

TABLE 2-4
 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN IN SURFACE WATER
 Alcoa Davenport Works, Riverdale, Iowa

Analyte	Frequency of Detection	Maximum Concentration (mg/L)	Range of SQL (mg/L)	Screening Benchmark (mg/L)	COPEC? Rationale
Volatiles Organics Compounds					
1,1,1-Trichloroethane	1/16	0.0019	0.001-0.5	183	N
1,1,2,2-Tetrachloroethane	0/16	ND	0.001-0.5	0.077	N
1,1-Dichloroethane	1/16	1	0.001-0.5	36	N
1,1-Dichloroethene	0/16	ND	0.001-0.5	0.315	N
1,2-Dichloroethane	0/16	ND	0.001-0.5	50	N
1,2-Dichloroethene	8/16	7.4	0.001-0.0071	30	N
Methyl ethyl ketone/2-Butanone	0/16	ND	0.01-1.0	7292	N
2-Hexanone	0/16	ND	0.01-1.0	3	N
4-Methyl-2-Pentanone (hexanone)	1/16	0.0096	0.01-1.0	3	N
Acetone	1/16	0.190	0.01-1.0	412	N
Benzene	0/16	ND	0.001-0.5	8.5	N
Bromodichloromethane	1/16	0.058	0.001-0.5	0.63	N
Bromoform	4/16	0.130	0.001-0.5	8.8	N
Bromomethane	1/16	0.0067	0.002-1.0	3.8	N
Carbon disulfide	1/16	0.0075	0.001-0.5	11	N
Chlorobenzene	0/16	ND	0.001-0.5	11.4	N
Chloroethane	1/16	0.0027	0.002-1.0	1212	N
Chloroform	2/16	0.035	0.001-0.5	3.9	N
Chloromethane	1/16	0.017	0.002-1.0	126	N
Dibromochloromethane	2/16	0.074	0.001-0.5	9.5	N
Ethylbenzene	0/16	ND	0.001-0.5	0.25	N
Methylene chloride	14/16	0.44 B	0.001-0.001	11	N
Tetrachloroethene	11/16	2.2	0.001-0.0071	0.69	Y
Toluene	0/16	ND	0.001-0.5	3.5	N
Total Xylenes	0/16	ND	0.001-0.5	0.10	N
Trichloroethene	8/16	2.0	0.001-0.0071	68	N
Vinyl chloride	6/16	1.6	0.002-0.014	0.25	Y
trans-1,3-dichloropropene	0/16	ND	0.01-0.33	28	N
Semivolatile Organic Compounds					
2,4,6-Trichlorophenol*	3/20	0.0061	0.01-0.02	0.24	N
2,4-Dimethylphenol*	0/20	ND	0.01-0.02	9.2	N
2-Methylnaphthalene*	0/20	ND	0.01-0.02	0.4	N
3,3'-Dichlorobenzidine*	0/20	ND	0.01-0.02	0.13	N
4-Methylphenol*	0/20	ND	0.01-0.02	27	N
Acenaphthene	0/16	ND	0.001-0.005	2.0	N
Acenaphthylene	1/16	0.0022L	0.001-0.005	2.0	N
Anthracene	0/16	ND	0.002-0.010	23.8	N
Benzo(a)anthracene	3/16	0.00025L	0.001-0.0005	0.0006	N
Benzo(a)pyrene	5/16	0.00036L	0.001-0.0005	0.0006	N
Benzo(b)fluoranthene	4/16	0.00031L	0.001-0.0005	0.0006	N
Benzo(g,h,i)perylene	3/16	0.0002	0.001-0.0005	0.0006	N
Benzo(k)fluoranthene	5/16	0.00015L	0.00005-0.00025	0.0006	N

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 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN IN SURFACE WATER
 Alcoa Davenport Works, Riverdale, Iowa

Analyte	Frequency of Detection	Maximum Concentration (mg/L)	Range of SOL ^c (mg/L)	Screening Benchmark (mg/L)	COPEC?	Rationale
Buryl benzyl phthalate*	1/20	0.0009j	0.01-0.02	2.2	N	A
Carbazole*	0/20	ND	0.01-0.02	0.2	N	A
Chrysene ^a	3/16	0.00024	0.0001-0.0005	0.0006	N	A
Dibenz(a,h)anthracene ^a	4/16	0.00022	0.0001-0.0005	0.0006	N	A
Dibenzofuran*	0/20	ND	0.01-0.02	0.09	N	A
Fluoranthene	6/16	0.0006L	0.0001-0.0005	0.26	N	A
Fluorene	0/16	ND	0.001-0.005	1.29	N	A
Indeno(1,2,3-cd)pyrene ^a	6/16	0.00027L	0.0001-0.0005	0.0006	N	A
Naphthalene	0/16	ND	0.002-0.010	5.8	N	A
Phenanthrene	0/16	ND	0.001-0.005	0.03	N	A
Phenol*	1/20	0.002j	0.01-0.02	9.4	N	A
Pyrene	6/16	0.00041	0.0001-0.0005	0.16	N	A
bis(2-ethylhexyl)phthalate*	1/20	0.001j	0.01-0.02	0.18	N	A
di-n-butylphthalate*	1/20	0.0005j	0.01-0.02	0.48	N	A
di-n-octylphthalate*	0/20	ND	0.01-0.02	0.018	N	C (5)
PCBs						
Aroclor-1016	0/16	ND	0.0005-0.0025	0.0003	N	C (6)
Aroclor-1221 ^b	0/16	ND	0.0005-0.0025	0.00012	U	D (100)
Aroclor-1232 ^b	0/16	ND	0.0005-0.0025	0.00012	U	D (100)
Aroclor-1242	0/16	ND	0.0005-0.0025	0.00012	U	D (100)
Aroclor-1248	0/16	ND	0.0005-0.0025	0.000005	U	D (100)
Aroclor-1254	0/16	ND	0.0005-0.0025	0.000001	U	D (100)
Aroclor-1260	0/16	ND	0.0005-0.0025	0.0002	U	D (100)
Inorganic Compounds						
Aluminum	9/16	0.702	0.2-0.2	12.7	N	A
Arsenic	1/16	0.0039	0.01-0.01	4.3	N	A
Barium	16/16	0.120 B	NA	2.6	N	A
Beryllium	0/16	ND	0.005-0.005	0.085	N	A
Cadmium	0/16	ND	0.005-0.005	0.017	N	A
Chromium	0/16	ND	0.01-0.01	2.8	N	A
Cobalt	0/16	ND	0.05-0.05	1.5	N	A
Copper	8/16	0.02 B	0.025-0.025	0.18	N	A
Cyanide	5/20	0.0129	0.005	3.78	N	A
Lead	0/16	ND	0.003	0.003	N	A
Manganese	16/16	0.688	NA	14.7	N	A
Mercury	0/16	ND	0.0002-0.0002	0.0001	N	A
Nickel	3/16	0.029	0.04-0.04	13.6	N	A
Selenium	2/16	0.0049	0.005-0.005	0.2184	N	A
Silver	0/16	ND	0.01-0.01	0.36	N	A
Thallium	0/16	ND	0.01-0.01	0.014	N	A
Vanadium	0/16	ND	0.05-0.05	0.067	N	A
Zinc	16/16	0.144	NA	0.33	N	A

CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN IN SURFACE WATER

Alcoa Davenport Works, Riverdale, Iowa

TABLE 2-4

Analyte	Frequency of Detection	Maximum Concentration (mg/L)	Range of SQL (mg/L)	Screening Benchmark (mg/L)	COP/EC? Rationale
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Summaries are based on surface water from Outfalls 001 to 006.

Duplicate samples were only counted once. The maximum of the two duplicate values was used.

* Based on Phase I data collected in 1991. All others are based on 1998 data.

^a benzo(a)pyrene used as a surrogate

^b Aroclor 1242 used as a surrogate

^c Range of SQLs only included for nondetects

^d Acenaphthene used as a surrogate

^e 2-hexanone used as a surrogate

A - Maximum concentration detected, or one-half maximum SQL did not exceed screening benchmark

B - Maximum concentration detected exceeded screening benchmark

C - One-half SQL exceeded SC in less than 20% of samples. Constituent not detected above SC.

Number of samples in which one-half SQL exceed of SC is presented in parentheses.

D - Uncertainty. Constituent not detected above SC, but 1/2 SQL exceeded SC in greater than 20% of samples.

Number of samples in which one-half SQL exceed of SC is presented in parentheses.

Bold Type indicates constituent is selected as a COP/EC or uncertainty

**TABLE 2-7
SUMMARY OF CANDIDATE RECEPTORS AND FORAGE AREAS
Alcoa Davenport Works, Davenport, Iowa**

Candidate Receptors				Risk Hypothesis	
Wetland 2	Outfall 001 Pond	Outfalls 001 - 006	Light Bulb Disposal Area and Dredge Disposal Area	Exposure Area	Eastern Historical Disposal Area and Western Disposal Area
TERRESTRIAL FSA UNITS					
			Little Brown Bat	Little Brown Bat	1.) Are the concentrations of PCBs in soil sufficient to impair the reproduction of terrestrial carnivorous birds and mammals that may forage in the upland sections of the FSA units and consume animals containing PCBs?
			Red Fox	Red-tailed Hawk	
			Little Brown Bat	Red Fox	2.) Are the concentrations of lead in soil and small mammals sufficient to impair the reproduction of terrestrial carnivorous mammals that may forage in the upland sections of the FSA units?
			Little Brown Bat	Red Fox	
			Little Brown Bat	Red Fox	3.) Are the concentrations of copper and zinc in small mammals sufficient to impair the reproduction of terrestrial carnivorous mammals and birds that may forage in the upland sections of the FSA units?
			Little Brown Bat	American Kestrel	
			Little Brown Bat	Red-tailed Hawk	
OUTFALLS					
		Great Blue Heron	Mallard		4.) Are concentrations of PCBs in outfall sediments, invertebrates, and animals sufficient to impair the survival, growth or reproduction of semiaquatic carnivorous birds that may forage in the outfalls?
		Little Brown Bat	Little Brown Bat		
		Little Brown Bat	Mallard		
		Little Brown Bat	Raccoon		
		Little Brown Bat	Mallard		5.) Are concentrations of carbazole, dibenzofuran, phenanthrene and high molecular weight PAHs in outfall sediments and invertebrates sufficient to impair the reproduction and development of semiaquatic omnivorous or primary carnivore birds and mammals?

TABLE 2-7
SUMMARY OF CANDIDATE RECEPTORS AND FORAGE AREAS
Alcoa Davenport Works, Davenport, Iowa

Exposure Area	Candidate Receptors				Risk Hypothesis
	Light Bulb Disposal Area and Dredge Disposal Area	Outfalls 001 - 006	Outfall 001 Pond	Wetland 2	
Wetland 2	Light Bulb Disposal Area and Dredge Disposal Area	Little Brown Bat ^b	Raccoon ^b	Little Brown Bat	6.) Are concentrations of vinyl chloride and tetrachloroethene in outfall surface water sufficient to impair the growth or survival of semiaquatic omnivorous or primary carnivorous mammals that may forage in the outfalls and consume animals and water?
		Little Brown Bat	Raccoon ^a	Little Brown Bat	7.) Are concentrations of bis(2-ethylhexyl)phthalate in the outfall sediments sufficient to impair the growth or survival of semiaquatic omnivorous or primary carnivorous mammals that may forage in the outfalls and consume animals and sediment?
		Little Brown Bat	Little Brown Bat	Mallard	8.) Are the concentrations of lead sufficient to impair the reproduction of semiaquatic omnivorous or carnivorous birds that may forage in the Outfall 001 pond and consume invertebrates containing lead.
		Little Brown Bat	Little Brown Bat	Raccoon ^a	9.) Are concentrations of aluminum in outfall sediments and invertebrates sufficient to impair the reproduction and development of semiaquatic omnivorous or primary carnivore birds and mammals?
		Little Brown Bat	Mallard	Raccoon ^a	
		Little Brown Bat	Mallard	Mallard	
Wetland 2	Light Bulb Disposal Area and Dredge Disposal Area	Great Blue Heron	Mallard	Mallard	10.) Are the concentrations of PCBs in soils/sediments, invertebrates and animals sufficient to impair the reproduction of semiaquatic carnivorous birds that may forage in Wetland 2?
		Mallard	Mallard	Mallard	11.) Are concentrations of carbazole, dibenzofuran, LMW PAHs and HMW PAHs in soils/sediments sufficient to impair the survival, growth or reproduction birds and mammals in Wetland 2?

Shaded areas indicate the risk hypotheses are not applicable.

^a Applicable only to Outfalls 001 to 005.
^b Applicable only to Outfalls 001 and 002.

TABLE 3.1
 MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
 MRP 15 SURFACE WATER ALCOA-DAVENPORT WORKS, RIVERDALE IOWA

Scenario Timeframe: Current
 Medium: Surface Water
 Exposure Medium: Surface Water
 Exposure Point: Shoreline adjacent to ALCOA (MRP15)

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
PCBs (total)	ug/L	NA ¹	NA	NA	NA		2.0E-05	NA	max concentration	2.0E-05	NA	max concentration
Aroclor 1248	ug/L	NA ²	NA	NA	NA		2.0E-05	NA	max concentration	2.0E-05	NA	max concentration
Aroclor 1254	ug/L	NA ²	NA	NA	NA		2.0E-05	NA	max concentration	2.0E-05	NA	max concentration
Aroclor 1260	ug/L	NA ²	NA	NA	NA		2.0E-05	NA	max concentration	2.0E-05	NA	max concentration

¹ Not Applicable. PCBs have not been detected in MRP15 adjacent to Alcoa shoreline using standard analytical methods. One sample collected immediately downstream from Outfall 006 was submitted for congener-specific PCB analysis which results in substantially lower detection limits. The total PCB concentration in the sample using a congener-specific approach was 0.02 parts per trillion.
² The same exposure point concentration was used for individual Aroclors because congener specific analysis shows the Aroclor detected having characteristics of both Aroclor 1248 and 1260.

TABLE 3.2
 MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
 WETLANDS 1 AND 2 SURFACE WATER ALCOA-DAVENPORT WORKS, RIVERDALE IOWA

Scenario Timeframe: Current
 Medium: Surface Water
 Exposure Medium: Surface Water
 Exposure Point: Wetlands 1 and 2

Chemical	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure					Central Tendency	
							Medium EPC Value	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale		Medium EPC Value
PCBs (total)	ug/L	0.5	NA	5.60E+00	NA	ug/L	0.5	NA	1/2 detection limit value	0.5	NA	max Aroclor EPC	1/2 detection limit value
Aroclor 1248	ug/L	0.25	NA	ND	NA	ug/L	0.25	NA	1/2 detection limit value	0.25	NA	1/2 detection limit value	1/2 detection limit value
Aroclor 1254	ug/L	0.5	NA	ND	NA	ug/L	0.5	NA	1/2 detection limit value	0.5	NA	1/2 detection limit value	1/2 detection limit value
Aroclor 1260	ug/L	0.5	NA	4.60E+00	NA	ug/L	0.5	NA	1/2 detection limit value	0.5	NA	1/2 detection limit value	1/2 detection limit value
Benzo(a)pyrene	ug/L	0.05	NA	ND	NA	ug/L	0.05	NA	1/2 detection limit value	0.05	NA	1/2 detection limit value	1/2 detection limit value

NA: Not Available.

¹ Because aroclors 1248 and 1254 were not detected, one-half the detection limit was used to calculate the total PCB concentration.

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
MRP 15 SEDIMENT ALCOA-DAVENPORT WORKS, RIVERDALE IOWA

Scenario Timeframe: Current
Medium: Sediments
Exposure Medium: MRP15 Sediments
Exposure Point: Shoreline adjacent to ALCOA (MRP15)

TABLE 3.3

Chemical	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure				Central Tendency	
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC	Medium EPC Rationale
PCBs (total)	mg/kg	0.278	NA	3.5	NA	mg/kg	0.65	W-Test-3	95% UCL	0.278	NA	arithmetic mean
Aroclor 1248	mg/kg	0.238	NA	3.5	NA	mg/kg	0.59	W-Test-3	95% UCL	0.238	NA	arithmetic mean
Aroclor 1254	mg/kg	0.096	NA	0.680	NA	mg/kg	0.23	W-Test-3	95% UCL	0.096	NA	arithmetic mean
Aroclor 1260	mg/kg	0.087	NA	0.099	NA	mg/kg	0.21	W-Test-3	95% UCL	0.087	NA	arithmetic mean

NA: Not Available.

W-Test: Developed by Shapiro and Wilk

(1) Normal Data

(2) Log-transformed Data

(3) Nonparametric Jackknife-transformed Data

WETLAND SEDIMENT ALCOA-DAVENPORT WORKS, RIVERDALE IOWA
 MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

TABLE 3.4

Scenario Timeframe: Current
 Medium: Sediments
 Exposure Medium: Wetland Sediments
 Exposure Point: Wetlands No. 1 and No. 2

Chemical	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Potential of Concern
							95% UCL	W-Test -3	95% UCL							
PCBs (total)	mg/kg	7.86	NA	25.25	NA	mg/kg	10.72	W-Test -3	95% UCL	7.86	NA	3.43	NA	95% UCL	arithmetic mean	
Aroclor 1248	mg/kg	-3.43	NA	18.0	NA	mg/kg	5.04	W-Test -3	95% UCL	3.43	NA	4.08	NA	95% UCL	arithmetic mean	
Aroclor 1254	mg/kg	4.08	NA	18.0	NA	mg/kg	5.65	W-Test -3	95% UCL	4.08	NA	0.349	NA	95% UCL	arithmetic mean	
Aroclor 1260	mg/kg	0.349	NA	NI	NA	mg/kg	0.55	W-Test -3	95% UCL	0.349	NA	10.4	NA	95% UCL	arithmetic mean	
Benzo(a)pyrene	mg/kg	10.4	NA	160	NA	mg/kg	26.75	W-Test -4	95% UCL	10.4	NA				arithmetic mean	

NA: Not Available

W-Test: Developed by Shapiro and Wilk

(1) Normal Data

(2) Log-transformed Data

(3) Nonparametric Jackknife-transformed Data

TABLE 3.5
 MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY (BOAT)
 RECREATIONAL FISHERMAN INGESTION OF FISH TISSUE ALCOA-DAVENPORT WORKS, RIVERDALE IOWA

Scenario Timeframe: Current
 Medium: Sediment/Surface Water
 Exposure Medium: Fish Tissue
 Exposure Point: Contaminant Concentration in Fish (Boat)

Chemical	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC	Medium EPC	Medium EPC	Medium EPC	Medium EPC	Medium EPC
PBS (total)	mg/kg	0.169	0.037	3.7	NA	0.212	NA ¹	95% UCL	0.169	NA ¹	arithmetic mean	
Aroclor 1248	mg/kg	0.096	0.037	0.53	NA	0.052	NA ¹	95% UCL	0.037	NA ¹	arithmetic mean	
Aroclor 1254	mg/kg	0.096	0.096	2.9	NA	0.124	NA ¹	95% UCL	0.096	NA ¹	arithmetic mean	
Aroclor 1260	mg/kg	0.035	NA	0.28	NA	0.044	NA ¹	95% UCL	0.035	NA ¹	arithmetic mean	

NA: Not Applicable

¹ Calculated as the weighted sum of individual fish comprising overall intake. See Section 3 and Appendix B for additional analytical discussion.

TABLE 3.6
 MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY (SHORE)
 RECREATIONAL FISHERMAN INGESTION OF FISH TISSUE ALCOA-DAVENPORT WORKS, RIVERDALE IOWA

Scenario Timeframe: Current
 Medium: Sediment/Surface Water
 Exposure Medium: Fish Tissue
 Exposure Point: Contaminant Concentration in Fish (Shore)

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
PCBs (total)	mg/kg	0.163	NA	3.7	NA		0.223	NA ¹	95% UCL	0.163	NA ¹	arithmetic mean
Aroclor 1248	mg/kg	0.038	NA	0.53	NA		0.058	NA ¹	95% UCL	0.038	NA ¹	arithmetic mean
Aroclor 1254	mg/kg	0.092	NA	2.9	NA		0.124	NA ¹	95% UCL	0.092	NA ¹	arithmetic mean
Aroclor 1260	mg/kg	0.035	NA	0.28	NA		0.069	NA ¹	95% UCL	0.035	NA ¹	arithmetic mean

NA: Not Applicable
¹ Calculated as weighted sum of individual fish comprising overall intake. See Section 3 and Appendix B for additional analytical discussion.

TABLE 1
 SELECTION OF EXPOSURE PATHWAYS
 MISSISSIPPI RIVER POOL 15, ALCOA-DAVENPORT WORKS, RIVERDALE IOWA

Scenario	Medium	Exposure	Exposure	Receptor	Receptor	Age	Exposure	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Sediment	Sediment	Shoreline adjacent to ALCOA (Areas 1A,1B,1C,1D)	Recreational Boat	Adult	Adult	Dermal	Off-Site	Quant	Boat fishermen could wade in shallow water and contact sediments.
				Duck Hunter	Adult	Adult	Dermal	Off-Site	Qual	The duck hunter could wade in shallow water to reach his duck blind and contact sediments.
Surface Water/ Sediment	Animal Tissue	Shoreline adjacent to ALCOA (Areas 1A,1B,1C,1D)	Recreational Boat	Adult	Adult	Fish	Ingestion	Off-Site	Quant	Recreational fishermen who eat the fish they catch.
			Recreational Fisherman	Adult	Adult	Fish	Ingestion	Off-Site	Quant	Recreational fishermen who eat the fish they catch.
Surface Water	Surface Water	Shoreline adjacent to ALCOA (Areas 1A,1B,1C,1D)	Recreational Fisherman	Adult	Adult	Recreational Fisherman	Ingestion	Off-Site	Quant	Recreational fishermen could wade in shallow water.
			Duck Hunter	Adult	Adult	Dermal	Off-Site	Qual	The duck hunter could wade in shallow water to reach his duck blind and contact surface water.	
Surface Water	Surface Water	Wetlands 1 and 2	Trespasser	Adult	Adult	Dermal	On-Site	Quant	Trespasser could enter site and walk through wetlands and come in contact with surface water in the wetlands.	
			Wetlands 1 and 2	Trespasser	Adult	Adult	Dermal	On-Site	Quant	Trespasser could enter site and walk through wetlands and come in contact with surface water in the wetlands.

TABLE 6.1
 CANCER TOXICITY DATA - ORAL/DERMAL
 MRP 15 ALCOA-DAVENPORT WORKS, RIVERDALE, IOWA

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor(1)	Adjusted Dermal Cancer Slope Factor (1)	Units	Weight of Evidence/ Cancer Guideline Description	Source Target Organ	Date (2) (MM/DD/YY)
Total PCBs	2.00E+00	NA	2.00E+00	kg-day/mg	B2	IRIS	8/27/98
Benzo(a)pyrene	7.30E+00	0.85 (3)	8.60E+00	kg-day/mg	B2	IRIS	11/12/98

IRIS = Integrated Risk Information System

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and

inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen

E - Evidence of noncarcinogenicity

Weight of Evidence:

Known/Likely

Cannot be Determined

Not Likely

(1) Slope factor divided by adjustment factor.
 No adjustment made for PCBs

(2) Date IRIS was searched.

(3) ATSDR 1991

TABLE 5.1
 NON-CANCER TOXICITY DATA -- ORAL/DERMAL
 MRP-15 ALCOA-DAVENPORT WORKS, RIVERDALE, IOWA

Chemical of Potential Concern	Chronic/ Subchronic	Oral RID Value	Oral RID Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RID (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RID: Target Organ	Dates of RID: Target Organ (3) (MM/DD/YY)
Aroclor - 1248	Chronic	7.00E-05	mg/kg/day	NA	NA	mg/kg/day	skin female reproduction, thesus monkey study		IRIS	8/27/98
Aroclor - 1254	Chronic	2.00E-05	mg/kg/day	NA	NA	mg/kg/day	Ocular exudate, inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes, Monkey Clinical and Immunologic Studies	UF = 300 MF = 1	IRIS	8/27/98
Aroclor - 1260	Chronic	7.00E-05	mg/kg/day	NA	NA	mg/kg/day	liver tumors in rats		IRIS	8/27/97

N/A = Not Applicable
 (1) No adjustment made
 (2) No adjustment made
 (3) For IRIS values, provide the date IRIS was searched.
 For HEAST values, provide the date of HEAST.
 For NCEA values, provide the date of the article provided by NCEA.

TABLE 9.2 RME
 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
 REASONABLE MAXIMUM EXPOSURE
 MISSISSIPPI RIVER POOL 15, ALCOA-DAVENPORT WORKS, RIVERDALE, IOWA

Scenario timeframe: Current
 Receptor Population: Recreational Boat Fisherman
 Receptor Age: Adult

Medium	Exposure	Medium	Point	Chemical	Carcinogenic Risk*				Chemical	Non-Carcinogenic Hazard Quotient						
					Exposure	Dermal	Inhalation	Ingestion		Exposure	Routes Total	Primary	Ingestion	Inhalation	Dermal	Exposure
Sediment	Medium	Surface Water	Exposure	Total PCBs	1.3E-08	6.2E-13	NA	NA	NA	NA	7.5E-04	1.7E-07	2.2E+00	7.5E-04	1.7E-07	2.2E+00
Surface Water	Medium	Surface Water	Point	Total PCBs	1.3E-08	6.2E-13	NA	NA	NA	NA	7.5E-04	1.7E-07	2.2E+00	7.5E-04	1.7E-07	2.2E+00
Surface Water	Medium	Fish Tissue	Point	Total PCBs	1.3E-08	6.2E-13	NA	NA	NA	NA	7.5E-04	1.7E-07	2.2E+00	7.5E-04	1.7E-07	2.2E+00
					Total Risk Across All Media and All Exposure Routes				Total Risk Across All Media and All Exposure Routes				Total Hazard Index Across All Media and All Exposure Routes			
					4.2E-05				4.2E-05				2.2E+00			

NA: Not Applicable
 *Carcinogenic risk was calculated using total PCBs.

Total [Organ] HI =
 Total [Organ] HI =
 Total [Organ] HI =

TABLE 9.4 RME
 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
 REASONABLE MAXIMUM EXPOSURE
 MISSISSIPPI RIVER POOL 15, ALCOA-DAVENPORT WORKS, RIVERDALE, IOWA

Scenario: Final/Name: Current
 Receptor Population: Recreational Shoreline Fisherman
 Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk*				Chemical	Non-Carcinogenic Hazard Quotient								
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total				
Surface Water	Fish Tissue	Duck Creek	Total PCBs	4.7E-05	NA	NA	4.7E-05	Total PCBs		2.50E+00	NA	NA	2.5E+00				
Total Risk Across All Media and All Exposure Routes				4.7E-05				Total Hazard Index Across All Media and All Exposure Routes					2.5E+00				

NA: Not Applicable
 *Carcinogenic risk was calculated using total PCBs.

Total [Organ] HI =
 Total [Organ] HI =
 Total [Organ] HI =

MISSISSIPPI RIVER POOL 15, ALCOA-DAVENPORT WORKS, RIVERDALE, IOWA
 REASONABLE MAXIMUM EXPOSURE

Scenario Timeline: Current
 Receptor Population: Shoreline Trespasser
 Receptor Age: Adult

TABLE 9.6 RME
 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS

Medium	Exposure	Medium	Exposure	Point	Chemical	Carcinogenic Risk				Routes Total	Chemical	Non-Carcinogenic Hazard Quotient				Routes Total			
						Ingestion	Inhalation	Dermal	Exposure			Primary Target Organ	Ingestion	Inhalation	Dermal		Exposure		
Sediment	Surface Water	Sediment	Surface Water	Wetlands 1 and 2	Total PCBs	NA	NA	2.2E-07	9.6E-08	1.2E-06	3.1E-08	Total PCBs	NA	NA	NA	1.2E-02	2.7E-02	NA	NA
Sediment	Surface Water	Sediment	Surface Water	Wetland 1	Benzo(a)pyrene	NA	NA	2.2E-07	9.6E-08	1.2E-06	3.1E-08	Benzo(a)pyrene	NA	NA	NA	1.2E-02	2.7E-02	NA	NA
Total Risk Across All Media and All Exposure Routes																			
1.5E-06										1.5E-06									
Total Hazard Index Across All Media and All Exposure Routes																			
3.9E-02																			

NA: Not Applicable
 *Carcinogenic risk was calculated using total PCBs.

Total [Organ] HI =
 Total [Organ] HI =
 Total [Organ] HI =

Table 2-2
Physical/Chemical Properties of COPECs
MRP15 and Wetland 1

COPEC	CAS#	Molecular Weight (g/mol)	Specific Gravity	Water Solubility (mg/L@25°C)	Vapor Pressure (mm Hg@25°C)	Henry's Law Constant (@25°C)	Log ₁₀ K _{ow}	Log ₁₀ K _{oc}	Mackay Level I Fugacity Based Partitioning						
									Air	Soil	Water	Sediment	Aquatic		
COCs															
Carbon disulfide	75-15-0	76.13	1.26	2.20E+05	356	NA	NA	NA							
SVOCs															
Carbazole	86-74-8	167	1.1	0.721	2.66E-04	8.13E-05	3.29	3.26	65.28%	6.10%	22.92%	5.69%	0.01%	0.00%	
Dibenzofuran	132-64-9	168	1.09	10	3.40E-05	7.45E-07	4.12-4.31	3.91-4.11	28.05%	24.22%	25.07%	22.61%	0.04%	0.01%	
Phenol	108-95-2	94.11	1.06	6.39E+03	5.30E-01	1.03E-05	1.47	2.14	26.37%	0.17%	73.30%	0.16%	0.00%	0.00%	
PAHs															
Acenaphthene	83-32-9	154	1.02	3.47-3.93	1.60E-03	7.92E-05	3.92-4.33	3.66	29.10%	23.56%	23.30%	21.99%	0.04%	0.01%	
Anthracene	120-12-7	178	1.24	0.030-0.1125	1.7E-05-1.95E-04	6.51E-05	4.34-4.54	4.2-4.42	77.55%	9.58%	3.91%	8.94%	0.01%	0.01%	
Fluorene	86-73-7	166	1.2	1.66-1.98	1.0E-03-1.0E-2	2.10E-04	4.12-4.38	3.70	23.16%	28.60%	21.49%	26.69%	0.04%	0.02%	
Naphthalene	91-20-3	128	1.16	30-34	2.3E-01-8.7E-01	4.60E-04	3.2-4.7	2.74-3.50	96.11%	0.49%	2.96%	0.45%	0.00%	0.00%	
Phenanthrene	85-01-8	178	1.18	0.71-1.29	6.80E-04	3.56E-05	4.2-4.6	3.72-4.59	0.15%	42.60%	17.39%	39.76%	0.07%	0.03%	
Fluoranthene	206-44-0	202	1.25	0.206-0.373	5.00E-06	1.69E-02	5.22	4.62	0.25%	48.03%	6.80%	44.82%	0.07%	0.03%	
Fylene	129-00-0	202	1.27	0.013-0.171	6.85E-07-2.5E-06	1.10E-05	4.88-5.32	4.66-5.13	0.00%	48.14%	6.82%	44.93%	0.07%	0.03%	
Benzofluoranthene	56-55-3	228	1.27	0.0094-0.014	1.17E-07	8.00E-06	5.61-5.91	6.15	0.00%	50.95%	1.39%	47.55%	0.08%	0.03%	
Benzofluoranthene	50-32-8	252	1.35	0.0038-0.004	5.50E-09	2.40E-06	5.81-6.50	5.60-6.28	0.00%	51.41%	0.49%	47.99%	0.08%	0.03%	
Benzofluoranthene	205-99-2	252	1.35	0.0012	5.00E-07	1.20E-05	6.57	5.74	0.00%	51.41%	0.49%	47.99%	0.08%	0.03%	
Benzofluoranthene	191-24-2	276	1.35	0.00026	1.00E-10	1.40E-07	7.1	6.89	0.00%	51.58%	0.17%	48.14%	0.08%	0.03%	
Benzofluoranthene	207-08-9	252	1.35	0.00055	9.60E-11	1.04E-03	6.85	6.64	0.01%	51.41%	0.49%	47.98%	0.08%	0.03%	
Chrysene	218-01-9	228	1.27	0.0018-0.006	6.30E-09	3.15E-07	5.60-5.91	5.38	0.00%	50.95%	1.39%	47.55%	0.08%	0.03%	
Dibenz(a,h)anthracene	53-70-3	278	1.28	0.00249-0.005	3.41E-14	7.33E-09	5.97-6.50	6.23	0.00%	51.62%	0.09%	48.18%	0.08%	0.03%	
Indeno(1,2,3-cd)pyrene	193-39-5	276	1.35	0.062	1.00E-09	2.96E-20	5.91-7.70	7.49	0.00%	51.58%	0.17%	48.14%	0.08%	0.03%	
PCBs															
Aroclor 1248	12672-29-6	288	1.41	0.06	4.90E-04	3.50E-03	6.11	5.64	1.56%	52.86%	3.23%	42.29%	0.05%	0.01%	
Aroclor 1254	11097-69-1	327	1.5	0.012-0.057	7.70E-05	2.30E-03	5.61-6.47	5.61	0.67%	53.21%	3.48%	42.57%	0.05%	0.02%	
Aroclor 1260	11096-82-5	370	1.57	0.08	4.10E-05	7.10E-03	6.91	6.42	0.02%	55.20%	0.56%	44.16%	0.06%	0.01%	
COPEC	CAS #	Atomic Weight (g/mol)	Atomic Radius (angstroms)	Volume	Atomic Radius 2+ (angstroms)	Atomic Radius 3+ (angstroms)	Density (g/cc)	Potential Ionization (eV) 2+	Potential Ionization (eV) 3+	pK1	pK2	pK3	pK4	Kd	
Chromium (Cr)	7440-47-3	52.0	1.17	7.3	0.64	0.55	7.1	6.76	6.05						
Copper (Cu)	7440-50-8	63.54	1.17	7.1	0.96	0.83	8.9	7.72	7.9					22	
Iron (Fe)	7439-89-6	55.847	1.16	7.1	0.67	0.67	7.9	7.9	16.16					NA	
Lead (Pb)	7439-92-1	207.19	1.54	18.27	1.32	0.84	11.34	7.41	14.96					2.80E+05	
Manganese (Mn)	7439-96-5	54.938	1.17	7.4	0.91	0.62	7.4	7.43	15.46					NA	
Zinc (Zn)	7440-66-6	65.37	1.25	9.2	0.74	NA	7.1	9.39	17.89					40	

I = Level I Fugacity based on the methods prescribed by Mackay and Paterson (1981) following the assumptions used by USEPA Assessment Tools for the Assessment of Risks (ASTER-Database)
 Data were obtained from the Alcoa CSM (G&M 1995), Assessment Tools for Evaluation of Risk Database (ASTER), RTI (1995), Hazardous Substance Data Bank (HSDB), USEPA (1979), Heslop & Robinson (1993: Inorganic Chemistry, Elsevier Publ., NY)
 NA: Not available for this chemical

FIGURE 2-9
CONCEPTUAL MODEL FOR DIRECT EXPOSURE PATHWAYS TO COPECS
 Alcoa-Davenport Works, Riverdale, Iowa

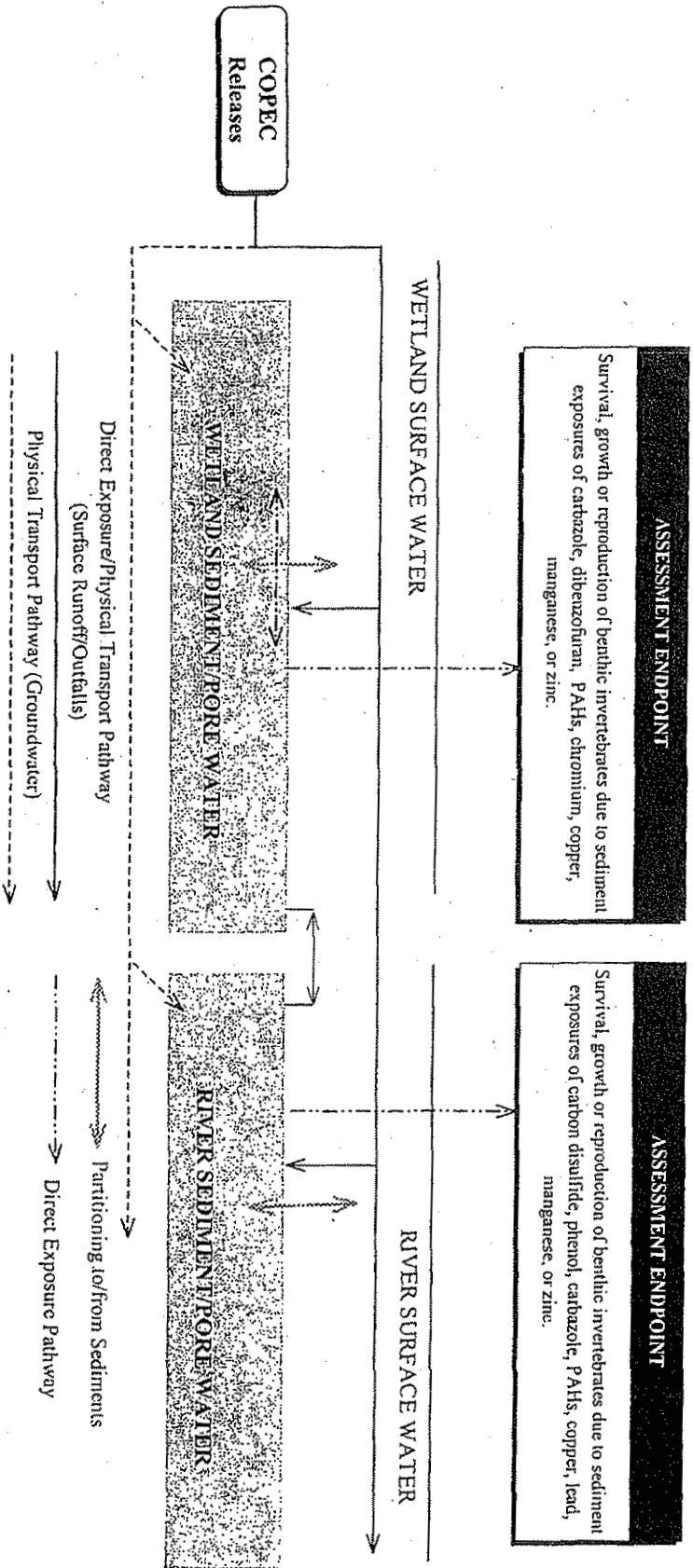
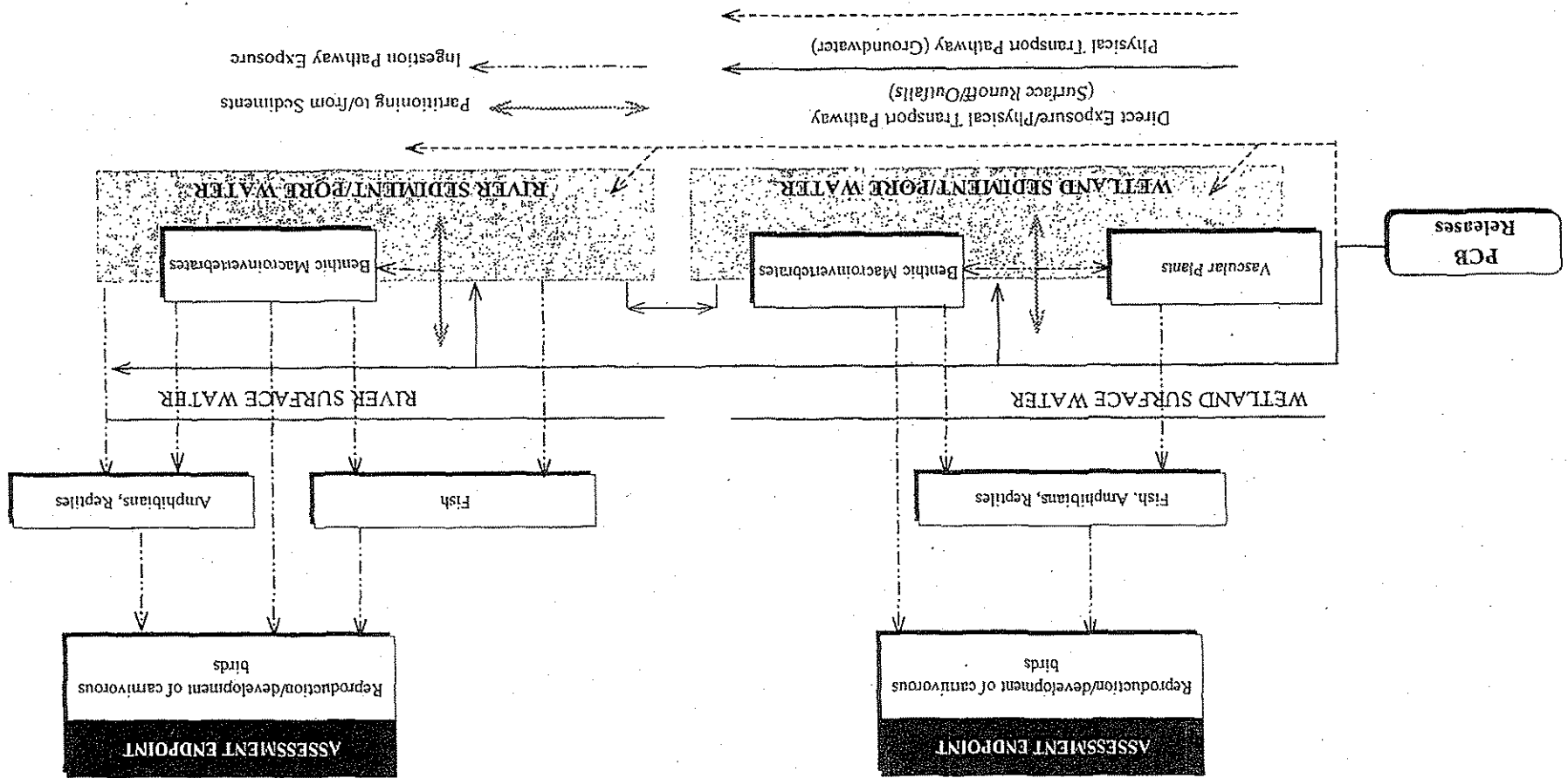
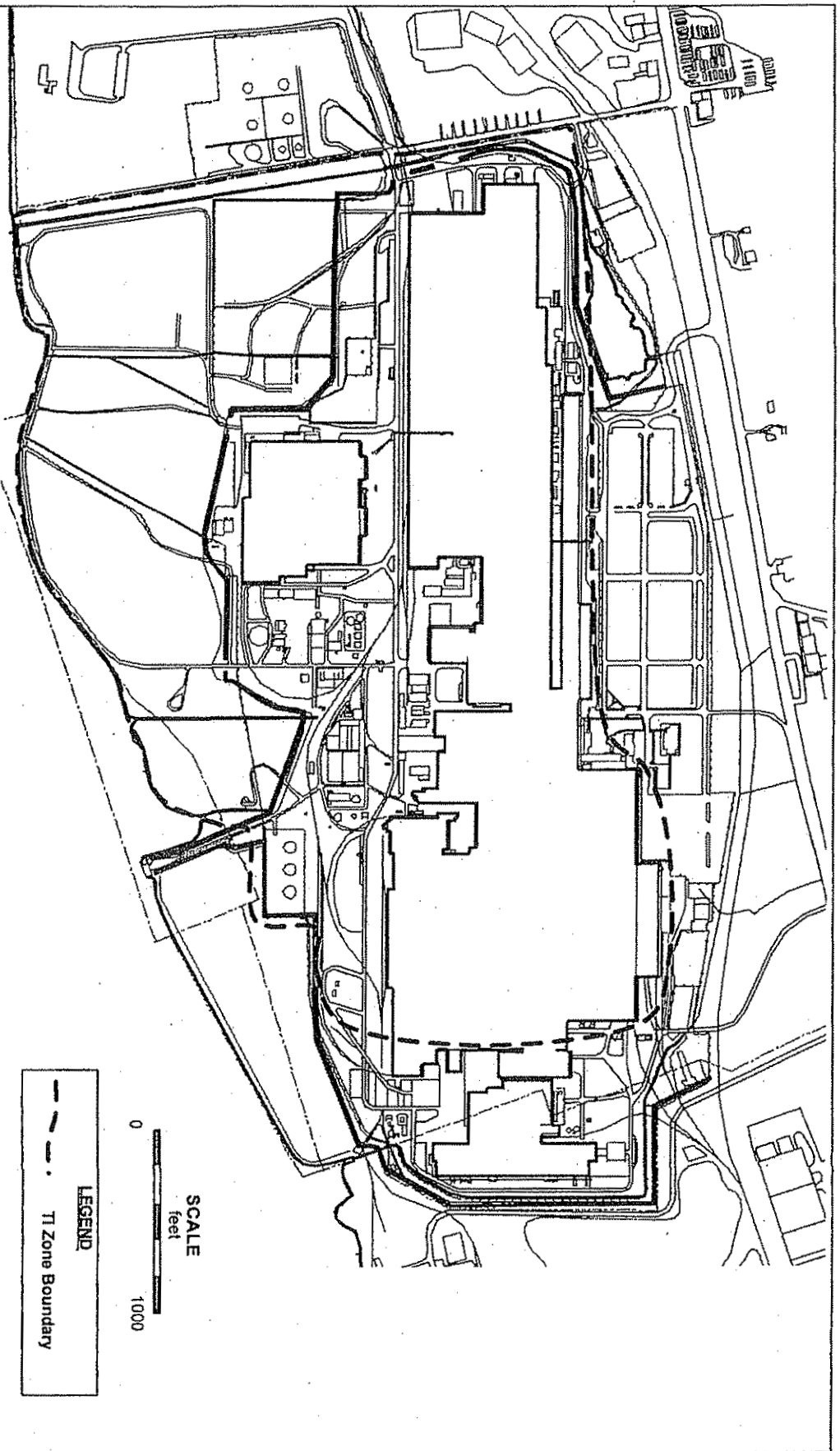


FIGURE 2-10
 CONCEPTUAL MODEL FOR INGESTION PATHWAY EXPOSURES TO PCBs
 Alcoa-Davenport Works, Riverdale, Iowa





*Adapted from Figure 6--1 of the Technical Impracticability Evaluation Report for Groundwater Restoration (Appendix A to the Alcoa-Davenport Works Groundwater Feasibility Study Report, ENSR, May 2004)

Figure 3
TI Zone Boundary
 Alcoa-Davenport Works, Riverdale, Iowa

Item No.	Component	Quantity	Unit	Unit Price	Cost
1	Air Stripper Installation (1b)	1	LS	\$ 25,000	\$ 25,000
	Site Preparation	1	LS	\$ 200,000	\$ 200,000
	Air Stripper Equipment	1	LS	\$ 200,000	\$ 200,000
2	Upgrade Existing Wells (2b)	3	EA	\$ 12,500	\$ 37,500
3	Groundwater Discharge (Recycle/Reuse) (3b)				

ALTERNATIVE IIB
DIRECT CAPITAL COSTS

Item No.	Component	Quantity	Unit	Unit Price	Cost
4	Air Stripper O&M (4a)	1	30 Yrs	\$ 1,172,600	\$ 1,172,600
5	NPDES Monitoring (5a)	1	30 Yrs	\$ 56,000	\$ 56,000
6	Groundwater Monitoring (6a)	1	30 Yrs	\$ 675,000	\$ 675,000
7	Institutional Controls (7a)	1	LS	\$ 10,000	\$ 10,000
	Deed Restrictions	1	30 Yrs	\$ 2,251,000	\$ 2,251,000
	Site Security	1	30 Yrs	\$ 56,000	\$ 56,000
	Maintenance of Fencing and Signage	1	30 Yrs	\$ 56,000	\$ 56,000
8	Engineering/Permitting Services (8a)	1	LS	\$ 50,000	\$ 50,000

ALTERNATIVE IIA
INDIRECT CAPITAL COSTS

Item No.	Component	Quantity	Unit	Unit Price	Cost
1	Air Stripper Installation (1a)	1	LS	\$ 25,000	\$ 25,000
	Site Preparation	1	LS	\$ 200,000	\$ 200,000
	Air Stripper Equipment	1	LS	\$ 200,000	\$ 200,000
2	Upgrade Existing Wells (2a)	3	EA	\$ 12,500	\$ 37,500
3	Groundwater Discharge (Existing System) (3a)	0	N/A	\$ -	\$ -

ALTERNATIVE IIA
DIRECT CAPITAL COSTS

TABLE 4-4
FFS COST ESTIMATE
ALTERNATIVES IIA & IIB
GROUNDWATER EXTRACTION AND TREATMENT
ALCOA DAVENPORT WORKS
RIVERDALE, IOWA
Jul-2003

INDIRECT CAPITAL COSTS				
	Piping and Pumping System	LS	1	\$ 15,000
	Sand Filter	LS	1	\$ 40,000
Total Alternative IIb				
	4	Air Stripper O&M (4b)	30 Yrs	\$1,172,600
	5	Sand Filter O&M (5b)	30 Yrs	\$ 275,000
	6	NPDES Monitoring (6b)	30 Yrs	\$ 56,000
	7	Groundwater Monitoring (7b)	30 Yrs	\$ 675,000
	8	Institutional Controls (8b)		
		Deed Restrictions	LS	\$ 10,000
		Site Security	30 Yrs	\$2,251,000
		Maintenance of Fencing and Signage	30 Yrs	\$ 56,000
	9	Engineering/Permitting Services (9b)	LS	\$ 60,000
	Total Alternative IIb			
	\$4,873,100			

FOOTNOTES
TABLE 4-4
FFS COST ESTIMATE
ALTERNATIVES IIA & IIB
GROUNDWATER EXTRACTION AND TREATMENT
ALCOA DAVENPORT WORKS
RIVERDALE, IOWA
JULY 2003

- 1a. Budgetary cost estimate provided by SAIC.
- 2a. Budgetary cost estimate provided by SAIC.
- 3a. Assume no additional costs associated with utilizing the existing treatment system discharge.
- 4a. Budgetary yearly cost estimate (\$104,161/year) provided by SAIC. Assume a net present worth value based on an eight-percent rate of return.
- 5a. Based on actual annual accrued costs (approximately \$5,000/year) for current NPDES sampling and analysis program. Assume a net present worth value based on an eight-percent rate of return.
- 6a. Based on actual annual costs (approximately \$60,000/year) accrued for current well network sampling and analysis program. Assume a net present worth value based on an eight-percent rate of return.
- 7a. Deed restriction cost estimate based on assumed attorney's fees and drawing preparation for the establishment of deed restrictions. Site security estimate based on approximate annual costs (\$200,000) accrued for guard service considered related to on-going remedial activities. Site security costs related to overall site operations significantly higher. Assume a net present worth value based on an eight-percent rate of return.
- 8a. Assumed cost based on approximately 20 percent of the direct capital costs.

- 1b. Budgetary cost estimate provided by SAIC.
- 2b. Budgetary cost estimate provided by SAIC.
- 3b. Piping/pumping cost based on assumed budgetary lump sum to route the groundwater discharge water to a location in the mill. Actual costs may vary significantly based on the actual location of final reuse. Assume that a sand filter will be utilized for supplemental treatment of the air stripper effluent prior to recycle/reuse. Budgetary capital cost estimate for the sand filter provided by Hoffland Environmental Inc.
- 4b. Budgetary yearly cost estimate (\$104,161/year) provided by SAIC. Assume a net present worth value based on an eight-percent rate of return.

- 5b. Based on the following assumed annual costs:
- Replacement sand filter media – assume \$1,500;
 - Annual power – assume \$2,000;
 - O&M Labor – assume \$20,000; and,
 - Miscellaneous equipment/replacement parts - \$1,000.
- Assume a net present worth value based on an eight-percent rate of return. Assume no discharge monitoring required.
- 6b. Based on actual annual costs (approximately \$5,000/year) accrued for current NPDES sampling and analysis program. Assume a net present worth value based on an eight-percent rate of return.
- 7b. Based on actual annual costs (approximately \$60,000/year) accrued for current well network sampling and analysis program. Assume a net present worth value based on an eight-percent rate of return.
- 8b. Deed restriction cost estimate based on assumed attorney's fees and drawing preparation for the establishment of deed restrictions. Site security based on approximate annual costs (\$200,000/year) accrued for guard service. Assume a net present worth value based on an eight-percent rate of return.
- 9b. Assumed cost based on approximately 20 percent of the direct capital costs.

TABLE 3-1
POTENTIAL FEDERAL AND STATE LOCATION-SPECIFIC ARARS, ALCOA-DAVENPORT WORKS SITE, RIVERDALE, IOWA
(ADDRESSED AS PART OF FSA UNIT EVALUATION PROGRAM)

Location	Requirement	Prerequisite	Clation FEDERAL	ARAR Determination	Comments
Executive Order 11988, Floodplain Management; and Fish and Wildlife Coordination Act, 16 U.S.C. 661 et seq.					
Within floodplain	Action to avoid adverse effects, minimize potential harm, restore and preserve natural and beneficial values	Action that will occur in a floodplain, i.e., lowlands and relatively flat areas adjoining inland and coastal waters and other flood-prone areas.	40 CFR 6, Appendix A, and 40 CFR 6.302(b)	Applicable To be addressed as part of FSA Unit Evaluation Plan Program	The Alcoa site is located on a floodplain terrace. Therefore, remedial actions must meet the requirements of this Executive Order.
Executive Order 11990, Protection of Wetlands					
Wetlands	Action to avoid adverse effects, minimize potential harm, and preserve and enhance wetlands, to the extent possible	Action involving construction of facilities or management of property in wetlands, as defined by 40 CFR Part 6, Appendix A, section 4(i)	Executive Order 11990 Section 7(c); 40 CFR Part 6, Appendix A; 40 CFR 6.302	Applicable To be addressed as part of FSA Unit Evaluation Plan Program	There are two wetlands on the Alcoa site. Remedial actions must be in compliance with the requirements of this Executive Order.
Clean Water Act, 33 U.S.C. 1251 et seq.					
Wetlands	Action to prohibit discharge of dredged or fill material into wetland without a permit	Wetlands, as defined by Executive Order 11990, Section 7	CWA Section 404; 40 CFR Part 230; and 33 - 330	Applicable To be addressed as part of FSA Unit Evaluation Plan Program	There are two wetlands on the Alcoa site. Remedial actions must be in compliance with these requirements.
Historic Sites, Buildings, and Antiquities Act, 16 U.S.C. 461 et seq., National Archeological and Historical Preservation Act, 16 U.S.C. Section 469					
Within area where action may cause irreparable harm, loss, or destruction of significant artifacts	Action to recover and preserve artifacts	Alterations of terrain that threatens significant scientific, prehistoric, data.	36 CFR Part 65	Applicable To be addressed as part of FSA Unit Evaluation Plan Program	Scientific, prehistoric, historic, or archaeological artifacts are not expected to be discovered or destroyed during remedial actions at the Alcoa site. Nonetheless, the law is applicable should such artifacts be discovered during remedial actions.
Historic Sites, Buildings, and Antiquities Act, 16 U.S.C. 461 et seq.					
Historic sites	Requires identification and preservation of cultural landmarks (including natural landmarks) on federal lands.	Areas designated as Historic sites	16 U.S.C. 461 - 467	Relevant and Appropriate To be addressed as part of FSA Unit Evaluation Program	Scientific, prehistoric, historic, or archaeological artifacts are not expected to be discovered or destroyed during remedial actions at the Alcoa site. Nonetheless, the law is applicable should such artifacts be discovered during remedial actions.
Iowa Code Annotated, Title 11, Natural Resources; Subtitle 6, Wildlife; Chapter 481A, Wildlife Conservation					
Within area used by wildlife	Places restrictions on the taking of wildlife	Presence of wildlife	I.A.C. 481A.38	Applicable To be addressed as part of FSA Unit Evaluation Program	Remedial actions on the Alcoa site must meet these requirements.

Groundwater		Groundwater Protection		Standards for solid waste disposal facilities		Groundwater Protection		Standards for permitted hazardous waste facilities	
Solid Waste Disposal Act (SWDA) as Amended by the Resource Conservation Act (RCRA), 42 U.S.C. 6901 et seq.									
Groundwater Protection		Owners and operators of new municipal solid waste landfill (MSWLF) units		Standards for solid waste disposal facilities		Owners and operators of permitted facilities that treat, store, or dispose of hazardous waste		Groundwater Protection	
40 CFR 258.40(a)(1).		40 CFR 264.94 -		Relevant and Appropriate To be addressed as part of PSA Unit Evaluation Program		Relevant and Appropriate To be addressed as part of PSA Unit Evaluation Program		40 CFR 264.94 -	
These groundwater protection standards are not applicable because Alcoa is not a new MSWLF unit. The standards are relevant and appropriate cleanup standards for groundwater at Alcoa due to the on-site presence of waste storage and disposal areas.		These groundwater protection standards are not applicable because Alcoa is not a permitted facility. The standards are relevant and appropriate cleanup standards for groundwater at Alcoa due to the on-site presence of waste storage and disposal areas.		Groundwater standards for COCs at Alcoa are provided in Table 3.		Groundwater standards for COCs at Alcoa are provided in Table 3.		Groundwater standards for COCs at Alcoa are provided in Table 3.	

TABLE 3-2
 POTENTIAL FEDERAL AND STATE CHEMICAL SPECIFIC GROUNDWATER ARARS
 ALCOA-DAVENPORT FS

Medium	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Groundwater	National Primary Drinking Water Standards (Maximum Contaminant Levels [MCL]) are health-based standards for public water supply systems.	Community water systems; and nontransient, noncommunity water systems.	40 Code of Federal Regulations (CFR) 141.11(b); 40 CFR 141.12(c); 40 CFR 141.61(a) and (c); 40 CFR 141.62(b)	Not Applicable, Appropriate	An MCL is the maximum permissible level of contaminant in water that is delivered to any user of a public water supply system. MCLs are not applicable cleanup standards for groundwater at the Alcoa-Davenport Works (Alcoa) site because only a public water supply system is required to meet MCLs. Alcoa is not a public water supply system. According to 40 CFR 300.430(e)(2)(i)(B) for any groundwater determined to be a current or potential source of drinking water, where the corresponding maximum contaminant level goal (MCLG) is set at zero, the MCL is relevant and appropriate. Available MCLs for chemicals of concern (COCs) at Alcoa are provided in Table 3-3.
			[Not Promulgated] Office of Water, U.S. Environmental Protection Agency (EPA), "Drinking Water Regulations and Health Advisories," Winter 2004.		

TABLE 3-2
 POTENTIAL FEDERAL AND STATE CHEMICAL SPECIFIC GROUNDWATER ARARS
 ALCOA-DAVENPORT FS

Medium	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Groundwater	National Primary Drinking Water Standards (Maximum Contaminant Level Goals (MCLG)) are nonenforceable health goals for public water supply systems	Community water systems; and nontransient, noncommunity water systems	40 CFR 141.50(a) and (b); 40 CFR 141.51(b) and [Not Promulgated] Office of Water, EPA, "Drinking Water Regulations and Health Advisories," Winter 2004.	Relevant and Appropriate	MCLGs are not applicable cleanup standards for groundwater at Alcoa because MCLGs are nonenforceable health goals for public water supply systems. Alcoa is not a public water supply system. According to 40 CFR 300.430(e)(2)(i)(B) and (C), MCLGs set at levels above zero are cleanup standards for contaminants in groundwater determined to be a current or potential source of drinking water if the MCLGs are relevant and appropriate. If an MCLG is determined not to be relevant and appropriate, the corresponding MCL shall be attained where relevant and appropriate. Available MCLGs for COCs at Alcoa are provided in Table 3-3.
Groundwater	EPA Health Advisory Levels (HALs), and EPA Negligible Risk Levels (NRLs).	Contaminated groundwater.	[Not Promulgated] Office of Water, EPA, "Drinking Water Regulations and Health Advisories," Winter 2004.	Relevant and Appropriate	HALs and NRLs are not applicable cleanup standards for groundwater at Alcoa because these are nonenforceable drinking water standards.

TABLE 3.2
 POTENTIAL FEDERAL AND STATE CHEMICAL SPECIFIC GROUNDWATER ARARS
 ALCOA-DAVENPORT FS

Medium	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Groundwater	Proposed MCLs are nonenforceable health-based standards for public water supply systems; and Proposed MCLGs are nonenforceable health goals for public water supply systems.	Community water systems; and nontransient, noncommunity water system	Not Promulgated Office of Water, EPA, "Drinking Water Regulations and Health Advisories," Winter 2004.	To-Be-Considered Guidance	Proposed MCLs and MCLGs may provide guidance for the cleanup of on-site contaminated groundwater that migrates off site and flows into groundwater that is current or potential source of drinking water, in the absence of promulgated federal MCLs or MCLGs, State of Iowa MCLs, or other ARARs.
Groundwater	EPA Region 9 PRGs are nonenforceable health-based standards.	Contaminated groundwater.	Not Promulgated EPA Region 9 PRG Table, 2002 online.	To-Be-Considered Guidance	PRGs may provide guidance for the screening of on-site contaminated groundwater in the absence of promulgated federal MCLs or MCLGs, State of Iowa MCLs, or other ARARs.

TABLE 3-2
 POTENTIAL FEDERAL AND STATE CHEMICAL SPECIFIC GROUNDWATER ARARS
 ALCOA-DAVENPORT FS

Medium	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Groundwater	Iowa Environmental Quality Act, I.A.C., Division 567, Title X, Chapter 133, Iowa Responsible Parties Cleanup Regulations Action Levels for groundwater cleanup actions	Point source contamination; I.A.C. 133.4(455B,455E)(2) and (3)(b)(1) contamination presents an aggravated or significant risk; cleanup actions required to abate, prevent, or remediate a hazardous condition, the presence of a hazardous substance or waste, the release of a regulated substance, or the discharge of a pollutant	I.A.C. 133.4(455B,455E)(2) and (3)(b)(1)	Relevant or Appropriate	The Iowa Department of Natural Resources (IDNR) and EPA Region 7 agreed to use the approach in IAC 137.5(4) for determining the appropriate groundwater standard for each COC even though a) the approach described in IAC 137 is different from the approach described in IAC 133, and b) IAC 137 (Land Recycling Program and Response Action Standards) is not an ARAR. The approach used to select the standards is described in Section 3.2 of the FS and the resulting standards are provided on Table 3-3.

TABLE 3-2
 POTENTIAL FEDERAL AND STATE CHEMICAL SPECIFIC GROUNDWATER ARARS
 ALCOA-DAVENPORT FS

Medium	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Groundwater	State MCLs are health-based standards for public water systems.	Community water systems; and nontransient, noncommunity water systems	I.A.C. 41.3(455B)(1)(b); and 41.3(455B)(2)(a), (c), and (d)	Relevant and Appropriate	The Iowa Department of Natural Resources (IDNR) and EPA Region 7 agreed to use the approach in IAC 137.5(4) for determining the appropriate groundwater standard for each COC even though a) the approach described in IAC 137 is different from the approach described in IAC 133, and b) IAC 137 (Land Recycling Program and Response Action Standards) is not an ARAR. The approach used to select the standards is described in Section 3.2 of the FS and the resulting standards are provided on Table 3-3.

Table 3-3 Chemical-Specific ARARs
Alcoa-Davenport FS

Parameter Group	Groundwater Within Plant Boundary			
	Constituents Detected in Groundwater	EPA MCL(G) ²	EPA HAL ³	EPA 10 ⁴ NRL ⁵
VOCs	1,1,1-Trichloroethane	200	--	--
	1,1,2-Tetrachloroethane	NA	20	--
	1,1,2-Trichloroethane	3	--	--
	1,1-Dichloroethane	NA	NA	810
	1,1-Dichloroethane	7	--	--
	1,2-Dichlorobenzene	600	--	--
	1,2-Dichloroethane	5	--	--
	1,2-Dichloroethane (total)	70	--	--
	2-Butanone -MEK	NA	4000	--
	4-Methyl-2-pentanone (hexanone)	NA	NA	160
	Acetone	NA	NA	610
	Acrolein	NA	NA	0.042
	Benzene	5	--	--
	Bromoform	80	--	--
	Carbon disulfide	NA	NA	1000
	Carbon tetrachloride	5	--	--
	Chlorobenzene	100	--	--
	Chloroethane	NA	NA	416
	Chloroform	80	--	--
	Chloromethane	NA	30	--
	Dibromochloromethane	60	--	--
	Ethylbenzene	700	--	--
	Methylene chloride	5	--	--
	n-propylbenzene	NA	NA	240
	sec-butylbenzene	NA	NA	240
	Tetrachloroethene	5	--	--
	Toluene	1000	--	--
trans-1,2-Dichloroethene	100	--	--	
trans-1,3-Dichloropropene	NA	NA	NA	
Trichloroethene	5	--	--	
Vinyl chloride	2	--	--	
Xylenes (total)	10000	--	--	
Acenaphthene	NA	NA	370	
Anthracene	NA	NA	1800	
Benzo(a)anthracene	0.2	--	--	
Benzo(a)pyrene	0.2	--	--	
Benzo(b)fluoranthene	0.2	--	--	
Benzo(g,h,i)perylene	NA	NA	NA	
Benzo(k)fluoranthene	NA	NA	0.92	
Chrysene	0.2	--	--	
Dibenz(a,h)anthracene	0.2	--	--	
Fluoranthene	NA	NA	1500	
Fluorene	NA	NA	240	
Indeno(1,2,3-cd)pyrene	0.2	--	--	
Naphthalene	NA	400	--	
Phenanthrene	NA	NA	NA	
Pyrene	NA	NA	180	
Di-n-butyl phthalate	NA	NA	3600	
Phenol	NA	2000	--	
Aroclor 1242	0.5	--	--	
Aroclor 1248	0.5	--	--	
Aroclor 1254	0.5	--	--	

See notes on Page 2.

Table 3-3 Chemical-Specific ARARs
Alcoa-Davenport FS

Parameter Group		BLRA COPC	MCL(g) ²	EPA	HAL ³	NRL ³	10 ⁴	BLRA	RBCc ⁴	BLRA 10 ⁵
VOCS		1,1-Dichloroethane	NA	NA	NA	NA	NA	1522	NA	NA
		1,2-Dichloroethane (total)	70*	--	--	--	--	--	--	--
		Benzene	5	--	--	--	--	--	--	--
		Carbon disulfide	NA	NA	NA	NA	NA	1778	NA	NA
		Chloroform	.80**	--	--	--	--	--	--	--
		Chloromethane	NA	30	NA	NA	NA	--	--	--
		Methylene chloride	5	--	--	--	--	--	--	--
		PCE	5	--	--	--	--	--	--	--
		TCE	5	--	--	--	--	--	--	--
		Toluene	1000	--	--	--	--	--	--	--
		Vinyl chloride	2	--	--	--	--	--	--	--

Groundwater @ Northwestern Facility Boundary

Parameter Group		BLRA COPC	MCL(g) ²	EPA	HAL ³	NRL ³	10 ⁴	BLRA	RBCc ⁵	BLRA 10 ⁵
VOCS		1,1,1-Trichloroethane	200	--	--	--	--	--	--	--
		1,1-Dichloroethane	NA	NA	NA	NA	NA	1254	NA	NA
		1,2-Dichloroethane (total)	70*	--	--	--	--	--	--	--
		2-Butanone-MEK	NA	4000	NA	NA	NA	--	--	--
		Acetone	NA	NA	NA	NA	NA	929	NA	NA
		Benzene	5	--	--	--	--	--	--	--
		Carbon disulfide	NA	NA	NA	NA	NA	1700	NA	NA
		Methylene chloride	5	--	--	--	--	--	--	--
		PCE	5	--	--	--	--	--	--	--
		TCE	5	--	--	--	--	--	--	--
		Toluene	1000	--	--	--	--	--	--	--

Groundwater @ Eastern Facility Boundary

¹For PAHs, the ARAR was selected as the greater of the BAP MCL or the constituent-specific HAL, NRL, or EPA Region 9 PRG. The MCL for BAP has been set at 0.2 ug/L because EPA (2004) believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water. [Reference: EPA 2004, EPA Ground Water & Drinking Water Consumer Factsheet on Benzo(a)pyrene.
www.epa.gov/safewater/contaminants/dw_contaminants/benzopyr.html.]

²MCL = Maximum Contaminant Level; MCLG = Maximum Contaminant Level Goal. Source: National Revised Primary Drinking Water Regulations, 40 CFR 141.61(a) and (c) (MCLs for Organic Contaminants), and 40 CFR 141.50(a) and (b) (MCLGs for Organic Contaminants).

³HAL = Health Advisory Level; NRL = Negligible Risk Level for carcinogens. Source: EPA, "Drinking Water Regulations and Health Advisories", EPA Document 822-R-04-005, Office of Water, Winter 2004.

⁴RBCs based on Baseline Risk Assessment Residential Potable Water User Scenario

⁵RBCs based on Baseline Risk Assessment Industrial Worker Scenario

*MCL for cis-1,2-Dichloroethane

**MCL for total trihalomethanes

NA = None available

-- = Not applicable

All units are ug/L

TABLE 3-4
 POTENTIAL FEDERAL AND STATE ACTION-SPECIFIC ARARS
 ALCOA-DAVENPORT WORKS SITE, RIVERDALE, IOWA

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Direct Discharge of Treatment System Effluent	Applicable federal water quality criteria for the protection of aquatic life must be complied with when environmental factors are being considered.	Surface discharge of treated effluent.	50 FR 30784 (July 29, 1985).	Applicable	Discharge from the groundwater treatment system is in compliance and managed under the Alcoa Davenport Works NPDES program.
	The discharge must be consistent with the requirements of a Water Quality Management Plan approved by EPA under Section 208(b) of the Clean Water Act.	Surface discharge of treated effluent.	CWA Section 208(b)	Relevant & Appropriate	Discharge must comply with substantive but not administrative requirements of the management plan.
Direct Discharge of Treatment System Effluent (Cont'd)	Regulate the point source discharge of water into surface water bodies. The State of Iowa has authority to administer NPDES in Iowa. Refer to State ARARs.	Surface discharge of treated effluent.	National Pollutant Discharge Elimination System (NPDES) 40 CFR 122.1-64	Applicable	Although a CERCLA site remediation is not required to obtain an NPDES permit for onsite discharges to surface waters, the substantive requirements of the NPDES permit program must be met by the remediation action if treated effluent is discharged to surface waters. The permitting authority should be contacted on a case-by-case basis to determine effluent standards.
	Prevent potential adverse health effects associated with organic HAPs emitted from site remediation activities.	Operate the pump and treat system	Clean Air Act (CAA), National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 63 Subpart GGGGG	Applicable	Potentially applicable if total VOC concentration in groundwater entering the remediation system exceeds 10 ppmw. Influent to the air stripper at Alcoa-Davenport is below the limit and as such, does not pose potential adverse health effects.
Groundwater Remediation (Pump & Treat) Operations					

TABLE 3-4
 POTENTIAL FEDERAL AND STATE ACTION-SPECIFIC ARARS
 ALCOA-DAVENPORT WORKS SITE, RIVERDALE, IOWA

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Groundwater Remediation System Augmentation	Provides limits on the release of particulate matter.	Fugitive dust generation	CAA, National Primary and Secondary Ambient Air Quality Standards for particulate matter, 40 CFR Part 50 Subchapter C	Applicable	Potentially applicable for alternatives involving construction of a recovery system that may cause particulate matter to be released.
	Provides criteria for defining solid waste as hazardous.	Well Drilling	Resource Conservation and Recovery Act (RCRA) 40 CFR 261	Relevant and Appropriate	Relevant and appropriate if investigation derived waste (IDW) exhibits characteristics of hazardous waste. If IDW exhibits characteristics that exceed the hazardous criteria, then disposal of those materials would be regulated.
	Establishes regulations covering activities of generators of hazardous wastes. Requirements include ID number, record keeping, and use of manifests.		Standards for RCRA Generators, 40 CFR 262.10-40	Relevant and Appropriate	
Waste Generation	The transport of hazardous waste is subject to requirements including DOT regulations, manifesting, and recording keeping.	Generation of wastes	Standard for RCRA Transport, 40 CFR 263.10-31	Relevant and Appropriate	Applicable for alternatives that produce wastes.
	Requires a written waste management plan for testing and disposal of wastes		RCRA General Facility Standards, 40 CFR 264 Subpart B	Applicable	
Free Product Recovery	Regulates disposal of PCB-containing materials at concentrations of 50 ppm or more. Disposal of these materials may require a TSCA-permitted landfill or incinerator.	Recovery of oil seeping into pits and basements	Toxic Substances Control Act (TSCA) 40 CFR Part 761 Subparts D and K	Applicable	Potentially applicable if removed product contains more than 50 ppm PCBs.
	Regulation transportation of hazardous materials	Off-site disposal of hazardous waste	Hazardous Materials Regulations, 49 CFR Parts 171 to 180	Relevant and Appropriate	These requirements are applicable to all alternatives involving transport of contaminated materials from the site.
Waste Transport	Requirements regarding procedures for planning and implementing the off-site transfer of any hazardous substance, pollutant, or contaminant defined as a CERCLA waste.	Off-site disposal of hazardous waste	Revised Off-Site Policy, 40 CFR 300.440	Relevant and Appropriate	Potentially applicable to all alternatives that employ off-site disposal.

TABLE 3-4
 POTENTIAL FEDERAL AND STATE ACTION-SPECIFIC ARARS
 ALCOA-DAVENPORT WORKS SITE, RIVERDALE, IOWA

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
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POTENTIAL STATE ACTION-SPECIFIC ARARS					
Direct Discharge of Treatment System Effluent	Iowa Department of Natural Resources (IDNR) - Environmental Protection Division requirements regarding discharge of treated effluent into waters of the state.	Discharge to surface water	IDNR Code Section 455B and Rule 567-64.3	Applicable	Currently treating groundwater - Iowa NPDES Permit No. 82-78-1-00
	Provides standards regarding ambient air quality.	Fugitive dust generation	IDNR Code Section 455B and Rule 567-28.1	Applicable	IDNR defers to federal regulations (40CFR50)
Groundwater Remediation System Augmentation	Private water well construction permit.	Well installation	IDNR Code Section 455B and Rule 567-38	Relevant and Appropriate	Not applicable to CERCLA response actions, but considered relevant and appropriate for the installation and operation of any future recovery wells.
	Uniform well construction requirements for protecting groundwater	Well installation	IDNR Code Section 455B and Rule 567-49	Relevant and Appropriate	
	Water withdrawal permit	Water Withdrawal	IDNR Code Section 455B and Rule 567-51	Relevant and Appropriate	
	Conditions on permitted groundwater withdrawals	Water Withdrawal	IDNR Code Section 455B and Rule 567-52.4	Relevant and Appropriate	

Table 3-3
 Chemical-Specific ARARs and TBCs
 Alcoa MRP15 Feasibility Study
 Davenport, Iowa

Regulation	Citation	ARAR or TBC	Description	Rationale
Clean Water Act [Federal Water Pollution Control Act, as amended]	33 U.S.C. §§ 1251-1387; 40 CFR § 129.105(a)(4)	ARAR	The ambient water quality criterion for navigable waters is 0.001 µ/L total PCBs.	Applicable to Mississippi River surface water.
Clean Water Act	33 U.S.C. § 131(a); 63 Fed. Reg. 68354 (December 10, 1998)	ARAR	Criteria continuous concentration (chronic) for PCBs is 0.014 µg/L in freshwater.	Relevant and appropriate water quality criterion to protect against chronic effects in aquatic life.
Food and Drug Administration	21CFR109.30 (December 10, 1998) Title 21, Volume 2, Parts 100 to 169 Pages 204 - 205	ARAR	Tolerance limit of 2 mg/kg PCBs in edible portions of fish tissue	Used by State of Iowa to Establish the need for fish advisories based on PCB concentrations in fish tissue.
Guidance on Remedial Actions for Superfund Sites with PCB Contamination	OSWER Directive No. 9355.4-01 dated August 1990	TBC	Provides guidance in the investigation and remedy selection process for PCB-contaminated Superfund sites. Provides preliminary remediation goals for various contaminated media, including sediment (pp. 34-36) and identifies other considerations important to the protection of human health and the environment.	May be considered when assessing sediment remediation.
Guidance on Remedial Actions for Superfund Sites with PCB Contamination	OSWER Directive No. 9355.4-01 dated August 1990	TBC	Provides guidance in the investigation and remedy selection process for PCB-contaminated Superfund sites. Provides preliminary remediation goals for various contaminated media, including sediment (pp. 34-36) and identifies other considerations important to the protection of human health and the environment.	May be considered when assessing sediment remediation.
STATE ARARs AND TBCs				
Water Quality Standards	I.A.C. Chapter 61	ARAR	Establishes water quality standards for surface waters of the state. The human health-based state criterion for PCBs is 0.004 µg/L. The chronic aquatic life criterion for PCBs is 0.014 µg/L.	Applicable to Mississippi River surface water and if treated water is discharged to the river.
Effluent and Pretreatment Standards	I.A.C. Chapter 62	ARAR	Requires NPDES permit for point source discharge of pollutants into navigable waters of the state.	Applicable if treated water is discharged to the river.
Rules for determining cleanup actions and Responsible parties	I.A.C., Title X, Chapter 133	ARAR	Establishes the procedures and criteria the Department will use to determine the parties responsible and cleanup actions necessary to meet the goals of the state pertaining to the protection of groundwater.	Applicable to any soil or groundwater above Iowa Action Levels. This site is being remediated under CERCLA and the responsible parties have already been determined.

Table 3-4
Action-Specific ARARs and TBCs
Alcoa MRP15 Feasibility Study
Davenport, Iowa

Regulation	Citation	ARAR or TBC	Description	Rationale
FEDERAL ARARs AND TBCs				
Clean Water Act [Federal Water Pollution Control Act, as amended]	Section 404(b) of the Clean Water Act, 33 U.S.C. § 1344(b); 40 CFR Part 230	ARAR	Guidelines for Specification of Disposal Sites for Dredged or Fill Material. Except as otherwise provided under Clean Water Act Section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. If there is no other practical alternative, impacts must be minimized. Includes criteria for evaluating whether a particular discharge site may be specified.	ARAR for remediation alternatives that include dredging/filling.
	Section 404(c) of the Clean Water Act, 33 U.S.C. § 1344(c); 40 CFR Part 231; 33 CFR Parts 320-329	ARAR	These regulations apply to all existing, proposed, or potential disposal sites for discharges of dredged or fill materials into U.S. waters, which include wetlands. Includes special policies, practices, and procedures to be followed by the U.S. Army Corps of Engineers in connection with the review of applications for permits to authorize the discharge of dredged or fill material into waters of the U.S. pursuant to Section 404 of the Clean Water Act. In accordance with CERCLA Section 121(e), a permit is not required for on-site CERCLA response actions, although the such activities must comply with substantive requirements of these regulations.	ARAR for remedial alternatives that include discharges of dredged or fill materials into U.S. waters.
Solid Waste Disposal Act, as amended – Regulated Levels for Toxic Characteristic Leaching Procedure (TCLP) Constituents	40 CFR Part 261	ARAR	Specify TCLP constituent levels for identifying wastes that exhibit toxicity characteristics.	Provisions of this Part, or equivalent authorized Iowa State regulations, may be applicable to determine whether sediments removed from the Mississippi River contain hazardous waste(s).
Solid Waste Disposal Act, as amended – Standards Applicable to Generators of Hazardous Waste	40 CFR Part 262	ARAR	Includes manifest, record keeping and other requirements applicable to generators of hazardous waste.	Provisions of this Part, or equivalent authorized Iowa State regulations, may apply to remedial alternatives that include dredging of sediments from the Mississippi River that are hazardous wastes.

Table 3-4
Action-Specific ARAAs and TBCs
Alcoa MRL15 Feasibility Study
Davenport, Iowa

ARAAs or TBCs	Regulation	Citation	Description	Rationale
ARAR	ARAR	40 CFR Part 263	Sets forth standards for transporters of hazardous wastes, including the receipt of an EPA identification number and manifesting requirements	Provisions of this Part, or equivalent authorized Iowa State regulations, may apply to remedial alternatives that include dredging of sediments from the Mississippi River that are hazardous wastes.
ARAR	ARAR	40 CFR Parts 264 and 265 removed	Includes management standards including record keeping, requirements for particular units such as tanks or containers, and other requirements applicable to owners and operators of hazardous waste treatment, storage, and disposal facilities.	For dredging alternatives, if it is determined that sediments removed from the Mississippi River contain hazardous waste(s), provisions of this Part, or equivalent authorized Iowa State regulations, may apply to the sediment transfer facility(ies).
ARAR	ARAR	40 CFR Part 268	Places land disposal restrictions, including treatment standards and related testing, tracking and record keeping requirements, on hazardous waste(s).	Provisions of this Part or equivalent authorized Iowa State regulations, may apply to remedial alternatives that include dredging of sediments from the Mississippi River that are hazardous wastes.
ARAR	ARAR	40 CFR Part 761	Provides regulations for storage, handling, and disposal of sediment containing PCBs greater than 50 ppm.	Applicable to remedial alternative which include removal and management of sediment with greater than 50 ppm PCBs.
ARAR	ARAR	49 CFR Part 171	Transportation and handling requirements for materials containing PCBs.	Would apply to remedial alternatives which include transport of materials containing PCBs on public roadways.
ARAR	ARAR	40 CFR Part 263	Sets forth standards for transporters of hazardous wastes, including the receipt of an EPA identification number and manifesting requirements	Provisions of this Part, or equivalent authorized Iowa State regulations, may apply to remedial alternatives that include dredging of sediments from the Mississippi River that are hazardous wastes.
ARAR	ARAR	40 CFR Parts 264 and 265 removed	Includes management standards including record keeping, requirements for particular units such as tanks or containers, and other requirements applicable to owners and operators of hazardous waste treatment, storage, and disposal facilities.	For dredging alternatives, if it is determined that sediments removed from the Mississippi River contain hazardous waste(s), provisions of this Part, or equivalent authorized Iowa State regulations, may apply to the sediment transfer facility(ies).
ARAR	ARAR	40 CFR Part 268	Places land disposal restrictions, including treatment standards and related testing, tracking and record keeping requirements, on hazardous waste(s).	Provisions of this Part or equivalent authorized Iowa State regulations, may apply to remedial alternatives that include dredging of sediments from the Mississippi River that are hazardous wastes.
ARAR	ARAR	40 CFR Part 761	Provides regulations for storage, handling, and disposal of sediment containing PCBs greater than 50 ppm.	Applicable to remedial alternative which include removal and management of sediment with greater than 50 ppm PCBs.
ARAR	ARAR	49 CFR Part 171	Transportation and handling requirements for materials containing PCBs.	Would apply to remedial alternatives which include transport of materials containing PCBs on public roadways.

Table 3-5
Action-Specific ARARs and TBCs
Alcoa MRP15 Feasibility Study
Davenport, Iowa

Regulation	Citation	ARAR or TBC	Description	Rationale
Rivers and Harbors Act	33 U.S.C. § 403; 33 CFR Parts 320, 321 and 322	ARAR	Prohibits unauthorized obstruction or alteration of any navigable water in the U.S. (dredging, fill, cofferdams, piers, etc.); U.S. Army Corps of Engineers approval is generally required to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of the channel of any navigable water of the U.S. On-site CERCLA response actions are exempt from permit requirements pursuant to CERCLA Section 121(e), although such activities must comply with substantive requirements of these regulations.	Would apply to remedial activities that include dredging and/or capping.
Clean Air Act	42 U.S.C. §§ 7401-7671q; 40 CFR Parts 50, 51 and 52; National Primary and Secondary Ambient Air Quality Standards (NAAQS)	ARAR	Identifies emissions requirements for "major" sources of lead, NO _x , CO, PM ₁₀ , and SO ₂ in attainment and non-attainment areas.	Sediment processing facility(ies) required for dredging alternatives would not be a "major" source for purposes of the NAAQS, although the NAAQS would be relevant and appropriate for such a facility(ies).
USEPA Remedial Design/Remedial Action Handbook		TBC	General reference manual that provides remedial project managers with an overview of the remedial design and remedial action processes.	Would be consulted during remedial design and remedial action.
USEPA Superfund Remedial Design and Remedial Action Guidance	OSWER Directive No. 9355.0-4A, June 1986	TBC	Guidance document developed to assist agencies and parties who plan, administer, and manage remedial design and remedial action at Superfund sites.	Would be consulted during remedial design and remedial action.
STATE ARARs AND TBCs				
Hazardous Waste	IAC Chapter 141	ARAR	Defines criteria for characterization and listing of RCRA hazardous waste.	Applicable for proper identification of remedial action generated waste.
Iowa Solid Waste Management and Disposal General Requirements	SWDR 567-101	ARAR	Defines requirements for disposal of solid wastes.	Applicable if a remedial action produces a solid waste
Air Emission Standards	IAC 567-23.3 (455B)	ARAR	Establishes monitoring requirements for emission of particulates or dust from any process.	Applicable if remedial action involves excavation or other activity that may create dust
Ambient Air Quality Standards	IAC 567-28 (455B)	ARAR	Establishes monitoring requirements for PM ₁₀ and Lead during excavation	Applicable if remedial action involves excavation or other activity that may create dust

Table 3-5
 Location-Specific ARARs and TBCs
 MRP15 Study Area
 Davenport, Iowa

Regulation	Citation	ARAR or TBC	Description	Rationale
FEDERAL ARARs AND TBCs				
Coastal Zone Management Act (CZMA)	16 USC §§ 1451- 1465; 15 CFR Parts 923 and 930	ARAR	Federal agencies that conduct or support activities that directly affect a coastal use or resource must undertake those activities in a manner that is consistent, to the maximum extent practicable, with State coastal zone management programs that have been approved by the National Oceanographic and Atmospheric Administration (NOAA).	
Endangered Species Act	16 USC §§ 1531- 1544; 50 CFR Part 17, Subpart I; 50 CFR Part 402	ARAR	Federal agencies are required to verify that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of a critical habitat of such species, unless such agency has been granted an appropriate exemption by the Endangered Species Committee (16 USC § 1536).	
Fish and Wildlife Coordination Act	16 USC § 662	ARAR	Whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose, by any department or agency of the United States, such department or agency first shall consult with the United States Fish and Wildlife Service, Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular State in which the impoundment, diversion, or other control facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources.	Substantive requirements of the Fish and Wildlife Coordination Act are ARARs for dredging and capping remedies, although on-site CERCLA response actions are exempt from the consultation requirements of the Fish and Wildlife Coordination Act.

Table 3-5
 Location-Specific ARARs and TBCs
 MRP15 Study Area
 Davenport, Iowa

Regulation	Citation	ARAR or TBC	Description	Rationale
FEDERAL ARARs AND TBCs (cont'd)				
National Historic and Historical Preservation Act	16 USC §§ 470-470x-6; 36 CFR Part 800	ARAR	Response actions must take into account effect on properties on or eligible for inclusion on the National Registry of Historic Places.	Applicable if significant archeological sites exist on or in the vicinity of this site.
Statement of Procedures on Floodplain Management and Wetlands Protections	40 CFR Part 6, Appendix A	ARAR	Sets forth EPA policy and guidance for carrying out Executive Orders 11990 and 11988. <u>Executive Order 11988</u> : Floodplain Management requires federal agencies to evaluate the potential effects of actions they may take in a floodplain to avoid, to the extent possible, adverse effects associated with direct and indirect development of a floodplain. Federal agencies are required to avoid adverse impacts or minimize them if no practicable alternative. <u>Executive Order 11990</u> : Protection of wetlands requires federal agencies conducting certain activities to avoid, to the extent possible, adverse impacts associated with the destruction or loss of wetlands if a practicable alternative exists. Federal agencies are required to avoid adverse impacts or minimize them if no practicable alternative exists.	To be considered if remedial action is expected to affect floodplains or identified wetland areas (e.g., access roads).
EPA Office of Solid Waste and Emergency Response – Policy on Floodplains and Wetland Assessments for CERCLA Actions, August 1985		TBC	This memorandum discusses situations that require preparation of a floodplains or wetlands assessment, and the factors that should be considered in preparing an assessment, for response actions taken pursuant to Section 104 or 106 of CERCLA.	Would be consulted with respect to any floodplains or wetlands assessments that need to be performed.
Endangered Plants and Wildlife	IAC Chapter 481B	ARAR	Protects endangered species and the critical habitats upon which endangered species depend.	