosulfan sulfate [a]	1031-07-8	219	NA	0.0068	0.1
Endrin aldehyde [b]	7421-93-4	2.0	NA	0.016	0.1
Endrin ketone [b]	53494-70-5	2.0	NA	0.0084	0.1
Isodrin	465-73-6	NE	NA	0.05	0.05
Kepone	143-50-0	NE	0.0067	1	1
PCBs (USEPA 508)					
Endrin	72-20-8	2.0	11	0.0022	0.05
gamma-BHC (Lindane)	58-89-9	0.20	0.061	0.0024	0.025
Heptachlor	76-44-8	0.40	0.015	0.0063	0.025
Heptachlor epoxide	1024-57-3	0.20	0.0074	0.0017	0.025
Methoxychlor	72-43-5	40	180	0.0078	0.1
Chlordane (technical)	57-74-9	2.0	NA	0.12	0.25
Toxaphene	8001-35-2	3.0	0.061	0.058	2.5
PCB-1016	12674-11-2	0.96	0.96	0.068	0.5
PCB-1221	11104-28-2	0.033	0.0068	0.051	0.5
PCB-1232	11141-16-5	0.033	0.0068	0.098	0.5
PCB-1242	53469-21-9	0.033	0.034	0.14	0.5
PCB-1248	12672-29-6	0.033	0.034	0.049	0.5
PCB-1254	11097-69-1	0.033	0.034	0.051	0.5
PCB-1260	11096-82-5	0.033	0.034	0.05	0.5
PCBs, Total	1336-36-3	0.50	0.17	0.045	0.5
Herbicides (USEPA 515.1)					
2,4-D	94-75-7	70	370	0.037	0.5
Silvex (2,4,5-TP)	93-72-1	50	290	0.06	0.5
Dalapon	75-99-0	200	1,100	1.0	10
Dinoseb	88-85-7	7.0	37	0.15	3
Pentachlorophenol	87-86-5	1.0	0.17	0.038	1
Picloram	2/1/1918	NE	2,600	0.077	0.5
Herbicides (USEPA 8151A)					
2,4,5-T	93-76-5	365	370	0.062	0.5
Dioxathion/Dioxenethion (BATCO 088.1)					
cis-Dioxathion	78-34-2	54.8	NA	NA	0.48
trans-Dioxathion	78-34-2	54.8	NA	NA	0.31
Dioxenethion	–	NE	NA	NA	0.22

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Table 3b. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Analyte[1]	CAS Number	Drinking Water Tier 1 TRG (pg/L)	Drinking Water RSL Tap (pg/L)	Drinking Water Laboratory MDL (pg/L)	Drinking Water Laboratory RL (pg/L)
Dioxins and Furans (1613) (pg/L)					
2,3,7,8-TCDD	51207-31-9	4.5	0.52	2.1	10
1,2,3,7,8-PeCDD	40321-76-4	0.89	NA	2.6	50
1,2,3,4,7,8-HxCDD	39227-28-6	4.5	NA	1.3	50
1,2,3,6,7,8-HxCDD	57653-85-7	10.8	NA	1.8	50
1,2,3,7,8,9-HxCDD	19408-74-3	10.8	NA	1.6	50
1,2,3,4,6,7,8-HpCDD	35822-46-9	44.6	NA	1.5	50
OCDD	3268-87-9	446	NA	3.1	100
2,3,7,8-TCDF	51207-31-9	4.5	NA	3.4	10
1,2,3,7,8-PeCDF	57117-41-6	8.9	NA	1.3	50
2,3,4,7,8-PeCDF	57117-31-4	0.89	NA	1.2	50
1,2,3,4,7,8-HxCDF	70648-26-9	4.5	NA	1.4	50
1,2,3,6,7,8-HxCDF	57117-44-9	4.5	NA	1.2	50
2,3,4,6,7,8-HxCDF	60851-34-5	4.5	NA	1.1	50
1,2,3,7,8,9-HxCDF	72918-21-9	4.5	NA	1.9	50
1,2,3,4,6,7,8-HpCDF	55673-89-7	45	NA	1.7	50
1,2,3,4,7,8,9-HpCDF	67562-39-4	45	NA	2.1	50
OCDF	39001-02-0	446	NA	1.3	100
Analyte[1]	**CAS Number**	**Drinking Water Tier 1 TRG (µg/L)**	**Drinking Water RSL Tap (µg/L)**	**Drinking Water Laboratory MDL (µg/L)**	**Drinking Water Laboratory RL (µg/L)**
Total Metals (including Mercury) (200.8, 245)					
Antimony	7440-36-0	6.0	15	0.4	1
Arsenic	7440-38-2	50	0.045	0.37	1
Barium	7440-39-3	2,000	7,300	0.14	2
Beryllium	7440-41-7	4.0	73	0.15	0.4
Cadmium	7440-43-9	5.0	18	0.043	0.1
Chromium	7440-47-3	100	NA	1	2
Copper	7440-50-8	1,300	1,500	0.5	1
Lead	7439-92-1	15	NA	0.06	0.3
Selenium	7782-49-2	50	180	0.58	2
Thallium	7440-28-0	2.0	0.37	0.1	0.2
Mercury	7439-97-6	2.0	0.63	0.091	0.2
Total Metals (including Mercury) (EPA 200.7)					
Zinc	7440-66-6	10,950	11,000	6.3	20
Aluminum	7429-90-5	36,500	37,000	100	200
Iron	7439-89-6	10,950	26,000	24	50
Manganese	7439-96-5	730	880	3	10
Silver	7440-22-4	183	180	0.97	10
Cobalt	7440-48-4	2,190	11	0.12	0.5
Nickel	7440-02-0	730	730	2	5
Tin	7440-31-5	21,900	22,000	1.4	5
Vanadium	7440-62-2	256	180	3.2	10
Cyanide, Total (USEPA 4500)					
Cyanide, Total	57-12-5	200	730	0.005	0.01
Sulfide, Total (USEPA 4500)					
Sulfide, Total	18496-25-8	NE	NA	NA	1

Notes:

[1]USEPA. Office of Solid Waste and Emergency Response. *Test Methods for Evaluating Solid Waste. SW-846 3rd ed. Washington, D.C. 1996.*

**TRG=MDEQ Tier 1 Target Remedial Goals per the Final Regulations Governing Brownfields Voluntary Cleanup and Redevelopment in Mississippi (MDBQ, March 2002)

Note : Where applicable the drinking water methods are being used to analyze compounds associated with the APP IX compound list. If the APP IX compound is not part of the Drinking water method being utilized the appropriate SW-846 method will be utilized to complete the analysis of that compound. Compounds that are bolded are part of the EPA's 500 series drinking water method but are not part of the APP IX compound list.

BATCO Bonner Analytical Testing Company.
HpCDF Heptachlorodibenzofuran.
HxCDF Hexachlorodibenzofuran.
MDL Method detection limit.
MEK Methyl ethyl ketone.
MIBK Methyl isobutyl ketone.
NA Not available.
NE TRG not yet established for the compound.

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Table 3b. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan,
Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

OCDD Octachlorodibenzodioxin.
OCDF Octachlorodibenzofuran.
PeCDD Pentachlorodibenzo-p-dioxin.
PeCDF Pentachlorodibenzofuran .
pg/L picograms per liter.
TCDD Tetrachlorodibenzodioxin.
TCDF Tetrafuran.
ug/L Micrograms per liter.
USEPA U.S. Environmental Protection Agency.

[a] Endosulfan used as a surrogate.
[b] Endrin used as a surrogate.

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Table 3c-1. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted mg/Kg	Tier 1 TRG Unrestricted mg/Kg	RSL Resident Soil mg/Kg	Laboratory MDL mg/Kg	Laboratory RL mg/Kg	Low Level Laboratory MDL mg/Kg	Low Level Laboratory RL mg/Kg
Volatile Organic Compounds (Method 8260)								
Ethylbenzene	100-41-4	395	395	5.4	0.0018	0.005	–	–
Styrene	100-42-5	384	384	8300	0.0019	0.005	–	–
trans-1,3-Dichloropropene	10061-02-8	NE	NE	NE	0.0033	0.025	–	–
Ethylene Dibromide	106-93-4	0.087	0.008	0.034	0.0017	0.005	–	–
Acrolein	107-02-8	40880	1564	0.15	0.024	0.1	–	–
3-Chloro-1-propene	107-05-1	NE	NE	0.88	0.0022	0.005	–	–
Propionitrile	107-12-0	NE	NE	NE	0.0016	0.005	–	–
Acrylonitrile	107-13-1	10.8	1.18	0.24	0.034	0.1	–	–
Vinyl acetate	108-05-4	9.13	9.13	970	0.0025	0.01	–	–
4-Methyl-2-pentanone (MIBK)	108-10-1	163333	6257	NE	0.00093	0.005	–	–
Toluene	108-88-3	38.0	38.0	5000	0.00087	0.005	–	–
Chlorobenzene	108-90-7	1.19	1.19	290	0.00098	0.005	–	–
trans-1,4-Dichloro-2-butene	110-57-8	NE	NE	0.0069	0.0015	0.005	–	–
Chlorodibromomethane	124-48-1	88.1	7.60	0.68	0.0014	0.005	–	–
Methacrylonitrile	126-98-7	204	7.82	3.2	0.0042	0.025	–	–
2-Chloro-1,3-butadiene	126-99-8	NE	NE	0.0094	0.0027	0.005	–	–
Tetrachloroethene	127-18-4	18.2	11.9	0.55	0.00063	0.005	–	–
Xylenes, Total	1330-20-7	318	318	630	0.0011	0.01	–	–
Carbon tetrachloride	56-23-5	0.569	0.371	0.81	0.00083	0.005	–	–
2-Hexanone	591-78-6	81760	3129	210	0.023	0.1	–	–
1,1,1,2-Tetrachloroethane	630-20-6	220	24.6	1.9	0.00084	0.005	–	–
Acetone	67-64-1	103751	7821	61000	0.011	0.05	–	–
Chloroform	87-66-3	0.478	0.312	0.29	0.001	0.005	–	–
Benzene	71-43-2	1.36	0.887	1.1	0.00073	0.005	–	–
1,1,1-Trichloroethane	71-55-6	1188	1188	8700	0.00059	0.005	–	–
Bromomethane	74-83-9	2.97	2.97	7.3	0.0015	0.005	–	–
Chloromethane	74-87-3	440	49.1	120	0.0021	0.005	–	–
Dibromomethane	74-95-3	20417	782	25	0.0044	0.01	–	–
Chloroethane	75-00-3	1974	220	15000	0.0011	0.005	–	–
Vinyl chloride	75-01-4	0.939	0.426	0.06	0.0015	0.005	–	–
Acetonitrile	75-05-8	111	111	870	0.041	0.2	–	–
Methylene Chloride	75-09-2	440	49.1	11	0.0083	0.025	–	–
Carbon disulfide	75-15-0	7.97	7.97	820	0.0011	0.005	–	–
Bromoform	75-25-2	90.1	58.8	62	0.0015	0.005	–	–
Dichlorobromomethane	75-27-4	1.89	1.24	0.27	0.00097	0.005	–	–
Trichlorofluoromethane	75-69-4	142917	23464	790	0.0012	0.005	–	–
Pentachloroethane	76-01-7	NE	NE	5.4	0.0024	0.005	–	–
Isobutyl alcohol	78-83-1	612500	23464	23000	0.0045	0.01	–	–
2-Butanone (MEK)	78-93-3	84.5	84.5	28000	0.0024	0.025	–	–
1,1,2-Trichloroethane	79-00-5	1.7	1.1	1.1	0.0013	0.005	–	–
Trichloroethene	79-01-6	7.92	5.17	2.8	0.0013	0.005	–	–
1,1,2,2-Tetrachloroethane	79-34-5	1.00	0.656	0.56	0.0029	0.01	–	–
Methyl methacrylate	80-62-6	16333	16333	4800	0.026	0.1	–	–
1,2-Dibromo-3-Chloropropane	96-12-8	0.100	0.100	0.0054	0.00083	0.005	–	–
1,2,3-Trichloropropane	96-18-4	0.818	0.091	0.005	0.0024	0.005	–	–
Ethyl methacrylate	97-63-2	16375	7039	1500	0.052	0.2	–	–

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Table 3c-1. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted mg/Kg	Tier 1 TRG Unrestricted mg/Kg	RSL Resident Soil mg/Kg	Laboratory MDL mg/Kg	Laboratory RL mg/Kg	Low Level Laboratory MDL mg/Kg	Low Level Laboratory RL mg/Kg
Semivolatile Organic Compounds (Method 8270)								
4-Nitroaniline	100-01-6	NE	NE	24	0.049	1.7	0.0083	0.17
4-Nitrophenol	100-02-7	16352	626	NE	0.33	1.7	0.073	0.17
Benzyl alcohol	100-51-6	204167	23464	6100	0.033	0.33	0.0061	0.033
N-Nitrosopiperidine	100-75-4	NE	NE	0.052	0.021	0.33	0.0034	0.033
4-Bromophenyl phenyl ether	101-55-3	NE	NE	NE	0.036	0.33	0.0069	0.033
2,4-Dimethylphenol	105-67-9	40833	1564	1200	0.044	0.33	0.0078	0.066
N-Nitrosomethylethylamine	10595-95-6	0.260	0.029	0.022	0.025	0.33	0.0033	0.033
1,4-Dichlorobenzene	106-46-7	238	28.8	2.4	0.035	0.33	0.0052	0.033
4-Chloroaniline	106-47-8	817	313	2.4	0.052	0.66	0.0052	0.066
p-Phenylene diamine	106-50-3	388360	14881	12000	0.83	1.7	0.36	0.83
bis(chloroisopropyl) ether	108-60-1	9.1	5.9	4.8	0.03	0.33	0.0072	0.033
Phenol	108-95-2	122500	48929	18000	0.034	0.33	0.0085	0.033
2-Picoline	109-06-8	NE	NE	NE	0.017	0.33	0.0033	0.066
Pyridine	110-86-1	2042	78.2	78	0.029	0.33	0.02	0.033
Bis(2-chloroethyl)ether	111-44-4	0.419	0.273	0.21	0.045	0.33	0.0065	0.033
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	180	0.039	0.33	0.0065	0.033
Bis(2-ethylhexyl) phthalate	117-81-7	409	45.6	35	0.029	0.33	0.008	0.066
Di-n-octyl phthalate	117-84-0	4083	1564	NE	0.029	0.33	0.0036	0.033
Hexachlorobenzene	118-74-1	1.85	0.399	0.3	0.039	0.33	0.0076	0.033
3,3'-Dimethylbenzidine	119-93-7	0.622	0.089	0.044	0.83	1.7	0.068	0.066
Anthracene	120-12-7	612500	23484	17000	0.025	0.33	0.0033	0.0067
Isosafrole	120-58-1	NE	NE	NE	0.024	0.33	0.0033	0.033
1,2,4-Trichlorobenzene	120-82-1	824	782	22	0.031	0.33	0.0046	0.033
2,4-Dichlorophenol	120-83-2	613	235	180	0.035	0.33	0.0072	0.033
2,4-Dinitrotoluene	121-14-2	408	158	1.6	0.049	0.33	0.0075	0.033
alpha,alpha-Dimethyl phenethylamine	122-09-8	NE	NE	NE	2.7	67	0.33	6.7
1,4-Dioxane	123-91-1	520	58.1	4.9	0.12	0.33	0.0034	0.033
o,o,o-Triethylphosphorothioate	126-68-1	NE	NE	NE	0.04	0.33	0.0044	0.066
Pyrene	129-00-0	61250	2346	1700	0.027	0.33	0.0033	0.0067
1,4-Naphthoquinone	130-15-4	NE	NE	NE	0.017	0.33	0.0033	0.033
Dimethyl phthalate	131-11-3	20440000	782143	NE	0.034	0.33	0.0075	0.033
Dibenzofuran	132-64-9	8176	313	78	0.033	0.33	0.0067	0.033
1-Naphthylamine	134-32-7	NE	NE	NE	0.066	0.33	0.017	0.066
Aramite, Total	140-57-8	NE	NE	19	0.057	0.33	0.0048	0.066
3 & 4 Methylphenol	15831-10-4	102200	3911	NE	0.043	0.33	0.0073	0.033
Hexachloropropene	1888-71-7	NE	NE	NE	0.029	0.33	0.0053	0.033
Benzo[g,h,i]perylene	191-24-2	61320	2348	NE	0.022	0.33	0.0033	0.0067
Indeno[1,2,3-cd]pyrene	193-39-5	7.84	0.875	0.15	0.028	0.33	0.0033	0.0067
Benzo[b]fluoranthene	205-99-2	7.84	0.875	0.15	0.038	0.33	0.0033	0.0067
Fluoranthene	206-44-0	81667	3129	2300	0.032	0.33	0.0033	0.0067
Benzo[k]fluoranthene	207-08-9	78.4	8.75	1.5	0.065	0.33	0.002	0.0067
Acenaphthylene	208-96-8	122640	4693	NE	0.036	0.33	0.0033	0.0067
Chrysene	218-01-9	784	87.5	15	0.021	0.33	0.0033	0.0067
Dialiate	2303-16-4	NE	NE	8	0.17	0.33	0.0056	0.033
Pronamide	23950-58-5	NE	NE	4600	0.024	0.33	0.0042	0.033
Thionazin	297-97-2	NE	NE	NE	0.023	0.33	0.017	0.033
Methyl parathion	298-00-0	408	19.6	15	0.026	0.33	0.017	0.033
Phorate	298-02-2	NE	NE	12	0.022	0.33	0.0059	0.033
Disulfoton	298-04-4	8.17	3.13	2.4	0.017	0.33	0.017	0.033
Sulfotepp	3689-24-5	NE	NE	31	0.02	0.33	0.0065	0.033
Benzo[a]pyrene	50-32-8	0.784	0.087	0.015	0.052	0.33	0.0012	0.0067
2,4-Dinitrophenol	51-28-5	408	156	120	0.83	1.7	0.017	0.33
Famphur	52-85-7	NE	NE	NE	0.029	0.33	0.017	0.033
4,6-Dinitro-2-methylphenol	534-52-1	204	7.82	4.9	0.17	1.7	0.017	0.17
Dibenz(a,h)anthracene	53-70-3	0.784	0.087	0.015	0.039	0.33	0.0033	0.0067
2-Acetylaminofluorene	53-96-3	2042	78.2	0.13	0.028	0.33	0.042	0.033
1,3-Dichlorobenzene	541-73-1	1640	70.4	NE	0.034	0.33	0.0056	0.033
N-Nitrosodiethylamine	55-18-5	0.038	0.004	0.00077	0.028	0.33	0.0033	0.066
Ethyl Parathion	56-38-2	1225	469	370	0.022	0.33	0.042	0.033
3-Methylcholanthrene	56-49-5	NE	NE	0.0052	0.041	0.33	0.042	0.033
Benzo[a]anthracene	56-55-3	7.8	0.87	0.15	0.027	0.33	0.0033	0.0067
4-Nitroquinoline-1-oxide	56-57-5	NE	NE	NE	0.83	3.3	0.042	0.33
7,12-Dimethylbenz(a)anthracene	57-97-6	NE	NE	0.00043	0.017	0.33	0.017	0.033
2,3,4,6-Tetrachlorophenol	58-90-2	61250	2346	1800	0.022	0.33	0.0033	0.033

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Table 3c-1. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted mg/Kg	Tier 1 TRG Unrestricted mg/Kg	RSL Resident Soil mg/Kg	Laboratory MDL mg/Kg	Laboratory RL mg/Kg	Low Level Laboratory MDL mg/Kg	Low Level Laboratory RL mg/Kg
Semivolatile Organic Compounds (Method 8270) (Continued)								
4-Chloro-3-methylphenol	59-50-7	408333	156429	6100	0.035	0.33	0.007	0.033
N-Nitrosomorpholine	59-89-2	NE	NE	0.073	0.027	0.33	0.0045	0.033
p-Dimethylamino azobenzene	60-11-7	NE	NE	0.11	0.019	0.33	0.017	0.033
Dimethoate	60-51-5	NE	NE	12	0.025	0.33	0.017	0.033
2,6-Dinitrotoluene	606-20-2	2042	78	61	0.042	0.33	0.0079	0.033
Pentachlorobenzene	608-93-5	1633	62.8	49	0.025	0.33	0.0033	0.033
N-Nitrosodi-n-propylamine	621-64-7	0.818	0.091	0.089	0.032	0.33	0.0075	0.033
Phenacetin	62-44-2	NE	NE	220	0.033	0.33	0.017	0.033
Ethyl methanesulfonate	62-50-0	NE	NE	NE	0.031	0.33	0.0078	0.066
Aniline	62-53-3	1004	112	85	0.034	0.66	0.0082	0.066
N-Nitrosodimethylamine	62-75-9	0.112	0.013	0.0023	0.12	0.33	0.019	0.033
Methyl methanesulfonate	66-27-3	NE	NE	4.9	0.017	0.33	0.0038	0.033
Hexachloroethane	67-72-1	93.3	45.6	35	0.028	0.33	0.0058	0.033
4-Chlorophenyl phenyl ether	7005-72-3	NE	NE	NE	0.044	0.33	0.0064	0.033
Hexachlorophene	70-30-4	813	23.5	18	13	170	2.4	17
Hexachlorocyclopentadiene	77-47-4	0.951	0.951	370	0.041	0.33	0.0037	0.066
Isophorone	78-59-1	4570	872	510	0.033	0.33	0.007	0.033
Pentachloronitrobenzene	82-68-8	22.0	2.46	1.9	0.021	0.33	0.017	0.033
Acenaphthene	83-32-9	122500	4693	3400	0.041	0.33	0.0033	0.0087
Diethyl phthalate	84-66-2	1974	1974	49000	0.037	0.33	0.0074	0.033
Di-n-butyl phthalate	84-74-2	2279	2279	8100	0.03	0.33	0.017	0.17
Phenanthrene	85-01-8	81320	2346	NE	0.027	0.33	0.0024	0.0067
Butyl benzyl phthalate	85-68-7	928	928	260	0.026	0.33	0.0055	0.033
N-Nitrosodiphenylamine	86-30-6	1168	130	99	0.033	0.33	0.0061	0.033
Fluorene	86-73-7	81667	3129	2300	0.036	0.33	0.0033	0.0067
2,6-Dichlorophenol	87-65-0	NE	NE	NE	0.027	0.33	0.0033	0.033
Hexachlorobutadiene	87-68-3	0.135	0.088	6.2	0.036	0.33	0.0068	0.033
Pentachlorophenol	87-86-5	23.8	2.86	0.89	0.33	1.7	0.017	0.17
2,4,6-Trichlorophenol	88-06-2	314	58.1	44	0.029	0.33	0.0079	0.033
2-Nitroaniline	88-74-4	0.492	0.492	610	0.045	1.7	0.007	0.17
2-Nitrophenol	88-75-5	NE	NE	NE	0.041	0.33	0.0058	0.033
Dinoseb	88-85-7	204	78.2	61	0.16	0.33	0.0062	0.066
Naphthalene	91-20-3	247	194	3.8	0.03	0.33	0.0033	0.0067
2-Methylnaphthalene	91-57-6	40880	1584	310	0.038	0.33	0.0033	0.0067
2-Chloronaphthalene	91-58-7	163520	6257	8300	0.035	0.33	0.006	0.033
2-Naphthylamine	91-59-8	NE	NE	0.27	0.034	0.33	0.017	0.066
Methapyrilene	91-80-5	NE	NE	NE	0.83	67	0.033	6.7
3,3'-Dichlorobenzidine	91-94-1	12.7	1.42	1.1	0.028	0.66	0.017	0.066
N-Nitrosodi-n-butylamine	924-16-3	1.060	0.118	0.087	0.024	0.33	0.017	0.033
1,1'-Biphenyl	92-52-4	10208	3911	51	0.74	0.33	–	–
4-Aminobiphenyl	92-67-1	NE	NE	0.023	0.037	0.33	0.017	0.086
N-Nitrosopyrrolidine	930-55-2	2.73	0.304	0.23	0.018	0.33	0.0036	0.033
Safrole, Total	94-59-7	NE	NE	0.52	0.024	0.33	0.0033	0.033
2-Methylphenol	95-48-7	102200	3911	3100	0.027	0.33	0.0063	0.033
1,2-Dichlorobenzene	95-50-1	279	279	1900	0.037	0.33	0.0086	0.033
2-Toluidine	95-53-4	30.1	3.36	NE	0.035	0.33	0.0033	0.033
2-Chlorophenol	95-57-8	10208	391	390	0.04	0.33	0.0053	0.033
1,2,4,5-Tetrachlorobenzene	95-94-3	613	23	18	0.031	0.33	0.0033	0.033
2,4,5-Trichlorophenol	95-95-4	204400	7821	6100	0.035	0.33	0.0078	0.033
Acetophenone	98-86-2	2633	2633	7800	0.028	0.33	0.0068	0.033
Nitrobenzene	98-95-3	8.41	8.41	4.8	0.026	0.33	0.0066	0.033
3-Nitroaniline	99-09-2	NE	NE	NE	0.046	1.7	0.0067	0.17
1,3,5-Trinitrobenzene	99-35-4	102	102	2200	0.17	0.33	0.017	0.066
N-Nitro-o-toluidine	99-55-8	173	19	54	0.026	0.33	0.017	0.033
1,3-Dinitrobenzene	99-65-0	204	7.82	6.1	0.024	0.33	0.017	0.033
Organochlorine Pesticides (EPA 8081A)								
Aldrin	309-00-2	0.337	0.038	0.029	0.00045	0.0017	–	–
alpha-BHC	319-84-6	0.9	0.1	0.077	0.00011	0.0017	–	–
beta-BHC	319-85-7	3.2	0.4	0.27	0.00011	0.0017	–	–
Chlordane (technical)	57-74-9	12.3	1.82	NE	0.0029	0.017	–	–
Chlorobenzilate	510-15-6	21.2	2.37	4.4	0.017	0.017	–	–
4,4'-DDD	72-54-8	23.8	2.66	2	0.00024	0.0033	–	–
4,4'-DDE	72-55-9	16.8	1.88	1.4	0.00019	0.0033	–	–
4,4'-DDT	50-29-3	16.8	1.88	1.7	0.00023	0.0033	–	–

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Table 3c-1. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted mg/Kg	Tier 1 TRG Unrestricted mg/Kg	RSL Resident Soil mg/Kg	Laboratory MDL mg/Kg	Laboratory RL mg/Kg	Low Level Laboratory MDL mg/Kg	Low Level Laboratory RL mg/Kg
Organochlorine Pesticides (EPA 8081A) (Continued)								
delta-BHC	319-86-8	NE	NE	NE	0.00013	0.0017	–	–
Dieldrin	60-57-1	0.358	0.040	0.03	0.00028	0.0033	–	–
Endosulfan I	959-98-8	1225	469	NE	0.00015	0.0017	–	–
Endosulfan II	33213-65-9	1225	469	NE	0.00023	0.0033	–	–
Endosulfan sulfate	1031-07-8	NE	NE	NE	0.00024	0.0033	–	–
Endrin	72-20-8	81.3	23.5	18	0.00073	0.0033	–	–
Endrin aldehyde	7421-93-4	NE	NE	NE	0.0003	0.0033	–	–
Endrin ketone	53494-70-5	NE	NE	NE	0.00027	0.0033	–	–
gamma-BHC (Lindane)	58-89-9	4.40	0.491	0.52	0.00011	0.0017	–	–
Heptachlor	76-44-8	0.195	0.127	0.11	0.000083	0.0017	–	–
Heptachlor epoxide	1024-57-3	0.629	0.070	0.053	0.00014	0.0017	–	–
Isodrin	465-73-6	NE	NE	NE	0.0033	0.0033	–	–
Kepone	143-50-0	NE	NE	0.049	0.17	0.17	–	–
Methoxychlor	72-43-5	1021	391	310	0.00035	0.0033	–	–
Toxaphene	8001-35-2	5.20	0.581	0.44	0.06	0.17	–	–
PCBs (EPA 8082)								
PCB-1016	12674-11-2	10.0	1.0	3.9	0.0029	0.033	–	–
PCB-1221	11104-28-2	10.0	1.0	0.14	0.0048	0.067	–	–
PCB-1232	11141-16-5	10.0	1.0	0.14	0.0033	0.033	–	–
PCB-1242	53469-21-9	10.0	1.0	0.22	0.0028	0.033	–	–
PCB-1248	12672-29-6	10.0	1.0	0.22	0.0072	0.033	–	–
PCB-1254	11097-69-1	10.0	1.0	0.22	0.0023	0.033	–	–
PCB-1260	11096-82-5	10.0	1.0	0.22	0.0087	0.033	–	–
Total PCBs	1336-36-3	10.0	1.0	0.22	0.0072	0.033	–	–
Herbicides (EPA 8151A)								
2,4-D	94-75-7	2042	782	690	0.005	0.0083	–	–
Silvex (2,4,5-TP)	93-72-1	1633	626	490	0.0016	0.0083	–	–
2,4,5-T	93-76-5	20417	782	610	0.0023	0.0083	–	–
Dioxathion/Dioxenethion (BATCO 088.1)								
cis-Dioxathion	78-34-2	3068	117	NE	NA	14	–	–
trans-Dioxathion	78-34-2	3066	117	NE	NA	15	–	–
Dioxenethion	–	NE	NE	NE	NA	17	–	–

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted pg/g	Tier 1 TRG Unrestricted pg/g	RSL Resident Soil pg/g	Laboratory MDL pg/g	Laboratory RL pg/g	Low Level Laboratory MDL pg/g	Low Level Laboratory RL pg/g
Dioxins and Furans (8290) (pg/g)								
2,3,7,8-TCDD	51207-31-9	38.2	42.6	NE	1.0	1	–	–
1,2,3,7,8-PeCDD	40321-76-4	76.3	8.5	NE	0.4	5	–	–
1,2,3,4,7,8-HxCDD	39227-28-6	382	42.6	NE	0.6	5	–	–
1,2,3,6,7,8-HxCDD	57653-85-7	923	103	NE	0.4	5	–	–
1,2,3,7,8,9-HxCDD	19408-74-3	923	103	NE	0.4	5	–	–
1,2,3,4,6,7,8-HpCDD	35822-46-9	3815	426	NE	0.4	5	–	–
OCDD	3268-87-9	38155	4258	NE	1.1	10	–	–
2,3,7,8-TCDF	51207-31-9	382	42.6	NE	0.7	1	–	–
1,2,3,7,8-PeCDF	57117-41-6	763	85.2	NE	0.7	5	–	–
2,3,4,7,8-PeCDF	57117-31-4	76.3	8.5	NE	0.4	5	–	–
1,2,3,4,7,8-HxCDF	70648-26-9	382	43	NE	0.5	5	–	–
1,2,3,6,7,8-HxCDF	57117-44-9	382	43	NE	0.8	5	–	–
2,3,4,6,7,8-HxCDF	60851-34-5	382	43	NE	0.2	5	–	–
1,2,3,7,8,9-HxCDF	72918-21-9	382	43	NE	0.4	5	–	–
1,2,3,4,6,7,8-HpCDF	55673-89-7	NE	NE	NE	0.4	5	–	–
1,2,3,4,7,8,9-HpCDF	67562-39-4	NE	NE	NE	0.6	5	–	–
OCDF	39001-02-0	38155	4258	NE	1.3	10	–	–

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Table 3c-1. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted mg/Kg	Tier 1 TRG Unrestricted mg/Kg	RSL Resident Soil mg/Kg	Laboratory MDL mg/Kg	Laboratory RL mg/Kg	Low Level Laboratory MDL mg/Kg	Low Level Laboratory RL mg/Kg
Total Metals (including Mercury) (SW846-6020, 7471A)								
Antimony	7440-36-0	81.7	31.3	31	1	2	–	–
Arsenic	7440-38-2	3.82	0.428	0.39	0.2	0.5	–	–
Barium	7440-39-3	14292	5475	15000	0.25	1	–	–
Beryllium	7440-41-7	1021	158	160	0.05	0.1	–	–
Cadmium	7440-43-9	1022	39.1	70	0.024	0.1	–	–
Chromium	7440-47-3	NE	NE	NE	0.5	1	–	–
Cobalt	7440-48-4	12250	4693	23	0.03	0.1	–	–
Copper	7440-50-8	8167	3129	3100	0.4	1	–	–
Lead	7439-92-1	1700	400	400	0.2	0.4	–	–
Mercury	7439-97-6	81.3	10.0	10	0.0082	0.02	–	–
Nickel	7440-02-0	4083	1564	1500	0.5	1	–	–
Selenium	7782-49-2	1021	391	390	0.5	1	–	–
Silver	7440-22-4	1021	391	390	0.1	0.2	–	–
Thallium	7440-28-0	143	5.48	0.78	0.05	0.2	–	–
Tin	7440-31-5	122500	46929	47000	5.1	20	–	–
Vanadium	7440-62-2	1429	548	NE	0.55	1	–	–
Zinc	7440-66-6	61250	23464	23000	1.1	4	–	–
Cyanide, Total (EPA 9012A)								
Cyanide, Total	57-12-5	4083	1564	1600	0.21	0.5	–	–
Sulfide, Total (EPA 9034)								
Sulfide, Total	18496-25-8	NE	NE	NE	NA	60	–	–

Notes:

[1]USEPA. Office of Solid Waste and Emergency Response. *Test Methods for Evaluating Solid Waste. SW-846 3rd ed. Washington, D.C. 1996.*

**TRG=MDEQ Tier 1 Target Remedial Goals per the Final Regulations Governing Brownfields Voluntary Cleanup and Redevelopment in Mississippi (MDBQ, March 2002)

All results to be reported in dry weight

BATCO Bonner Analytical Testing Company.
HpCDF Heptachlorodibenzofuran.
HxCDF Hexachlorodibenzofuran.
MDL Method detection limit.
MEK Methyl ethyl ketone.
mg/Kg milligrams per kilogram.
MIBK Methyl isobutyl ketone.
NA Not applicable.
NE RSL or TRG not yet established for the compound.
OCDD Octachlorodibenzodioxin.
OCDF Octachlorodibenzofuran.
PeCDD Pentachlorodibenzo-p-dioxin.
PeCDF Pentachlorodibenzofuran.
pg/g picograms per gram.
TCDD Tetrachlorodibenzodioxin.
TCDF Tetrafuran.
ug/L Micrograms per liter.
USEPA U.S. Environmental Protection Agency.

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Table 3c-2. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted mg/Kg	Tier 1 TRG Unrestricted mg/Kg	RSL Resident Soil mg/Kg	Laboratory MDL mg/Kg	Laboratory RL mg/Kg	Low Level Laboratory MDL mg/Kg	Low Level Laboratory RL mg/Kg
Volatile Organic Compounds (Method 8260)								
Ethylbenzene	100-41-4	395	395	27	0.0016	0.005	–	–
Styrene	100-42-5	384	384	38000	0.0019	0.005	–	–
trans-1,3-Dichloropropene	10061-02-6	NE	NE	NE	0.0033	0.025	–	–
Ethylene Dibromide	106-93-4	0.087	0.008	0.17	0.0017	0.005	–	–
Acrolein	107-02-8	40880	1564	0.65	0.024	0.1	–	–
3-Chloro-1-propene	107-05-1	NE	NE	3.4	0.0022	0.005	–	–
Propionitrile	107-12-0	NE	NE	NE	0.0016	0.005	–	–
Acrylonitrile	107-13-1	10.6	1.18	1.2	0.034	0.1	–	–
Vinyl acetate	108-05-4	9.13	9.13	4100	0.0025	0.01	–	–
4-Methyl-2-pentanone (MIBK)	108-10-1	183333	8257	NE	0.00093	0.005	–	–
Toluene	108-88-3	38.0	38.0	45000	0.00087	0.005	–	–
Chlorobenzene	108-90-7	1.19	1.19	1400	0.00096	0.005	–	–
trans-1,4-Dichloro-2-butene	110-57-6	NE	NE	0.035	0.0015	0.005	–	–
Chlorodibromomethane	124-48-1	68.1	7.80	3.3	0.0014	0.005	–	–
Methacrylonitrile	126-98-7	204	7.82	16	0.0042	0.025	–	–
2-Chloro-1,3-butadiene	126-99-8	NE	NE	0.047	0.0027	0.005	–	–
Tetrachloroethene	127-18-4	16.2	11.9	2.6	0.00063	0.005	–	–
Xylenes, Total	1330-20-7	316	316	2700	0.0011	0.01	–	–
Carbon tetrachloride	56-23-5	0.589	0.371	3	0.00083	0.005	–	–
2-Hexanone	591-78-6	81760	3129	1400	0.023	0.1	–	–
1,1,1,2-Tetrachloroethane	630-20-6	220	24.6	9.3	0.00084	0.005	–	–
Acetone	67-64-1	103751	7821	630000	0.011	0.05	–	–
Chloroform	67-66-3	0.478	0.312	1.5	0.001	0.005	–	–
Benzene	71-43-2	1.36	0.887	5.4	0.00073	0.005	–	–
1,1,1-Trichloroethane	71-55-6	1188	1188	38000	0.00059	0.005	–	–
Bromomethane	74-83-9	2.97	2.97	32	0.0015	0.005	–	–
Chloromethane	74-87-3	440	49.1	500	0.0021	0.005	–	–
Dibromomethane	74-95-3	20417	782	110	0.0044	0.01	–	–
Chloroethane	75-00-3	1974	220	61000	0.0011	0.005	–	–
Vinyl chloride	75-01-4	0.939	0.428	1.7	0.0015	0.005	–	–
Acetonitrile	75-05-8	111	111	3700	0.041	0.2	–	–
Methylene Chloride	75-09-2	440	49.1	53	0.0063	0.025	–	–
Carbon disulfide	75-15-0	7.97	7.97	3700	0.0011	0.005	–	–
Bromoform	75-25-2	90.1	58.8	220	0.0015	0.005	–	–
Dichlorobromomethane	75-27-4	1.89	1.24	1.4	0.00097	0.005	–	–
Trichlorofluoromethane	75-69-4	142917	23464	3400	0.0012	0.005	–	–
Pentachloroethane	76-01-7	NE	NE	19	0.0024	0.005	–	–
Isobutyl alcohol	78-83-1	612500	23464	310000	0.0045	0.01	–	–
2-Butanone (MEK)	78-93-3	84.5	84.5	200000	0.0024	0.025	–	–
1,1,2-Trichloroethane	79-00-5	1.7	1.1	5.3	0.0013	0.005	–	–
Trichloroethene	79-01-6	7.92	5.17	14	0.0013	0.005	–	–
1,1,2,2-Tetrachloroethane	79-34-5	1.00	0.656	2.8	0.0029	0.01	–	–
Methyl methacrylate	80-62-6	18333	16333	21000	0.026	0.1	–	–
1,2-Dibromo-3-Chloropropane	96-12-8	0.100	0.100	0.069	0.00083	0.005	–	–
1,2,3-Trichloropropane	96-18-4	0.818	0.091	0.095	0.0024	0.005	–	–
Ethyl methacrylate	97-63-2	16375	7039	7500	0.052	0.2	–	–

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Table 3c-2. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted mg/Kg	Tier 1 TRG Unrestricted mg/Kg	RSL Resident Soil mg/Kg	Laboratory MDL mg/Kg	Laboratory RL mg/Kg	Low Level Laboratory MDL mg/Kg	Low Level Laboratory RL mg/Kg
Semivolatile Organic Compounds (Method 8270)								
4-Nitroaniline	100-01-6	NE	NE	86	0.049	1.7	0.0083	0.17
4-Nitrophenol	100-02-7	16352	628	NE	0.33	1.7	0.073	0.17
Benzyl alcohol	100-51-6	204187	23464	62000	0.033	0.33	0.0061	0.033
N-Nitrosopiperidine	100-75-4	NE	NE	0.16	0.021	0.33	0.0034	0.033
4-Bromophenyl phenyl ether	101-55-3	NE	NE	NE	0.038	0.33	0.0069	0.033
2,4-Dimethylphenol	105-67-9	40833	1564	12000	0.044	0.33	0.0076	0.066
N-Nitrosomethylethylamine	10595-95-6	0.260	0.029	0.078	0.025	0.33	0.0033	0.033
1,4-Dichlorobenzene	106-46-7	238	28.6	12	0.035	0.33	0.0052	0.033
4-Chloroaniline	106-47-8	817	313	8.6	0.052	0.66	0.0052	0.066
p-Phenylene diamine	108-50-3	388380	14881	120000	0.83	1.7	0.38	0.83
bis(chloroisopropyl) ether	108-60-1	9.1	5.9	22	0.03	0.33	0.0072	0.033
Phenol	108-95-2	122500	46929	180000	0.034	0.33	0.0065	0.033
2-Picoline	109-06-8	NE	NE	NE	0.017	0.33	0.0033	0.066
Pyridine	110-86-1	2042	78.2	1000	0.029	0.33	0.02	0.033
Bis(2-chloroethyl)ether	111-44-4	0.419	0.273	1	0.045	0.33	0.0065	0.033
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	1800	0.039	0.33	0.0065	0.033
Bis(2-ethylhexyl) phthalate	117-81-7	409	45.6	120	0.029	0.33	0.008	0.068
Di-n-octyl phthalate	117-84-0	4083	1564	NE	0.029	0.33	0.0038	0.033
Hexachlorobenzene	118-74-1	1.85	0.399	1.1	0.039	0.33	0.0076	0.033
3,3'-Dimethylbenzidine	119-93-7	0.622	0.069	0.16	0.83	1.7	0.066	0.066
Anthracene	120-12-7	612500	23464	170000	0.025	0.33	0.0033	0.0067
Isosafrole	120-58-1	NE	NE	NE	0.024	0.33	0.0033	0.033
1,2,4-Trichlorobenzene	120-82-1	824	782	99	0.031	0.33	0.0046	0.033
2,4-Dichlorophenol	120-83-2	813	235	1800	0.035	0.33	0.0072	0.033
2,4-Dinitrotoluene	121-14-2	408	156	5.5	0.049	0.33	0.0075	0.033
alpha,alpha-Dimethyl phenethylamine	122-09-8	NE	NE	NE	2.7	67	0.33	6.7
1,4-Dioxane	123-91-1	520	58.1	17	0.12	0.33	0.0034	0.033
o,o,o-Triethylphosphorothioate	126-68-1	NE	NE	NE	0.04	0.33	0.0044	0.066
Pyrene	129-00-0	61250	2346	17000	0.027	0.33	0.0033	0.0067
1,4-Naphthoquinone	130-15-4	NE	NE	NE	0.017	0.33	0.0033	0.033
Dimethyl phthalate	131-11-3	20440000	782143	NE	0.034	0.33	0.0075	0.033
Dibenzofuran	132-64-9	8176	313	1000	0.033	0.33	0.0067	0.033
1-Naphthylamine	134-32-7	NE	NE	NE	0.066	0.33	0.017	0.066
Aramite, Total	140-57-8	NE	NE	89	0.057	0.33	0.0048	0.066
3 & 4 Methylphenol	15831-10-4	102200	3911	NE	0.043	0.33	0.0073	0.033
Hexachloropropene	1888-71-7	NE	NE	NE	0.029	0.33	0.0053	0.033
Benzo[g,h,i]perylene	191-24-2	61320	2348	NE	0.022	0.33	0.0033	0.0067
Indeno[1,2,3-cd]pyrene	193-39-5	7.84	0.875	2.1	0.028	0.33	0.0033	0.0067
Benzo[b]fluoranthene	205-99-2	7.84	0.875	2.1	0.038	0.33	0.0033	0.0067
Fluoranthene	206-44-0	81667	3129	22000	0.032	0.33	0.0033	0.0067
Benzo[k]fluoranthene	207-08-9	78.4	8.75	21	0.065	0.33	0.002	0.0067
Acenaphthylene	208-96-8	122640	4693	NE	0.036	0.33	0.0033	0.0067
Chrysene	218-01-9	784	87.5	210	0.021	0.33	0.0033	0.0067
Diallate	2303-16-4	NE	NE	28	0.17	0.33	0.0056	0.033
Pronamide	23950-58-5	NE	NE	46000	0.024	0.33	0.0042	0.033
Thionazin	297-97-2	NE	NE	NE	0.023	0.33	0.017	0.033
Methyl parathion	298-00-0	408	19.6	150	0.026	0.33	0.017	0.033
Phorate	298-02-2	NE	NE	120	0.022	0.33	0.0059	0.033
Disulfoton	298-04-4	8.17	3.13	25	0.017	0.33	0.017	0.033
Sulfotepp	3689-24-5	NE	NE	310	0.02	0.33	0.0065	0.033
Benzo[a]pyrene	50-32-8	0.784	0.087	0.21	0.052	0.33	0.0012	0.0067
2,4-Dinitrophenol	51-28-5	408	156	1200	0.83	1.7	0.017	0.33
Famphur	52-85-7	NE	NE	NE	0.029	0.33	0.017	0.033
4,6-Dinitro-2-methylphenol	534-52-1	204	7.82	49	0.17	1.7	0.017	0.17
Dibenz(a,h)anthracene	53-70-3	0.784	0.087	0.21	0.039	0.33	0.0033	0.0067
2-Acetylaminofluorene	53-96-3	2042	78.2	0.45	0.028	0.33	0.042	0.033
1,3-Dichlorobenzene	541-73-1	1840	70.4	NE	0.034	0.33	0.0056	0.033
N-Nitrosodiethylamine	55-18-5	0.038	0.004	0.011	0.026	0.33	0.0033	0.066
Ethyl Parathion	56-38-2	1225	469	3700	0.022	0.33	0.042	0.033
3-Methylcholanthrene	56-49-5	NE	NE	0.078	0.041	0.33	0.042	0.033
Benzo[a]anthracene	56-55-3	7.8	0.87	2.1	0.027	0.33	0.0033	0.0067
4-Nitroquinoline-1-oxide	56-57-5	NE	NE	NE	0.83	3.3	0.042	0.33
7,12-Dimethylbenz(a)anthracene	57-97-6	NE	NE	0.0062	0.017	0.33	0.017	0.033
2,3,4,6-Tetrachlorophenol	58-90-2	61250	2346	18000	0.022	0.33	0.0033	0.033

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Table 3c-2. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted mg/Kg	Tier 1 TRG Unrestricted mg/Kg	RSL Resident Soil mg/Kg	Laboratory MDL mg/Kg	Laboratory RL mg/Kg	Low Level Laboratory MDL mg/Kg	Low Level Laboratory RL mg/Kg
Semivolatile Organic Compounds (Method 8270) (Continued)								
4-Chloro-3-methylphenol	59-50-7	408333	156429	62000	0.035	0.33	0.007	0.033
N-Nitrosomorpholine	59-89-2	NE	NE	0.26	0.027	0.33	0.0045	0.033
p-Dimethylamino azobenzene	60-11-7	NE	NE	0.37	0.019	0.33	0.017	0.033
Dimethoate	60-51-5	NE	NE	120	0.025	0.33	0.017	0.033
2,6-Dinitrotoluene	608-20-2	2042	78	620	0.042	0.33	0.0079	0.033
Pentachlorobenzene	608-93-5	1633	82.6	490	0.025	0.33	0.0033	0.033
N-Nitrosodi-n-propylamine	621-64-7	0.818	0.091	0.25	0.032	0.33	0.0075	0.033
Phenacetin	62-44-2	NE	NE	780	0.033	0.33	0.017	0.033
Ethyl methanesulfonate	62-50-0	NE	NE	NE	0.031	0.33	0.0078	0.066
Aniline	62-53-3	1004	112	300	0.034	0.88	0.0082	0.088
N-Nitrosodimethylamine	62-75-9	0.112	0.013	0.034	0.12	0.33	0.019	0.033
Methyl methanesulfonate	66-27-3	NE	NE	17	0.017	0.33	0.0038	0.033
Hexachloroethane	67-72-1	93.3	45.6	120	0.028	0.33	0.0058	0.033
4-Chlorophenyl phenyl ether	7005-72-3	NE	NE	NE	0.044	0.33	0.0084	0.033
Hexachlorophene	70-30-4	613	23.5	180	13	170	2.4	17
Hexachlorocyclopentadiene	77-47-4	0.951	0.951	3700	0.041	0.33	0.0037	0.066
Isophorone	78-59-1	4570	872	1800	0.033	0.33	0.007	0.033
Pentachloronitrobenzene	82-68-8	22.0	2.48	6.8	0.021	0.33	0.017	0.033
Acenaphthene	83-32-9	122500	4893	33000	0.041	0.33	0.0033	0.0067
Diethyl phthalate	84-66-2	1974	1974	490000	0.037	0.33	0.0074	0.033
Di-n-butyl phthalate	84-74-2	2279	2279	62000	0.03	0.33	0.017	0.17
Phenanthrene	85-01-8	61320	2346	NE	0.027	0.33	0.0024	0.0067
Butyl benzyl phthalate	85-68-7	928	928	910	0.028	0.33	0.0055	0.033
N-Nitrosodiphenylamine	86-30-6	1188	130	350	0.033	0.33	0.0061	0.033
Fluorene	86-73-7	61667	3129	22000	0.036	0.33	0.0033	0.0067
2,6-Dichlorophenol	87-65-0	NE	NE	NE	0.027	0.33	0.0033	0.033
Hexachlorobutadiene	87-68-3	0.135	0.088	22	0.036	0.33	0.0068	0.033
Pentachlorophenol	87-86-5	23.8	2.66	2.7	0.33	1.7	0.017	0.17
2,4,6-Trichlorophenol	88-06-2	314	58.1	160	0.029	0.33	0.0079	0.033
2-Nitroaniline	88-74-4	0.492	0.492	6000	0.045	1.7	0.007	0.17
2-Nitrophenol	88-75-5	NE	NE	NE	0.041	0.33	0.0058	0.033
Dinoseb	88-85-7	204	78.2	620	0.16	0.33	0.0062	0.066
Naphthalene	91-20-3	247	194	18	0.03	0.33	0.0033	0.0067
2-Methylnaphthalene	91-57-6	40880	1564	4100	0.038	0.33	0.0033	0.0067
2-Chloronaphthalene	91-58-7	163520	6257	82000	0.035	0.33	0.006	0.033
2-Naphthylamine	91-59-8	NE	NE	0.96	0.034	0.33	0.017	0.088
Methapyriiene	91-80-5	NE	NE	NE	0.83	67	0.033	6.7
3,3'-Dichlorobenzidine	91-94-1	12.7	1.42	3.8	0.028	0.66	0.017	0.066
N-Nitrosodi-n-butylamine	924-16-3	1.060	0.118	0.4	0.024	0.33	0.017	0.033
1,1'-Biphenyl	92-52-4	10208	3911	210	0.74	0.33	–	–
4-Aminobiphenyl	92-67-1	NE	NE	0.082	0.037	0.33	0.017	0.068
N-Nitrosopyrrolidine	930-55-2	2.73	0.304	0.82	0.018	0.33	0.0038	0.033
Safrole, Total	94-59-7	NE	NE	7.8	0.024	0.33	0.0033	0.033
2-Methylphenol	95-48-7	102200	3911	31000	0.027	0.33	0.0063	0.033
1,2-Dichlorobenzene	95-50-1	279	279	9800	0.037	0.33	0.0086	0.033
2-Toluidine	95-53-4	30.1	3.36	NE	0.035	0.33	0.0033	0.033
2-Chlorophenol	95-57-8	10208	391	5100	0.04	0.33	0.0053	0.033
1,2,4,5-Tetrachlorobenzene	95-94-3	613	23	180	0.031	0.33	0.0033	0.033
2,4,5-Trichlorophenol	95-95-4	204400	7821	62000	0.035	0.33	0.0078	0.033
Acetophenone	98-86-2	2833	2633	100000	0.028	0.33	0.0068	0.033
Nitrobenzene	98-95-3	8.41	8.41	24	0.026	0.33	0.0066	0.033
3-Nitroaniline	99-09-2	NE	NE	NE	0.046	1.7	0.0067	0.17
1,3,5-Trinitrobenzene	99-35-4	102	102	27000	0.17	0.33	0.017	0.066
N-Nitro-o-toluidine	99-55-8	173	19	190	0.026	0.33	0.017	0.033
1,3-Dinitrobenzene	99-65-0	204	7.82	62	0.024	0.33	0.017	0.033
Organochlorine Pesticides (EPA 8081A)								
Aldrin	309-00-2	0.337	0.038	0.1	0.00045	0.0017	–	–
alpha-BHC	319-84-6	0.9	0.1	0.27	0.00011	0.0017	–	–
beta-BHC	319-85-7	3.2	0.4	0.96	0.00011	0.0017	–	–
Chlordane (technical)	57-74-9	12.3	1.62	NE	0.0029	0.017	–	–
Chlorobenzilate	510-15-6	21.2	2.37	16	0.017	0.017	–	–
4,4'-DDD	72-54-8	23.8	2.66	7.2	0.00024	0.0033	–	–
4,4'-DDE	72-55-9	16.8	1.88	5.1	0.00019	0.0033	–	–
4,4'-DDT	50-29-3	16.8	1.88	7	0.00023	0.0033	–	–

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Table 3c-2. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted mg/Kg	Tier 1 TRG Unrestricted mg/Kg	RSL Resident Soil mg/Kg	Laboratory MDL mg/Kg	Laboratory RL mg/Kg	Low Level Laboratory MDL mg/Kg	Low Level Laboratory RL mg/Kg
Organochlorine Pesticides (EPA 8081A) (Continued)								
delta-BHC	319-86-8	NE	NE	NE	0.00013	0.0017	–	–
Dieldrin	60-57-1	0.358	0.040	0.11	0.00028	0.0033	–	–
Endosulfan I	959-98-8	1225	489	NE	0.00015	0.0017	–	–
Endosulfan II	33213-65-9	1225	489	NE	0.00023	0.0033	–	–
Endosulfan sulfate	1031-07-8	NE	NE	NE	0.00024	0.0033	–	–
Endrin	72-20-8	81.3	23.5	180	0.00073	0.0033	–	–
Endrin aldehyde	7421-93-4	NE	NE	NE	0.0003	0.0033	–	–
Endrin ketone	53494-70-5	NE	NE	NE	0.00027	0.0033	–	–
gamma-BHC (Lindane)	58-89-9	4.40	0.491	2.1	0.00011	0.0017	–	–
Heptachlor	76-44-8	0.195	0.127	0.38	0.000083	0.0017	–	–
Heptachlor epoxide	1024-57-3	0.829	0.070	0.19	0.00014	0.0017	–	–
Isodrin	465-73-6	NE	NE	NE	0.0033	0.0033	–	–
Kepone	143-50-0	NE	NE	0.17	0.17	0.17	–	–
Methoxychlor	72-43-5	1021	391	3100	0.00035	0.0033	–	–
Toxaphene	8001-35-2	5.20	0.561	1.6	0.06	0.17	–	–
PCBs (EPA 8082)								
PCB-1016	12674-11-2	10.0	1.0	21	0.0029	0.033	–	–
PCB-1221	11104-28-2	10.0	1.0	0.54	0.0048	0.067	–	–
PCB-1232	11141-16-5	10.0	1.0	0.54	0.0033	0.033	–	–
PCB-1242	53469-21-9	10.0	1.0	0.74	0.0028	0.033	–	–
PCB-1248	12672-29-6	10.0	1.0	0.74	0.0072	0.033	–	–
PCB-1254	11097-69-1	10.0	1.0	0.74	0.0023	0.033	–	–
PCB-1260	11096-82-5	10.0	1.0	0.74	0.0067	0.033	–	–
Total PCBs	1336-36-3	10.0	1.0	0.74	0.0072	0.033	–	–
Herbicides (EPA 8151A)								
2,4-D	94-75-7	2042	782	7700	0.005	0.0083	–	–
Silvex (2,4,5-TP)	93-72-1	1633	828	4900	0.0016	0.0083	–	–
2,4,5-T	93-76-5	20417	782	6200	0.0023	0.0083	–	–
Dioxathion/Dioxenethion (BATCO 088.1)								
cis-Dioxathion	78-34-2	3066	117	NE	NA	14	–	–
trans-Dioxathion	78-34-2	3066	117	NE	NA	15	–	–
Dioxenethion	–	NE	NE	NE	NA	17	–	–

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted pg/g	Tier 1 TRG Unrestricted pg/g	RSL Resident Soil pg/g	Laboratory MDL pg/g	Laboratory RL pg/g	Low Level Laboratory MDL pg/g	Low Level Laboratory RL pg/g
Dioxins and Furans (8290) (pg/g)								
2,3,7,8-TCDD	51207-31-9	38.2	42.6	NE	1.0	1	–	–
1,2,3,7,8-PeCDD	40321-76-4	76.3	8.5	NE	0.4	5	–	–
1,2,3,4,7,8-HxCDD	39227-28-6	382	42.6	NE	0.6	5	–	–
1,2,3,6,7,8-HxCDD	57653-85-7	923	103	NE	0.4	5	–	–
1,2,3,7,8,9-HxCDD	19408-74-3	923	103	NE	0.4	5	–	–
1,2,3,4,6,7,8-HpCDD	35822-46-9	3815	428	NE	0.4	5	–	–
OCDD	3268-87-9	38155	4258	NE	1.1	10	–	–
2,3,7,8-TCDF	51207-31-9	382	42.6	NE	0.7	1	–	–
1,2,3,7,8-PeCDF	57117-41-6	783	85.2	NE	0.7	5	–	–
2,3,4,7,8-PeCDF	57117-31-4	76.3	8.5	NE	0.4	5	–	–
1,2,3,4,7,8-HxCDF	70648-26-9	382	43	NE	0.5	5	–	–
1,2,3,6,7,8-HxCDF	57117-44-9	382	43	NE	0.6	5	–	–
2,3,4,6,7,8-HxCDF	60851-34-5	382	43	NE	0.2	5	–	–
1,2,3,7,8,9-HxCDF	72918-21-9	382	43	NE	0.4	5	–	–
1,2,3,4,6,7,8-HpCDF	55673-89-7	NE	NE	NE	0.4	5	–	–
1,2,3,4,7,8,9-HpCDF	67562-39-4	NE	NE	NE	0.6	5	–	–
OCDF	39001-02-0	38155	4258	NE	1.3	10	–	–

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Table 3c-2. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil / Sediment						
		Tier 1 TRG Restricted mg/Kg	Tier 1 TRG Unrestricted mg/Kg	RSL Resident Soil mg/Kg	Laboratory MDL mg/Kg	Laboratory RL mg/Kg	Low Level Laboratory MDL mg/Kg	Low Level Laboratory RL mg/Kg
Total Metals (including Mercury) (SW846-6020, 7471A)								
Antimony	7440-36-0	81.7	31.3	410	1	2	–	–
Arsenic	7440-38-2	3.82	0.428	1.8	0.2	0.5	–	–
Barium	7440-39-3	14292	5475	190000	0.25	1	–	–
Beryllium	7440-41-7	1021	158	2000	0.05	0.1	–	–
Cadmium	7440-43-9	1022	39.1	800	0.024	0.1	–	–
Chromium	7440-47-3	NE	NE	NE	0.5	1	–	–
Cobalt	7440-48-4	12250	4893	300	0.03	0.1	–	–
Copper	7440-50-8	8167	3129	41000	0.4	1	–	–
Lead	7439-92-1	1700	400	800	0.2	0.4	–	–
Mercury	7439-97-6	81.3	10.0	43	0.0082	0.02	–	–
Nickel	7440-02-0	4083	1564	20000	0.5	1	–	–
Selenium	7782-49-2	1021	391	5100	0.5	1	–	–
Silver	7440-22-4	1021	391	5100	0.1	0.2	–	–
Thallium	7440-28-0	143	5.48	10	0.05	0.2	–	–
Tin	7440-31-5	122500	46929	810000	5.1	20	–	–
Vanadium	7440-62-2	1429	548	NE	0.55	1	–	–
Zinc	7440-66-6	61250	23464	310000	1.1	4	–	–
Cyanide, Total (EPA 9012A)								
Cyanide, Total	57-12-5	4083	1564	20000	0.21	0.5	–	–
Sulfide, Total (EPA 9034)								
Sulfide, Total	18498-25-6	NE	NE	NE	NA	60	–	–

Notes:

[1]USEPA. Office of Solid Waste and Emergency Response. *Test Methods for Evaluating Solid Waste. SW-846 3rd ed. Washington, D.C. 1996.*

**TRG=MDEQ Tier 1 Target Remedial Goals per the Final Regulations Governing Brownfields Voluntary Cleanup and Redevelopment in Mississippi (MDBQ, March 2002)

All results to be reported in dry weight

BATCO Bonner Analytical Testing Company.
HpCDF Heptachlorodibenzofuran.
HxCDF Hexachlorodibenzofuran.
MDL Method detection limit.
MEK Methyl ethyl ketone.
mg/Kg milligrams per kilogram.
MIBK Methyl isobutyl ketone.
NA Not applicable.
NE RSL or TRG not yet established for the compound.
OCDD Octachlorodibenzodioxin.
OCDF Octachlorodibenzofuran.
PeCDD Pentachlorodibenzo-p-dioxin.
PeCDF Pentachlorodibenzofuran.
pg/g picograms per gram.
TCDD Tetrachlorodibenzodioxin.
TCDF Tetrafuran.
ug/L Micrograms per liter.
USEPA U.S. Environmental Protection Agency.

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Table 3d. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Indoor Air				
		Residential Air Screening Level ug/m3	Industrial Air Screening Level ug/m3	Laboratory MDL ug/m3	Laboratory RL ug/m3	Laboratory RL(ppbv)
Volatile Organic Compounds (Method TO 15)						
Benzene	71-43-2	0.31	1.6	0.18	0.64	0.20
Benzyl Chloride	100-44-7	0.05	0.25	0.40	2.07	0.40
Bromomethane	74-83-9	5.2	22	0.12	0.78	0.20
Carbon tetrachloride	56-23-5	0.41	2	0.24	1.26	0.20
Chlorobenzene	108-90-7	52	220	0.23	0.92	0.20
Chloroethane	75-00-3	10000	44000	0.09	0.53	0.20
Chloroform	67-66-3	0.11	0.53	0.19	0.98	0.20
Chloromethane	74-87-3	94	390	0.33	1.03	0.50
1,2-Dibromoethane	106-93-4	0.0041	0.02	0.34	1.54	0.20
1,2-Dichlorobenzene	95-50-1	210	880	0.42	1.20	0.20
1,3-Dichlorobenzene	541-73-1	NE	NE	0.39	1.20	0.20
1,4-Dichlorobenzene	106-46-7	0.22	1.1	0.38	1.20	0.20
Dichlorodifluoromethane	75-71-8	100	440	0.33	0.98	0.20
1,1,Dichloroethane	75-34-3	1.5	7.7	0.11	0.81	0.20
1,2-Dichloroethane	107-06-2	0.094	0.47	0.19	0.81	0.20
1,1-Dichloroethene	75-35-4	1.5	7.7	0.13	0.79	0.20
cis-1,2-Dichloroethene	156-59-2	NE	NE	0.24	0.79	0.20
1,2-Dichloropropane	78-87-5	0.24	1.2	0.24	0.92	0.20
cis-1,3-Dichloropropene	10061-01-5	NE	NE	0.34	0.91	0.20
trans-1,3-Dichloropropene	10061-02-6	NE	NE	0.22	0.91	0.20
Ethylbenzene	100-41-4	0.97	4.9	0.29	0.87	0.20
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	NE	NE	0.22	1.40	0.20
Hexachlorobutadiene	87-68-3	0.11	0.56	0.83	11	1.0
Methylene Chloride	75-09-2	5.2	26	0.16	1.7	0.50
1,2,4-Trichlorobenzene	120-82-1	2.1	8.8	0.73	7.4	1.0
Styrene	100-42-5	1000	4400	0.25	0.9	0.20
1,1,2,2-Tetrachloroethane	79-34-5	0.042	0.21	0.42	1.4	0.20
Tetrachloroethene	127-18-4	0.41	2.1	0.27	1.4	0.20
Toluene	108-88-3	5200	22000	0.20	0.75	0.20
1,1,1-Trichloroethane	71-55-6	5200	22000	0.16	1.1	0.20
1,1,2-Trichloroethane	79-00-5	0.15	0.77	0.29	1.1	0.20
Trichloroethene	79-01-6	1.2	6.1	0.19	1.1	0.20
Trichlorofluoromethane	75-69-4	730	3100	0.13	1.1	0.20
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	31000	130000	0.24	1.5	0.20
1,2,4-Trimethylbenzene	95-63-6	7.3	31	0.31	1.0	0.20
1,3,5-Trimethylbenzene	108-67-8	NE	NE	0.32	1.0	0.20
Vinyl chloride	75-01-4	0.16	2.8	0.18	0.51	0.20
m-Xylene & p-Xylene	136777-61-	100	440	0.52	0.87	0.20
o-Xylene	95-47-6	100	440	0.26	0.87	0.20

Notes:

1 USEPA Compendium Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/ Mass Spectrometry (GC/MS)*. January 1999

2 USEPA Regional Screening Levels

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Table 3e. Parameters, Methods, and Target Reporting Limits, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi

Analyte[1]	CAS Number	Soil Gas				
		Residential Air Screening Level ug/m3	Industrial Air Screening Level ug/m3	Laboratory MDL ug/m3	Laboratory RL ug/m3	Laboratory RL(ppbv)
Volatile Organic Compounds (Method TO 15)						
Benzene	71-43-2	0.31	1.6	1.8	6.4	2.0
Benzyl Chloride	100-44-7	0.05	0.25	4	20.7	4.0
Bromomethane	74-83-9	5.2	22	1.2	7.8	2.0
Carbon tetrachloride	56-23-5	0.41	2	2.4	12.6	2.0
Chlorobenzene	108-90-7	52	220	2.3	9.2	2.0
Chloroethane	75-00-3	10000	44000	0.9	5.3	2.0
Chloroform	67-66-3	0.11	0.53	1.85	9.8	2.0
Chloromethane	74-87-3	94	390	3.3	10.3	5.0
1,2-Dibromomethane	106-93-4	0.0041	0.02	3.4	15.4	2.0
1,2-Dichlorobenzene	95-50-1	210	880	4.2	12.0	2.0
1,3-Dichlorobenzene	541-73-1	NE	NE	3.9	12.0	2.0
1,4-Dichlorobenzene	106-46-7	0.22	1.1	3.8	12.0	2.0
Dichlorodifluoromethane	75-71-8	100	440	3.3	9.8	2.0
1,1,Dichloroethane	75-34-3	1.5	7.7	1.1	8.1	2.0
1,2-Dichloroethane	107-06-2	0.094	0.47	1.9	8.1	2.0
1,1-Dichloroethene	75-35-4	1.5	7.7	1.3	7.9	2.0
cis-1,2-Dichloroethene	156-59-2	NE	NE	2.4	7.9	2.0
1,2-Dichloropropane	78-87-5	0.24	1.2	2.4	9.2	2.0
cis-1,3-Dichloropropene	10061-01-5	NE	NE	3.4	9.1	2.0
trans-1,3-Dichloropropene	10061-02-6	NE	NE	2.2	9.1	2.0
Ethylbenzene	100-41-4	0.97	4.9	2.9	8.7	2.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	NE	NE	2.2	14.0	2.0
Hexachlorobutadiene	87-68-3	0.11	0.56	8.3	110	10
Methylene Chloride	75-09-2	5.2	26	1.6	17.0	5.0
1,2,4-Trichlorobenzene	120-82-1	2.1	8.8	7.3	14.8	2.0
Styrene	100-42-5	1000	4400	2.5	8.5	2.0
1,1,2,2-Tetrachloroethane	79-34-5	0.042	0.21	4.2	14.0	2.0
Tetrachloroethene	127-18-4	0.41	2.1	2.7	14.0	2.0
Toluene	108-88-3	5200	22000	2	7.5	2
1,1,1-Trichloroethane	71-55-6	5200	22000	1.6	11.0	2.0
1,1,2-Trichloroethane	79-00-5	0.15	0.77	2.9	11.0	2.0
Trichloroethene	79-01-6	1.2	6.1	1.9	11.0	2.0
Trichlorofluoromethane	75-69-4	730	3100	1.3	11.0	2.0
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	31000	130000	2.4	15.0	2.0
1,2,4-Trimethylbenzene	95-63-6	7.3	31	3.1	9.8	2.0
1,3,5-Trimethylbenzene	108-67-8	NE	NE	3.2	9.8	2.0
Vinyl chloride	75-01-4	0.16	2.8	1.8	5.1	2.0
m-Xylene & p-Xylene	136777-61-	100	440	5.2	8.7	2.0
o-Xylene	95-47-6	100	440	2.6	8.7	2.0

Notes:

1 USEPA Compendium Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/ Mass Spectrometry (GC/MS).* January 1999

2 USEPA Regional Screening Levels

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Table 4. Sample Containers, Preservation, and Holding Times, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Parameter	Method	Bottle Type	Preservation	Holding Time
Surface Water/Groundwater				
Volatile Organic Compounds	8260 [1]	3 - 40 ml glass vials with Teflon®-lined lid w/ septum	Cool <6°C; pH <2 w/HCl	14 days to analysis
Acid Sensitive VOCs		2-40 ml glass vials with Teflon®-lined lid w/ septum	Cool <6°C	7 days to analysis
Semivolatile Organic Compounds	8270 [1]	2 - 1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C	7 days to extraction 40 days to analysis
Organochlorine Pesticides	8081A	2 - 1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C	7 days to extraction 40 days to analysis
Polychlorinated biphenyls (PCBs)	8082	2 - 1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C	7 days to extraction 40 days to analysis
Herbicides	8151A	2 - 1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C	7 days to extraction 40 days to analysis
PCDDs/PCDFs	8290	2 - 1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C	30 days to extraction 45 days to analysis
Total Metals (including Mercury)	6020, 7470A [1]	1-250 ml plastic	pH < 2 w/ HNO3	6 months Metals 28 days Mercury
Cyanide, Total	9012A	1-250 ml plastic	Cool <6°C; pH > 10 w/ NaOH	14 days to analysis
Sulfide, Total	9034	2-250 ml plastic	Cool <6°C; Zinc Acetate & NaOH (pH > 9)	7 days to analysis
Dioxathion	BATCO 088.1	1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C Protect from Light	7 days to extraction 6 months to analysis
Drinking (Potable) Water				
Volatile Organic Compounds	524.2, 504.1, and 8260 [1]	6 - 40 ml glass vials with Teflon®-lined lid w/ septum 1-250 clear glass bottle (for dechlorination)	Dechlorinate w/ ascorbic acid; preserve to pH < 2 w/ HCl	14 days to analysis
Acid Sensitive VOCs		4-40 ml glass vials with Teflon®-lined lid w/ septum	Cool <6°C	7 days to analysis
Semivolatile Organic Compounds	525.2 and 8270 [1]	4 - 1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C	7 days to extraction 40 days to analysis
Organochlorine Pesticides	508 and 8081A	4 - 1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C	7 days to extraction 40 days to analysis
Polychlorinated biphenyls (PCBs)	508	2 - 1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C	7 days to extraction 40 days to analysis
Herbicides	515.1	2 - 1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C	7 days to extraction 40 days to analysis
PCDDs/PCDFs	1613	2 - 1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C	1 year to extraction 1 year to analysis
Total Metals (including Mercury)	200.8, 200.7, 245 and 6020 [1]	2-250 ml plastic	pH < 2 w/ HNO3	6 months Metals 28 days Mercury
Cyanide, Total	4500A	1-250 ml plastic	Cool <6°C; pH > 10 w/ NaOH	14 days to analysis
Sulfide, Total	4500	2-250 ml plastic	Cool <6°C; Zinc Acetate & NaOH (pH > 9)	7 days to analysis
Dioxathion	BATCO 088.1	1 liter amber glass bottle with Teflon®-lined lid	Cool <6°C Protectfrom Light	7 days to extraction 6 months to analysis

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Table 4. Sample Containers, Preservation, and Holding Times, Quality Assurance Project Plan, Hercules Incorporated, Hattiesburg Facility, Hattiesburg, Forrest County, Mississippi.

Parameter	Method	Bottle Type	Preservation	Holding Time
Sediment				
Volatile Organic Compounds	8260 [1]	**Bulk**: 1 - 4 oz. wide-mouth glass jar	Cool <6°C	14 days to analysis
		Encore: 3 - 5 g samplers	Cool <6°C; lab preserve w/in 48 hours	
		Terracore: 2-DI & 1-MeOH 40 ml glass vials w/ septum	Cool <6°C; lab preserve w/in 48 hours	
Semivolatile Organic Compounds	8270 [1]	1 - 8 oz. wide-mouth glass jar	Cool <6°C	14 days to extraction 40 days to analysis
Organochlorine Pesticides	8081A	1 - 8 oz. wide-mouth glass jar	Cool <6°C	14 days to extraction 40 days to analysis
Polychlorinated biphenyls (PCBs)	8082	1 - 8 oz. wide-mouth glass jar	Cool <6°C	14 days to extraction 40 days to analysis
Herbicides	8151A	1 - 8 oz. wide-mouth glass jar	Cool <6°C	14 days to extraction 40 days to analysis
PCDDs/PCDFs	8290	1 - 8 oz. wide-mouth glass jar	Cool <6°C	30 days to extraction 45 days to analysis
Total Metals (including Mercury)	6020, 7471A [1]	1 - 8 oz. wide-mouth plastic jar	Cool <6°C	6 months Metals 28 days Mercury
Cyanide, Total	9012A	1 - 8 oz. wide-mouth plastic jar	Cool <6°C	14 days to analysis
Sulfide, Total	9030B/9034 [1]	1 - 8 oz. wide-mouth plastic jar	Cool <6°C	7 days to analysis
Dioxathion	BATCO 088.1	1 - 8 oz. wide-mouth glass bottle with Teflon®-lined lid	Cool <6°C Protect from Light	14 days to extraction 6 months to analysis
Indoor Air/Soil Gas				
Volatile Organic Compounds	TO-15 [3]	600 L Canister	NA	30 days to analysis

Notes:

1 USEPA. Office of Solid Waste and Emergency Response. *Test Methods for Evaluating Solid Waste. SW-846 3rd ed. Washington, D.C. 1996.*

2 USEPA Compendium Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mas Spectrometry (GC/MS).* January 1999

3 All holding times are measured from date of collection.

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Appendix A

EQuIS Lab SOP

INTRODUCTION

ARCADIS manages and verifies/validates analytical data generated by commercial analytical laboratories in the EQuIS database (product of Earthsoft, Inc.). All laboratories contracted by ARCADIS or their clients, on a site-by-site basis, may be required to submit electronic data deliverables (EDDs) in addition to the hard copy report. This Standard Operating Procedure (SOP) describes the structure, format, and submission requirements for electronic data deliverables (EDDs) in the EQuIS EFWEDD (Sample, Test, Result, Batch) format.

This document is a general guidance for preparation of the required electronic data and associated quality control information. The structure of the EDD as defined in this document will remain constant unless Earthsoft modifies the database structure. Reference values and requirements for population of additional fields with specific information will not change from project to project.

Modification to reference value lists may NOT be made by the laboratory without authorization from ARCADIS.

Section I provides ARCADIS contact information and the procedure to submit electronic deliverables directly via e-mail. However, all EDDs will be required to be submitted in a final CD compilation for each specific sampling event or as directed by the ARCADIS Project Manager (PM).

Section II outlines the table structures and general requirements of the EDDs. The EDD structure is based on EarthSoft's EFWEDD EDD format. EarthSoft's EDD format has not been changed; however, some 'optional' fields identified in the EarthSoft EDD have been modified to be 'required' in this EDD format. Additional information regarding the EarthSoft products can be found at http://www.earthsoft.com/.

Section III presents some additional explanation and requirements for populating the table structure and population set forth in Section II.

Section IV summarizes the use of the EDP. Each laboratory **MUST** use EDP to check each EDD file set prior to submission to ARCADIS. The EDP Error Report must be submitted with the EDD. ***All errors identified by the EDP routine must be corrected prior to forwarding the files for entry into the EQuIS database. Or approval for submittal with errors must be authorized by ARCADIS.***

I. CONTACT INFORMATION

Laboratories should contact the ARCADIS National Program Lab Managers with questions regarding this document. The contact info is as follows:

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ELECTRONIC LABORATORY DATA CHECKER EDP

Prior to submitting an EDD to ARCADIS, the EarthSoft EDP must be run to check and verify the EDD structure, format and reference value compliance. The EDP report must be submitted for each file with each EDD set. The Data Checker error report, which demonstrates that the EDD files were successfully checked, must be electronically submitted with the four EDD files to ARCADIS.

REFERENCE VALUES

A specific set of values is required to be utilized in populating certain key fields of the EDD. The Reference Value Lists for the EDP will be provided for each ARCADIS subcontracted laboratory. The Reference Value Lists must be utilized as provided. Alterations or additions to the Reference Values are **NOT** allowed **without prior** written authorization by the ARCADIS Data Manager. Electronic mail may be considered written authorization.

ELECTRONIC DATA DELIVERABLE (EDD) SUBMISSION

Prior to submission to ARCADIS, each data file must also be reviewed by the laboratory to ensure that the sample IDs, dates, times and other inter-related information is consistent between all four (4) files and the EDD is complete. All parameters that are subcontracted to other laboratories must be included in the EDD for a specific SDG or Laboratory Project Number. It is not acceptable to submit separate EDDs for subcontract parameters. Manual review of the files may be necessary to complete this review.

It is **IMPERATIVE** that the EDD results match the hard copy results. If the results do not match the lab will correct the error ASAP at no additional charge. This includes issues involving various rounding routines for different electronic data management programs within the laboratory (i.e. LIMS vs. EPA CLP). Significant figures must also match hard copy and be consistent from one sampling event to the next. Reporting limits must be consistent between events as well and must be in compliance with the Laboratory Task Order or Project Statement of Work. There may be instances where diluted surrogates and unrecovered spike compounds will require population of the EDD with numeric values in lieu of data flags in the hard copy report. The ARCADIS Data Manager will provide project specific guidance for these conditions. Adherence to the SOP requirements for population of spike/surrogate recovery and RPD fields is required to allow electronic validation of the data.

The EDP Reports for each file must be submitted with the 4 files of the actual EDD.

Laboratories must submit EDDs via e-mail for verification of compatibility and completeness to the assigned ARCADIS Data Manager for the project.

The subject line of this e-mail must include the following text:

[Facility-Code] [Laboratory Project/Log/SDG Number] - EDD Submission

The e-mail should also include the laboratory contact name and phone number.

EDDs must be submitted via e-mail prior to or at the same time the final hard copy document is delivered. ARCADIS may review the EDDs prior to requesting final submittal on CD. EDDs will be returned to the laboratory for modifications until the files can be successfully imported into the EQuIS Project Database and Electronic Data Validation can be performed without field population errors. Any revisions to the EDD will be required within 24 hours of notification to the laboratory regarding observed problems with the EDD. When the EDD is acceptable to the ARCADIS Data Manager and Project Manager, a CD containing all final versions of the EDD should be submitted to ARCADIS for archiving.

Invoices for analytical work will not be approved for payment until the final EDD revisions are acceptable.

II. ELECTRONIC DELIVERABLE DATA FORMAT

This section identifies the structure and format requirements for EQuIS EFWEDD EDDs submitted by all laboratories to ARCADIS. Specific field definitions are presented for each of the four files. Laboratories should review the unique requirements for these fields. The format population and adherence to the criteria are mandatory. Data are electronically validated and errors are quickly identifiable if the EDD is incorrect.

GENERAL FORMAT REQUIREMENTS

All laboratory data must be saved as an ASCII file format using the following standard format. Each subcontracting laboratory's data must be incorporated into the primary laboratory's EDD.

Each data field must be either separated by tabs or enclosed in double quotes (") and separated by commas. Data fields that do not contain information may be represented by two commas. Maximum length of text fields is indicated in the parentheses. If the input information is less than the maximum field length, **DO NOT ADD** spaces to account for the difference.

Each record must be terminated with a carriage return/line feed (i.e., standard DOS text file). The file can be produced using any software with the capability to create ASCII files.

THE LABORATORY SHALL LEAVE THE HEADERS IN EACH ASCII FILE TO ASSIST IN REVIEW AND RESOLUTION OF ERRORS.

Four files are required for each SDG or Laboratory Project Number: one each for samples, tests, results, and batches. Each file must be saved as a Tab Delimited or Comma Separated file.

Enterprise EDD File Naming Conventions
EDD packages must be named using a specific naming convention. An EDD Package consists of a .zip file containing the text (.txt) EDDs and a User Certificate. The zip file and text file names must contain the specific elements listed below under file naming conventions, separated by a period. A User Certificate file will be supplied to the lab by Arcadis for inclusion in the zip file. Please include in the subject line of emailed EDD submissions the facility code and Sample Delivery Group (SDG) number.

File Naming Conventions:
ZIP File Name = Unique ID.Facility Code.Format Name.zip
Text File EDDs Name = Unique ID.EDD Section Name.txt

Unique ID = SDG number.
Facility Code = The facility code (i.e., Site Name from ENFOS)
Format Name = The EQuIS EDD format name (e.g., ESBasic, EFWEDD, etc.).
EDD Section Name = The name of the section within the EDD (e.g. EFW2FSample, EFW2LabTST, etc.).

For example, ZIP File Name = "2009001.BP-99999.EFWEDD.zip" will contain the following files: "2009001.EFW2FSample.txt", "2009001.EFW2LabTST.txt", "2009001.EFW2LabRES.txt", '2009001.EFW2LabBCH.txt' and "pfoos.usr".

Package re-submittal
In order to re-submit corrected EDDs, the .zip file and text (.txt) EDDs must each be renamed. If the example EDD package above were to be re-submitted it would have ZIP File Name = "2009001B.BP-99999.EFWEDD.zip" containing "2009001B.EFW2FSample.txt", "2009001B.EFW2LabTST.txt", "2009001B.EFW2LabRES.txt", '2009001B.EFW2LabBCH.txt' and "pfoos.usr". Note that a "B" has been appended to the SDG name in both the zip file name and each of the text file names. A subsequent re-submittal of the same SDG would require that a C be appended and so on.

Referential integrity is enforced between tables (e.g. sys_sample_code present in the result, batch, and test tables must also be present in the sample table). For example, a data record with a specific sys_sample_code found in the result table, but not in the sample table, will cause and error in the Data Import Module and the file will not be allowed to be entered into the database. Dates and times associated with each test must match in the "Test" and "Result" files or the database will not allow entry of the entire file.

Reference values must be adhered to for a variety of fields as identified in the Reference Value list and described in the following table format requirements.

FORMAT DETAILS

The following four sections provide a detailed summary and the specific layout for each field required in each of the four (4) tables of the EDD. The ARCADIS EDD has been derived from the EarthSoft EFWEDD EDD.

Date is reported as MM/DD/YY (month/day/year) and time as HH:MM (hour:minute). Time must be reported in 24-hour (military) format (3:30 p.m. = 15:30 and 8:30 AM = 08:30 not 8:30). **NOTE:** Make certain that the LIMS systems format the date and time the same way for all files.

The columns in the following 4 tables relate to:

"Number" Column in Tables = Column of EDD table

"Attribute Name" = Column Name
PK after attribute indicates this is a primary key within Access for the table.

"Column Data" Type = Text or Numeric values required. Parenthetical number indicates total allowable number of characters in the field.

"Required" Column:

The column titled 'Required' will contain the text 'Yes' if the field is required to be populated by the laboratory. In addition, a "condition" is added to indicate additional information applying to population of the associated field. The first number of the condition relates to the table in which the condition applies, i.e. 1 is the Sample File, 2 is the Test File, 3 is the Result File, and 4 is the Batch File. Conditions apply as follows:

Condition	Table	Description
0	ALL	Field always required
1-1	SAMPLE	Field required for field samples only not required for laboratory samples
1-2	SAMPLE	Field required (parent_sample_code) for **laboratory** QC samples that have 'parents'
1-3	SAMPLE	Field not required for field samples
2-1	TEST	Field required if applicable for specific test
3-1	RESULT	Field required (result_value) for detected analytes only (TRG or TICs). Must be NULL if non-detect or surrogates, internal standards or spiked compounds
3-2	RESULT	Field required if available or appropriate for result
3-3	RESULT	Field required for matrix spikes or matrix spike duplicates (NOT required for surrogate compounds or LCS samples where the original concentration is assumed to be zero).
3-4	RESULT	Field required for surrogate compounds, LCS, Blank Spikes, Matrix Spikes, and Internal Standards.
3-5	RESULT	Field required for LCS duplicates, Blank Spike Duplicates, Matrix Spike Duplicates, Lab Replicates
3-6	RESULT	Field required for LCSD, BSD, MSD, and Lab duplicate samples
3-7	RESULT	Field required for surrogates and spike compounds
4-1	BATCH	Field required if available or appropriate for result

"REQUIRED":

"YES" = Required data if applicable

"NO" = Optional information unless otherwise directed by ARCADIS Data Manager or preferred for insertion by lab except where lab is specifically directed to leave the field Null.

Parent Sample Definition

Parent Samples are base samples for duplicates or spikes. i.e. original field samples used for matrix spikes or field sample used for Lab Duplicate/Replicate. A Matrix Spike is not the Parent Sample of the Matrix Spike Duplicate.

POPULATING SPIKE FIELDS

SURROGATES: surrogate recoveries are to be populated in qc_spike_added, qc_spike_measure, and qc_spike_recovery fields. Surrogates are analyte type = SUR. Control limits for surrogate recoveries must also be populated.

INTERNAL STANDARDS: internal standard values are to be populated in qc_spike_added, qc_spike_measure, and qc_spike_recovery fields. Internal Standards are analyte type = IS.

LCS, BS, and MS COMPOUNDS: recoveries are to be populated in qc_spike_added, qc_spike_measured, and qc_spike_recovery fields. Compounds spiked to evaluate method accuracy are analyte type = SC. Control limits for spike recoveries must also be populated.

LCSD, BD, AND MSD COMPOUNDS: recoveries are to be populated in qc_dup_spike_added, qc_dup_spike_measured, and qc_dup_spike_recovery fields. The Compounds spiked to evaluate method accuracy are analyte type = SC. Control limits for spike recoveries must also be populated. Additionally, the qc_rpd and qc_rpd_cl fields must be populated for these samples.

LAB REPLICATE SAMPLE DATA: values for lab duplicates/replicates are to be populated in qc_dup_spike_measured field. The qc_rpd and qc_rpd_cl fields must be populated for these samples.

III. ADDITIONAL REQUIREMENTS

SAMPLE TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
1	sys_sample_code	Text(40)	Yes (0)	Unique sample identifier (COC Sample ID). Each sample must have a unique value, including spikes and duplicates. Unique sample identifiers **throughout** the database are an **ABSOLUTE** restriction enforced by EQuIS Chemistry. This unique identifier also carries through to each subsequent sampling event where the samples IDs must be unique for EVERY event of the project (continuing years). Laboratory QC samples must also have unique identifiers between sampling event and from 1 year to the next and between laboratories in the event subcontractors are used. For Matrix Spike, Matrix Spike Duplicate, and Laboratory Duplicates of Field Samples, add the suffix **MS, MSD, and LR**, respectively to create unique identifiers for these types of Lab QC samples.
2	sample_name	Text(30)	No	Additional sample identification information as necessary. Is not required to be unique (i.e., duplicates are OK).

SAMPLE TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
3	sample_matrix_code	Text(10)	Yes (0)	Code, which distinguishes between different types of sample matrix. **Examples**: Soil samples ="SO" , groundwater samples = "WG". Field Blanks, Trip Blanks, and Rinsate Blanks = "WQ". Water Method Blanks and liquid matrix spikes = "WQ" Soil Method Blanks and soil/sludge/sediment matrix spikes = "SQ' This field refers to the sample matrix not the matrix after preparation or extraction. See rt_matrix for the list of valid values.
4	sample_type_code	Text(10)	Yes (0)	Code that distinguishes between different types of samples. **For example**, normal field samples = "N" and laboratory method blank ="LB". Field QC sample types are Field Duplicates = "FD", Field Blanks = "FB", Trip Blanks = "TB". Lab QC sample types are LCS or Blank Spikes = "BS", LCSD or BS Duplicates = "BD" and Matrix Spikes = "MS" and Matrix Spike Duplicates = "SD". See rt_sample_type in Reference Values list of valid values.
5	sample_source	Text(10)	Yes (0)	Must be either "Field" for field samples **or** "Lab" for laboratory QC samples. No other values are allowed. Matrix spikes and lab duplicate/replicate are "Lab" samples, even though the parent is a "Field" and the base sample came from the field. The spiking or splitting for duplication is done in the lab. Field duplicates as submitted to the lab by field sampling teams are "Field"
6	parent_sample_code	Text(40)	Yes (1-2)	The value in the "sys_sample_code" that identifies the sample that was the source of this sample. *For example*, the Matrix Spike and the Matrix Spike Duplicate or Lab Replicates parent_sample_code is the sys_sample_code for the originating field sample that is spiked to generate the MS/MSD or split by the lab for use as the laboratory duplicate. This field is only required in the EDD for laboratory "clone" samples (e.g., matrix spikes and duplicates). Field duplicates are submitted blind to the laboratory, so this field cannot be completed by the laboratory. This field must be blank for samples that have no parent (e.g., normal field samples, method blanks, etc.).
7	sample_delivery_group	Text(10)	Yes (0)	Sample delivery group or laboratory Project/Log Number. All deliverables must reference the SDG or Lab Log-in Number. **This field MUST BE POPULATED**
8	sample_date	Date	Yes (1-1)	Date of sample collection in **MM/DD/YY** format including trip blanks. Must be blank for laboratory samples.
9	sample_time	Time	Yes (1-1)	Time of sample collection in 24-hour (military) **HH:MM** format. 8:45 AM = 08:45 and 3:30 PM = 15:30. Must be blank for laboratory samples.

SAMPLE TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
10	sys_loc_code	Text(20)	No	Sample collection location. To be populated by ARCADIS unless otherwise directed at project initiation.
11	start_depth	Double	No	Beginning depth (top) of soil sample. To be populated by ARCADIS unless otherwise directed at project initiation.
12	end_depth	Double	No	Ending depth (bottom) of soil sample. To be populated by ARCADIS unless otherwise directed at project initiation.
13	depth_unit	Text(15)	No	Unit of measurement for the sample begin and end depths. IRPIMS-style unit of measurement codes (see table X03) are recognized by Chem; other codes may be allowed by the Chem project manager. To be populated by ARCADIS unless otherwise directed at project initiation.
14	chain_of_custody	Text(15)	Yes (1-1)	Chain of custody identifier or number. A single sample may be assigned to only one chain of custody. The COC identifier will be provided by the field sampling team based on conventions established for a specific project.
15	sent_to_lab_date	Date	No	Date sample was sent to lab (in MM/DD/YY format for EDD).
16	sample_receipt_date	Date	Yes (1-1)	Date that sample was received at laboratory in **MM/DD/YY** format. Must be blank for laboratory samples.
17	sampler	Text(30)	No	Name or initials of sampler.
18	sampling_company_ code	Text(10)	Yes (1-1)	Name or initials of sampling company (no controlled vocabulary). "ARCADIS" should be entered into this field unless otherwise directed at project initiation.
19	sampling_reason	Text(30)	No	Optional reason for sampling. No controlled vocabulary is enforced.
20	sampling_technique	Text(40)	No (1-1)	To be populated by ARCADIS unless otherwise directed at project initiation. Sampling technique. **For example**, low flow, bailing, MIP, etc... Must be blank for laboratory samples.
21	task_code	Text(10)	No	Code used to identify the task under which the field sample was retrieved.
22	collection_quarter	Text(5)	No	Quarter of the year sample was collected (e.g., "1Q96")
23	composite_yn	Text(1)	No	Boolean field used to indicate whether a sample is a composite sample.
24	composite_desc	Text(255)	No	Description of composite sample (if composite_yn is YES).

SAMPLE TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
25	sample_class	Text(10)	No	Navy sample class code.
26	custom_field_1	Text(255)	No	Custom sample field
27	custom_field_2	Text(255)	No	Custom sample field
28	custom_field_3	Text(255)	No	Custom sample field
29	comment	Text(255)	Yes (0)	Field required to contain the full sample ID code.
30	sample_receipt_time	Text(5)	Yes (1-1)	Time of sample receipt by laboratory in 24-hour (military) **HH:MM** format. 8:45 AM = 08:45 and 3:30 PM = 15:30

TEST TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
1	sys_sample_code (PK)	Text (40)	Yes (0)	SAME AS #1 IN SAMPLE TABLE. This value is used in enforcing referential integrity between tables. Must match sys_sample_code in Sample Table.
2	lab_anl_method_name (PK)	Text (35)	Yes (0)	Laboratory analytic method name or description. See rt_analytic_method in reference value tables for list of valid values.
3	analysis_date (PK)	Date/ Time	Yes (0)	Date of sample analysis in MM/DD/YY format. Refers to initiation of the analysis not prep method date.
4	analysis_time (PK)	Text (5)	Yes (0)	Time of sample analysis in 24-hour (military) HH:MM format. Note that this field, combined with the "analysis_date" field is used to distinguish between reextractions, reanalyses, and dilutions. Please ensure that retests have "analysis_date" and/or analysis_time" different from the original test event (and complete test_type field as appropriate).
5	total_or_dissolved (PK)	Text (1)	Yes (0)	"T" for total metal organic carbon concentration, "D" for dissolved or filtered metal or organic carbon concentration ONLY. USE "N" for organic (or other) constituents for which neither "total" nor "dissolved" is applicable including TDS.
6	column_number (PK)	Text (2)	Yes (2-1)	Applicable for GC or HPLC methods. "1C" for first column analyses, "2C" for second column analyses, or "NA" for analyses where not applicable. If any "2C" tests are listed, then there must be corresponding "1C" tests present also. Laboratories must indicate which of the two columns is to be considered "primary" by entering "Y" in the "reportable_result" field of the result table for the result presented in hard copy reports. It is NOT acceptable to identify both "1C" and "2C" reportable_result as "Y:; one must be "N" if "1C" and "2C" are provided in the EDD.

TEST TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
7	test_type (PK)	Text (10)	Yes (0)	Type of test. Valid values include "initial", "reextract", and "reanalysis", "dilution" are acceptable. See rt_test_type for al valid values.
8	lab_matrix_code	Text (10)	Yes (0)	Code that distinguishes between different types of matrix analyzed. Soil = "SO"; groundwater = "GW" and TCLP = TCLP as a lab matrix. See rt_matrix for valid values
9	analysis_location	Text (2)	Yes (0)	"LB" for fixed-based laboratory analysis, "FI" for field instrument, "FL" for mobile field laboratory analysis, or.
10	basis	Text (10)	Yes (0)	"Wet" for wet-weight basis; or "Dry" for dry-weight basis. For tests for which this distinction is not applicable use Wet
11	container_id	Text (30)	No	Sample container identifier.
12	dilution_factor	Single	Yes (0)	Test or analytical run dilution factor. **Must** be "1" if no dilution.
13	Prep_method	Text (35)	Yes (2-1)	Laboratory sample preparation method name. See rt_std_prep_method for valid values.
14	prep_date	Date/ Time	Yes (2-1)	Date of sample preparation in MM/DD/YY format.
15	prep_time	Text (5)	Yes (2-1)	Time of sample preparation in 24-hour (military) HH:MM format
16	leachate_method	Text (15)	Yes (2-1)	Method name, e.g., SW1311 or SW1312. See rt_analytic_method for valid values.
17	leachate_date	Date/ Time	Yes (2-1)	Date of leachate preparation in MM/DD/YY format.
18	leachate_time	Text (5)	Yes (2-1)	Time of leachate preparation in 24-hour (military) HH:MM format.
19	lab_name_code	Text (10)	Yes (0)	Unique identifier of the laboratory reporting results. See rt_subcontractor for valid values.
20	qc_level	Text (10)	NO	Not populated by Lab.
21	lab_sample_ id	Text (20)	Yes (0)	Laboratory sample identifier. A field sample may have more than one laboratory lab_sample_id; however it is limited to only ONE lab_sample_id per method).
22	percent_moisture	Text (5)	Yes (2-1)	Percent moisture of the sample portion used in the specific lab_anl_methd_name test; this value may vary from test to test for any sample. The value must be NUMERIC as "NN.MM", e.g., 70.1% could be reported as "70.1" but not as 70.1%". The database assumes that the number is a "%" and units of measure are not necessary. **NOTE: This field MUST be populated for all soil, sludge, and sediment samples whether or not the value is reported in the hard copy. Use "0" for lab soil QC samples.**
23	subsample_amount	Text (14)	Yes 0)	Amount of sample used for the test. THIS FIELD MUST BE POPULATED
24	subsample_amount_unit	Text (15)	Yes (0)	Unit of measurement for subsample amount. See rt_unit for valid values.

TEST TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
25	analyst_name	Text (30)	Yes (0)	Name or initials of laboratory analyst.
26	instrument_lab	Text (50)	Yes (0)	Instrument identifier.
27	comment	Text (255)	NO	Comments about the test as necessary (Optional).
28	preservative	Text (50)	Yes (2-1)	Indicate preservative or leave blank, if none. **THIS FIELD MUST BE POPULATED IF A PRESERVATIVE WAS IN THE SAMPLE AS RECEIVED FROM THE FIELD OR IF THE SAMPLE WAS PRESERVED BY THE LABORATORY BEFORE PREPARATION AND ANALYSIS.**
29	final_volume	Text (15)	Yes (2-1)	Final amount of extract or digestate.
30	final_volume_unit	Text (15)	Yes (2-1)	Unit of measure for final_volume. See rt_unit for valid values.

RESULT TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
1	sys_sample_code (PK)	Text (40)	Yes (0)	SAME AS #1 IN SAMPLE & TEST TABLES. This value is used in enforcing referential integrity between tables.
2	lab_anl_method_name (PK)	Text (35)	Yes (0)	Laboratory analytic method name. Must be same as lab_anl_method_name in Test File. See rt _analytic_method for valid values.
3	analysis_date (PK)	Date/Time	Yes (0)	Must be the SAME AS #3 IN THE TEST TABLE. This value is used in enforcing referential integrity between tables. Date of sample analysis in MM/DD/YY format.
4	analysis_time (PK)	Text (5)	Yes (0)	Must be the SAME AS #4 IN THE TEST TABLE. This value is used in enforcing referential integrity between tables.
5	total_or_dissolved_ (PK)	Text (1)	Yes (0)	Must be the SAME AS #5 IN THE TEST FILE.
6	column_number (PK)	Text (2)	Yes (3-2)	Must be the SAME AS #6 IN THE TEST FILE
7	test_type (PK)	Text (10)	Yes (0)	Must be the SAME AS #7 IN THE TEST FILE
8	cas_rn (PK)	Text (15)	Yes (0)	Chemical Abstracts Number for the parameter if available. This must be the true CAS # and "not made up". Where CAS #s are not available, i.e. wet chem. Parameters, identifiers will be provided by ARCADIS project requirements. See notes at end of section for TIC management. See rt_analyte for valid values. The lab is not authorized to add internally developed "CAS #s" for general chemistry parameters, surrogates, internal standards, TICs. CAS#s used for TICs must be available through an outside source such as "Chemfinder".
9	chemical_name	Text (60)	Yes (0)	Chemical name associated with CAS # in #8. The cas_rn field is the only chemical identifier information actually imported in EQuIS Chemistry.

RESULT TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
10	result_value	Text (20)	Yes (3-1)	Analytical result reported for **"TRG" or "TIC"** result_type **ONLY**. Appropriate and consistent number of significant digits must be entered. **MUST BE BLANK FOR NON-DETECTS.** "SUR", "IS", and "SC" results do **NOT** populate this field (populate the QC fields).
11	result_error_delta	Text (20)	Yes (3-2) [Radiochem)	Error range applicable to the result value for radiochemistry results.
12	result_type_code	Text (10)	Yes (0)	Must be either "TRG" for a target or regular results, "TIC" for tentatively identified compounds, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds.**[LCS, LCSD, MS, MSD, BS, BSD]**
13	reportable_result	Text (10)	Yes (0)	Must be either "**Yes**" for results, which are considered to be reportable, **or "No"** for other results. Used to distinguish between multiple results where a sample is retested after dilution or to indicate which of the first or second column result should be considered primary. For re-analyses and dilutions all results must be entered into the database if hard copy data is provided **BUT ONLY ONE RESULT FOR EACH COMPOUND/ANALYTE MAY BE FLAGGED AS REPORTABLE.**
14	detect_flag	Text (2)	Yes (0)	Either "Y" for detected analytes or "N" for non-detects. **MUST be "N" for NON-DETECTS.**
15	lab_qualifiers	Text (7)	Yes (3-2)	Qualifier flags assigned by the laboratory. See rt_qualifier for valid qualifiers that may be used.
16	Organic_ yn	Yes/No	Yes (0)	Must be either "Y" for organic constituents or "N" for inorganic constituents.
17	method_detection_ limit	Text (20)	Yes (0)	Laboratory determined MDL per 40 CFR Part 136, adjusted for dilutions and percent moisture (if it applies).
18	reporting_detection_ limit	Text (20)	Yes (0)	Detection limit that reflects sample analysis conditions including analysis volumes and dilution factors. This should be the laboratory PQL or standard reporting limits
19	quantitation_limit	Text (20)	No	NOT Currently used unless specifically defined for the project.
20	Result_unit	Text (15)	Yes (0)	Units of measure relates to **ALL** results including result_value, qc_original_concentration, qc_spike added, qc_spike_measured, qc_dup_orginal_conc, qc_dup_spike_added, qc_dup_spike_measured. See rt_unit for valid values.
21	detection_limit_unit	Text (15)	Yes (0)	Units of measure for detection limit(s). See rt_unit for valid values.
22	tic_retention_time	Text (8)	Yes (3-2)	Retention time in minutes for tentatively identified compounds (TICs). Populated only for TIC result_type
23	result_comment	Text (255)	NO	MUST BE LEFT BLANK BY THE LAB

RESULT TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
24	qc_original_conc	Text (14)	Yes (3-3)	The concentration of the analyte in the original (unspiked) sample. Populated for matrix spike samples. Not populated where original concentration is assumed to be zero, i.e. LCS or BS samples.
25	qc_spike_added	Text (14)	Yes (3-4)	The concentration of the analyte added to the original sample. Populated for **ALL** Surrogates, and LCS, BS, and MS samples
26	qc_spike_measured	Text (14)	Yes (3-4)	The measured concentration of the analyte. Use zero for spiked compounds that were not detected in the sample. **MUST BE NUMBERIC** even if diluted out or not recovered (use "0" if diluted, matrix interference, elevated concentrations of target compounds, etc.) Populated for **ALL** Surrogates, and LCS, BS, and MS samples
27	qc_spike_recovery	Text (14)	Yes (3-4)	The percent recovery for "SUR" and "SC" results. **MUST BE NUMERIC** even if diluted out or not recovered (use "0" if diluted, matrix interference, elevated concentrations of target compounds, etc.) Report as percentage (e.g., report "120%" as "120"); DO NOT include "%" sign in field. Populated for **ALL** Surrogates, and LCS, BS, and MS samples
28	qc_dup_original conc	Text (14)	Yes (3-5)	The concentration of the analyte in the original (unspiked) sample. Populated for matrix spike duplicate samples. Not populated where original concentration is assumed to be zero, i.e. LCSD or BSD samples.
29	qc_dup_spike_added	Text (14)	Yes (3-5)	The concentration of the analyte added to the original sample. Populated for **ALL** LCSD, BSD, and MSD samples.
30	qc_dup_spike_measured	Text (14)	Yes (3-5)	The measured concentration of the analyte in the duplicate. Populated for **ALL** LCSD, BSD, and MSD samples. MUST be NUMERIC. Use zero for spiked compounds that were not recovered due to dilution, matrix interference, elevated concentrations of target compounds, etc..
31	qc_dup_spike_recovery	Text (14)	Yes (3-5)	The duplicate percent recovery. Populated for **ALL** LCSD, BSD, and MSD samples. **MUST be NUMERIC.** Use zero for spiked compounds that were not recovered due to dilution, matrix interference, elevated concentrations of target compounds, etc Report as percentage (e.g., report "120%" as "120").
32	qc_rpd	Text (8)	Yes (3-6)	The relative percent difference between MS and MSD, LCS and LCSD, BS and BSD, & primary field sample result and Lab Replicate. Populated for **ALL** LCSD, BSD, MSD, and LR samples. **MUST be NUMERIC.** Use zero for RPDs that were not calculated due to elevated concentrations of target compounds, dilution, matrix interference, etc Report as percentage (e.g., report "120%" as 120").
33	qc_spike_lcl	Text (8)	Yes (3-7)	Lower control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as

RESULT TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
				percentage (e.g., report "120%" as "120").
34	qc_spike_ucl	Text (8)	Yes (3-7)	Upper control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage (e.g., report "120%" as "120").
35	qc_rpd_cl	Text (8)	Yes (3-6)	Relative percent difference control limit. Required for any duplicated sample. Report as percentage (e.g., report "120%" as "120").
36	qc_spike_status	Text (10)	Yes (3-4)	Used to indicate whether the spike recovery was within control limits. Use the "+" character to indicate failure, otherwise leave blank.
37	qc_dup_spike_status	Text (10)	Yes (3-5)	Used to indicate whether the duplicate spike recovery was within control limits. Use the "+" character to indicate failure, otherwise leave blank.
38	qc_rpd_status	Text (10)	Yes (3-6)	Used to indicate whether the relative percent difference was within control limits. Use the "+" character to indicate failure, otherwise leave blank. Required for any duplicated sample.

BATCH TABLE				
Num	**Attribute Name**	**Column Datatype**	**Required**	**Attribute Definition**
1	sys_sample_code (PK)	Text (40)	Yes (0)	SAME AS #1 IN SAMPLE , TEST TABLE. This value is used in enforcing referential integrity between tables.
2	lab_anl_method_name (PK)	Text (35)	Yes (0)	SAME AS #2 IN TEST TABLE. See rt _analytic_method for valid values.
3	analysis_date (PK)	Date	Yes (0)	SAME AS #3 IN TEST TABLE. This value is used in enforcing referential integrity between tables. Date of sample analysis in MM/DD/YY format. May refer to either beginning or end of the analysis as required by EQuIS Chemistry project manager.
4	analysis_time (PK)	Text (5)	Yes (0)	SAME AS #4 IN TEST, AND RESULT TABLES. This value is used in enforcing referential integrity between tables.
5	total_or_dissolved (PK)	Text (1)	Yes (0)	SAME AS #5 IN TEST TABLE. This value is used in enforcing referential integrity between tables.
6	column_number (PK)	Text (2)	Yes (4-1)	SAME AS #6 IN TEST TABLE. This value is used in enforcing referential integrity between tables.
7	test_type (PK)	Text (10)	Yes (0)	SAME AS #7 IN TEST TABLE. This value is used in enforcing referential integrity between tables.
8	test_batch_type (PK)	Text (10)	Yes (0)	Lab batch type. Valid values include "Prep", "Analysis", and "Leach". Additional valid values may optionally be provided by the EQuIS Chemistry project manager. This is a required field for all batches.
9	test_batch_id	Text (20)	Yes (0)	Unique identifier for all and each lab batches. Must be unique within EQuIS Chemistry database. For example, the same identifier cannot be used for a prep batch and an analysis batch and the values must be different from one sampling event to another. THIS IDENTIFIER CANNOT BE USED FROM ONE YEAR TO THE NEXT.

ADDITIONAL INFORMATION FOR PREPARING THE 4-FILE EDD

SAMPLE FILE AND SYS_SAMPLE_CODE

1. The sys_sample_code is the unique sample ID as supplied on the Chain of Custody form with the same spacing as identified on the COC or on a supplemental Sample ID list submitted to the laboratory with the Laboratory Task Order or prior to submission of samples.

2. In order to uniquely identify MS/MSD, laboratory duplicates, TCLP, and SPLP samples, the laboratory shall add a suffix to the original sample ID listed on the chain of custody:

   Matrix Spike Sample = xxxxx MS
   Matrix Spike Duplicate Sample = xxxxx MSD
   Lab Duplicate/Replicate = xxxxx LR
   TCLP Extract Sample = xxxxx TCLP
   SPLP Extract Sample = xxxxx SPLP

   These are the only characters that are allowed to be amended to ANY sample ID as listed on the COC or the sample ID list referred to above.
   The parent_sample_code shall be entered into the parent_sample_code field of the Sample File.

3. If the sample_name field is provided it must contain the full sample ID from the chain of custody.

4. Sample_Type_Code must be appropriately applied as follows:
   "N" = normal field samples
   "FD" = field duplicates samples submitted blind to the laboratory
   "TB" = trip blanks
   "FB" = field blanks
   "EB" = rinsate or equipment blanks
   "BS" = laboratory control samples or blank spikes
   "BD" = laboratory control sample duplicates or blank spike duplicates
   "MS" = matrix spikes
   "SD" = matrix spike duplicates
   "LR" = laboratory duplicates or laboratory replicates

5. The following "**matrix_type**" codes must be used ("**SQ**" = soil QC sample and "**WQ**" = water QC sample):
   Method Blank = "SQ" or "WQ"
   MS/MSDs = "SQ" or "WQ"
   LCS/LCSDs = "SQ" or "WQ"
   BS/BSDs = "SQ" or "WQ"

6. SDG Numbers or laboratory Log Numbers (per ARCADIS PM direction) **MUST** be populated in "**sample_delivery_group**" field of the **Sample File.**

QUALITY CONTROL SAMPLES AND DATA

7. The source of Lab Duplicates, Lab Replicates, Matrix Spikes, and Matrix Spike Duplicates is the Lab not the Field even if the MS/MSD are identified on the COC by the field sampling team. The samples are spiked in the laboratory not in the field.

8. Laboratory QC data, which span more than one SDG may be submitted with each appropriate SDG.

9. Laboratory LCS and LCSD should be reported as two separate samples.

10. **Matrix Spike and Matrix Spike Duplicate recoveries must be reported as "0" if the value is not calculated due to concentrations of the spiked analyte in the sample at concentrations above the 4X factor.**

11. **All laboratory method performance site-specific and batch Quality Control sample results (i.e. Method Blanks, LCS/LCSDs, Blank Spikes, Leachate Blanks as method appropriate) must be included in the EDD.** For most projects, this does **NOT** include **non-site-specific** matrix spikes and laboratory duplicates/replicates.

12. Laboratory batch sample duplicate/replicate and MS/MSD results from **non-project specific** samples (i.e. batch QC samples) shall **NOT** be included in the EDD.

13. Surrogates populate the qc_spike fields not qc_dup_spike fields or the result_value field even if the surrogates are reported for MSD, BSD, or LCSD samples.

14. QC_Spike_Added values for Spike, IS and Surrogate compounds are REQUIRED.

15. QC_Spike_Measured values for Spike, IS and Surrogate compounds are REQUIRED.

16. RPDs for LCSDs, BSDs, MSDs, and Laboratory Duplicates must be populated in the "**qc_rpd**" field. A value of "0" or "100" must be reported, as appropriate, if the RPD is not calculated due to excessive concentrations or interference present in the sample. The "**qc_rpd**" must be a numeric entry.

17. The RPD control limit must be listed in the "**rpd_cl**" field for all parameters where an RPD is reported. This includes lab duplicate/replicate samples.

SAMPLE FILE

18. The following "**matrix_type**" codes must be used for QC samples ("**SQ**" = soil QC sample and "**WQ**" = water QC sample):

    Method Blank = "SQ" of "WQ"
    MS/MSDs = "SQ" or "WQ"
    LCS/LCSDs = "SQ" or "WQ"
    BS/BSDs = "SQ" or "WQ"

19. SDG or Laboratory Project numbers must be populated in "sample_delivery_group" field.

TEST FILE

20. Percent moisture must be reported in the "**percent_moisture**" field in the **Test File** for all solid samples (i.e., soil, sediment, and sludge).

21. Subsample weights and final volumes must be listed for all parameters as appropriate.

RESULTS FILE

22. Result_value is only populated with data for "TRG" and "TIC" detections. All other data is entered in the "qc_" fields. The field must be "NULL" for non-detects and other analyte_types. The Reporting Limit must not be entered in this field.

23. Non-detected data shall have a lab_qualifier of "U" in addition to other qualifiers deemed applicable. The Detect_Flag shall be "N" and the Result_value field shall be blank.

24. The Reporting Limit must be provided for all parameters. The RL MUST be adjusted for dilutions made during analysis.

25. Surrogate recoveries MUST BE REPORTED in the qc_spike_measured and qc_spike_recovery fields, even if the surrogate had been diluted out. List "0" as the measured and recovered amount. Control Limits must also be entered for surrogates. Surrogates are "SUR" analyte_type not "TRG".

26. Surrogate, LCS, LCSD, BS, BSD, MS, and MSD detected concentrations, and percent recoveries must be populated with a numeric value. A value of "0" **must** be entered if the Spiked Compound is diluted out or not recovered. An "+" is unacceptable as this is a numeric field.

27. "**QC_original_concentration**" must be populated for matrix spikes and matrix spike duplicates

28. Valid entries for the reportable_result field are "Yes" or "No" only.

29. ONLY report compounds of interest for any method blank, sample, and sample duplicate, trip blank.

30. Laboratory Qualifier designation must be consistent. For an estimated concentration with blank contamination "BJ" must be used. Note that "JB", "B J" or "J B" cannot be used.

31. Explanation of Duplicate Qualifiers:

B	Analyte found in associated blank	Organic Analysis
B	<CRDL but >= Instrument Detection Limit	Inorganic Analysis
N	Presumptive evidence of a compound	Organic Analysis
N	Sample recovery not within control limits	Inorganic Analysis

It is preferred by ARCADIS that the laboratory not qualifiers with multiple explanations. **Any qualifiers utilized in the hard copy report or the electronic report must be defined in the hard copy report. There is no exception to this requirement for explanation of qualifiers applied to electronic data.**

32. Nomenclature for tentatively identified compounds (TIC):

Use the CAS # if it is available and **REAL (outside verifiable source)** for TICs and enter the chemical name in the chemical_name field.

For UNKNOWN TICs follow the following protocol:

cas_rn for unkown VOA TIC = VTIC 1 through VTIC 10
cas_rn for unkown SVOA TIC = SVTIC 1 through SVTIC 20

Enter "UNKNOWN", "UNKNOWN Hydrocarbon", "UNKNOWN Aliphatic", or other identifier as appropriate or applicable in "chemical_name" field.

TICs will produce errors in the ELDC/EDDP that cannot be corrected by the laboratory. These are the only acceptable errors in the data checker report unless otherwise authorized by ARCADIS.

33. TCLP or SPLP results must be submitted in units of mg/L or appropriate liquid units. **(Make sure that moisture correction is not automatically enforced).**

BATCH FILE

34. **The laboratory must use unique Batch File Names for each analytical department/method and for continuing years. Electronic validation utilizes Batch IDs to link field samples with quality control data. Overlapping Batch IDs are not acceptable.**

GENERAL ISSUES

35. Incomplete chain-of-custody (C-O-C) forms must be immediately communicated to the project manager. Some of the C-O-C information is used for completion of the Sample_Matrix_Code and Sample_Delivery_Group. These discrepancies must be rectified upon receipt of samples at the laboratory prior to log in.

36. **Duplicate sample IDs are not acceptable within the EQuIS database. It is imperative that samples including field blanks, trip blanks, equipment blanks, field duplicates have unique sample IDs for projects including ongoing sampling events such as quarterly groundwater monitoring.**

SUBCONTRACTED PARAMETERS

37. The EDD must be populated with **ALL** appropriate and applicable fields, including **ALL** QC data for any subcontracted parameters.

PLEASE CONTACT THE ARCADIS PROJECT CHEMIST, DATA MANAGER or PROJECT MANAGER IF THERE ARE ANY QUESTIONS REGARDING PREPARATION OR GENERATION OF THE EDD.

EXAMPLE EDD REPORTS

The following subsections provide examples of how the EQuIS EDD should be populated for QC data.

RESULT FILE FIELDS FOR A NORMAL FIELD SAMPLE, TRG AND TIC RESULTS

The table below shows some of the fields in the Result File for a normal field sample (i.e., Sample_type_code = N, TB, FD, etc.) and "TRG" or "TIC" analyte_type_code. NOTE: all QC fields are blank.

cas_rn	result value	qc original conc	qc spike added	qc spike measured	qc spike recovery	qc dup. original conc	qc dupl. spike added	qc dup. spike measured	qc dup. spike recovery
93-76-5	3.17								
94-75-7	1.56								
94-82-6	2.31								

RESULT FILE FIELDS FOR A NORMAL FIELD SAMPLE WITH SURROGATES

The following table shows some of the fields in the result file for a normal field sample (i.e., Sample_type_code = N, TB, etc.). Note that QC fields are blank except on surrogate Rows.

cas_rn	result value	result unit	result type code	qc original conc	qc spike added	qc spike measured	qc spike recovery
93-76-5	1.56	mg/L	TRG				
94-75-7	3.17	mg/L	TRG				
PHEN2F		mg/L	SUR		12.5	12.9	103

RESULT FILE FIELDS FOR A MATRIX SPIKE

The following table shows some of the fields in the result file for a matrix spike sample (i.e., Sample_type_code = MS). Note that all "dup" QC fields are blank, and that the result_value field is NULL. Also, the qc_rpd field would be blank for these rows. The parent_sample_code must contain the contents of the sys_sample_code of the original (parent) sample.

cas_rn	result value	qc original conc	qc spike added	qc spike measured	qc spike recovery	qc dup. original conc	qc dupl. Spike added	qc dup. spike measured	qc dup. spike recovery
93-76-5		1.56	4.18	5.36	90.9				
94-75-7		3.17	4.18	7.15	95.2				
94-82-6		2.31	4.22	5.66	79.3				

RESULT FILE FIELDS FOR A MATRIX SPIKE DUPLICATE

The following table shows some of the fields in the result file for a matrix spike/matrix spike duplicate considered as a single sample (i.e., Sample_type_code = MSD). Note that all QC fields are completed, and that the result_value field is not needed. Also, the qc_rpd field would be completed for these rows. The parent_sample_code must contain the contents of the sys_sample_code of the original (parent) sample.

cas_rn	result value	qc original conc	qc spike added	qc spike measured	qc spike recovery	qc dup original conc	qc dup. spike added	qc dup spike measured	qc dup spike recovery
93-76-5						1.56	4.23	5.70	97.8
94-75-7						3.17	4.23	7.62	105
94-82-6						2.31	4.13	5.33	73.1

RESULT FILE FIELDS FOR A LCS or BS \

The following table shows some of the fields in the result file for an LCS sample (i.e., laboratory control sample, blank spike, Sample_type_code = BS). The qc_rpd field is left blank for these rows.

cas_rn	result value	qc original conc	qc spike added	qc spike measured	qc spike recovery	qc dup original conc	qc dup spike added	qc dup spike measured	qc dup spike recovery
93-76-5		1.5	5.00	5.26	105				
94-75-7		10.2	1.00	1.02	102				
94-82-6		3.4	12.5	12.9	103				

RESULT FILE FIELDS FOR A LCS DUPLICATE OR BS DUPLICATE

The following table shows some of the fields in the result file for a laboratory control sample duplicate (i.e., Sample_type_code = BD). Note that the result_value field is not required. Also, the qc_rpd field must be completed for these rows.

cas_rn	result value	qc original conc	qc spike added	qc spike measured	qc spike recovery	qc dup original conc	qc dup spike added	qc dup spike measured	qc dup spike recovery	qc_rpd
93-76-5							5.00	4.92	98	2.0
94-75-7							1.00	0.95	95	6.6
94-82-6							12.5	11.8	94	12.3

REANALYSES, REEXTRACTIONS, DILUTIONS

The following table shows how to report retests for three different circumstances. The first example, the sample was retested (for 75-25-2) because the initial result required reanalysis due to QC failure. For the second example, the initial sample result (for 95-95-4) required dilution. The third example (for 67-66-3) required both reanalysis and dilution (reanalysis supercedes dilution). The fourth example (87-86-5) shows an initial result that require re-extraction due to QC failure or elevated concentrations that could not be diluted based on the original extraction. The other results are "turned off" by setting the reportable_result field to "No".

test_type	cas_rn	result_value	reportable_result
initial	75-25-2	1.2	No
reanalysis	75-25-2	1.1	Yes
initial	95-95-4	250E	No
dilution	95-95-4	328	Yes
initial	67-66-3	3.4	No
reanalysis	67-66-3	3.3	Yes
initial	87-86-5	980E	No
reextraction	87-86-5	1500	Yes

ANALYSES REQUIRING SECOND COLUMN CONFIRMATION

Analyte identification requiring confirmation by a second analytical technique is required by certain gas chromatography (GC) methods. A common technique used to confirm the identity of an analyte is to analyze the sample using a second GC column that is dissimilar from the GC column used for the first analysis. This confirmation technique is used routinely when analyzing samples for pesticides, herbicides, and certain volatile organic compounds (e.g., BTEX), and the two analyses often are performed simultaneously using an instrument equipped with dual GC columns connected to common injection port.

The method for reporting data from dual column GC analyses is not standard throughout the environmental laboratory industry. ARCADIS recommends that laboratories use the method described in SW-846 Method 8000B, unless project-specific requirements or the method used for analysis dictate otherwise. The following table illustrates the proper format to be used to report first and second column results. The results for the first and third constituents (75-25-2 and 95-95-4) are being reported from column 1, and the result for the second constituent (67-66-3) is being reported from column 2. The other results are "turned off" by setting the reportable_result field to "No".

column_number	cas_rn	result_value	reportable_result
1C	75-25-2	6.2	Yes
1C	67-66-3	3.4	No
1C	95-95-4	5.6	Yes
2C	75-25-2	1.3	No
2C	67-66-3	33.7	Yes
2C	95-95-4	5.4	No

REFERENCE TABLES

A number of fields in each of the EDD files must be entered to correspond exactly with reference values standardized by ARCADIS. These reference values will be updated from time to time. Each laboratory will be supplied a copy of the updated document. It is the laboratory's responsibility to submit EDDs using the most current reference tables as defined by a specific project.

The following table summarizes the EDD fields where standard reference values must be used:

EDD File	EDD Field	Reference Table
Sample	sample_type_code	rt_sample_type
	sample_matrix_code	rt_matrix
Test	lab_anl_method_name	rt_anl_mthd
	lab_matrix_code	rt_matrix
	prep_method	rt_std_prep_mthd
	subsample_amount_unit	rt_unit
	final_volume_unit	rt_unit
Result	lab_anl_method_name	rt_anl_mthd
	cas_rn	rt_analyte
	chemical_name	rt_analyte
	result_type_code	rt_result_type
	lab_qualifier	rt_qualifier
	result_unit	rt_unit
	detection_limit_unit	rt_unit
Batch	lab_anl_method_name	rt_anl_mthd

IV. EDP

The EDP data checker assists the **LABORATORY** in checking EDD files to ensure that they are error-free prior to submission to ARCADIS. All laboratories providing data to ARCADIS **must use** the EDP program to verify that EDDs are without error. The EDP error reports for each file **must be** submitted with each EDD.

The use of the EDDP helps to solve common data population problems including duplicate data, incorrectly populated fields, and incorrect methods, CAS #s, and other acceptable reference values. If an EDD is received by ARCADIS containing errors it will be rejected until the EDD report is acceptable for import into the EQuIS database. Invoice payment will not be made until the EDD is acceptable.

ARCADIS will provide laboratories with the most recent version of the EDP.

ARCADIS

Appendix B

COC Form

ARCADIS
Infrastructure, environment, facilities

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

Lab Work Order #

Send Results to:

Contact & Company Name | Telephone

Address | Fax

City | State | Zip | E-mail Address

Project Name/Location (City, State) | Project #

Sampler's Printed Name | Sampler's Signature

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix

Preservative								
Filtered (✓)								
# of Containers								
Container Information								
PARAMETER ANALYSIS & METHOD								

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

Matrix Key:
SO - Soil | SE - Sediment | NL - NAPL/Oil
W - Water | SL - Sludge | SW - Sample Wipe
T - Tissue | A - Air | Other: _____

REMARKS

Special Instructions/Comments:

☐ **Special QA/QC Instructions(✓):**

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓)	Printed Name:	Printed Name:	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm:	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

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Appendix C

Laboratory Standard Operating Procedures (on CD)