APPENDIX E

Wyoming VRP Cleanup Levels (Fact Sheets 12 and 13)

Combined Cleanup Level Table

Effective June 30, 2009				
CAS No.	Contaminant	Residential Soil (mg/kg)	Migration to Groundwater[a] (mg/kg)	Water Cleanup Levels (ug/L)
	Volatile Organics Compounds (VOCs)			
75-07-0	Acetaldehyde	1.10E+01	4.50E-04	NA
67-64-1	Acetone	6.10E+04	4.40E+00	3.28E+04
75-05-8	Acetonitrile	8.70E+02	2.60E-02	2.30E-01
107-02-8	Acrolein	1.60E-01	8.60E-06	1.82E+01
107-13-1	Acrylonitrile	2.40E-01	9.90E-06	1.58E-01
107-18-6	Allyl alcohol	3.10E+02	3.70E-02	1.82E+02
107-05-1	Allyl Chloride	1.80E+00	6.80E-04	4.05E+00
71-43-2	Benzene	1.10E+00	2.30E-04	5.00E+00
542-88-1	Bis(chloromethyl)ether	NA	NA	3.87E-04
108-86-1	Bromobenzene	9.40E+01	1.50E-02	7.29E+02
75-27-4	Bromodichloromethane	1.00E+01	3.00E-04	8.00E+01
75-25-2	Bromoform (tribromomethane)	6.10E+01	2.30E-03	8.00E+01
74-83-9	Bromomethane (Methyl bromide)	7.90E+00	2.20E-03	5.10E+01
106-99-0	1,3-Butadiene	7.70E-02	9.00E-05	2.50E-02
71-36-3	1-Butanol	6.10E+03	7.50E-01	3.65E+03
75-15-0	Carbon disulfide	6.70E+02	2.70E-01	3.65E+03
56-23-5	Carbon tetrachloride	2.50E-01	7.90E-05	5.00E+00
108-90-7	Chlorobenzene	3.10E+02	6.80E-02	1.00E+02
126-99-8	2-Chloro-1,3-butadiene	8.60E+00	7.70E-03	7.29E+02
75-00-3	Chloroethane (ethyl chloride)	1.50E+04	6.00E+00	NA
67-66-3	Chloroform	3.00E-01	5.50E-05	8.00E+01
74-87-3	Chloromethane (methyl chloride)	1.70E+00	4.60E-04	NA
95-49-8	o-Chlorotoluene	1.60E+03	8.00E-01	7.29E+02
106-43-4	p-Chlorotoluene	5.50E+03	2.80E+00	2.55E+03
98-82-8	Cumene (isopropylbenzene)	2.20E+03	1.30E+00	3.60E+03
110-82-7	Cyclohexane	7.20E+03	1.30E+01	NA
108-94-1	Cyclohexanone	3.10E+05	4.20E+01	1.82E+05
124-48-1	Dibromochloromethane (THM)	5.80E+00	2.20E-04	8.00E+01
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	5.60E-03	1.50E-07	2.00E-01
106-93-4	1,2-Dibromoethane (EDB)	3.40E-02	1.90E-06	5.00E-02
75-71-8	Dichlorodifluoromethane	1.90E+02	6.10E-01	7.29E+03
75-34-3	1,1-Dichloroethane	3.40E+00	7.00E-04	7.29E+03
107-06-2	1,2-Dichloroethane (EDC)	4.50E-01	4.40E-05	5.00E+00
75-35-4	1,1-Dichloroethylene	2.50E+02	1.20E-01	7.00E+00
156-59-2	1,2-Dichloroethylene (cis)	7.80E+02	1.10E-01	7.00E+01
156-60-5	1,2-Dichloroethylene (trans)	1.10E+02	3.40E-02	1.00E+02
78-87-5	1,2-Dichloropropane	9.30E-01	1.30E-04	5.00E+00
142-28-9	1,3-Dichloropropane	1.60E+03	2.70E-01	7.29E+02
542-75-6	1,3-Dichloropropene	1.70E+00	1.60E-04	8.51E-01
123-91-1	1,4-Dioxane	4.40E+01	1.20E-03	7.73E+00
106-89-8	Epichlorohydrin	1.80E+01	4.30E-04	8.59E+00
106-88-7	1,2-Epoxybutane	1.50E+02	8.70E-03	NA
141-78-6	Ethyl acetate	7.00E+04	7.00E+00	3.28E+04
100-41-4	Ethylbenzene	5.70E+00	1.90E-03	7.00E+02
75-00-3	Ethyl chloride	1.50E+04	6.00E+00	NA
75-21-8	Ethylene oxide	1.60E-01	9.00E-06	2.74E-01
60-29-7	Ethyl ether	1.60E+04	1.60E+00	7.29E+03
97-63-2	Ethyl methacrylate	7.00E+03	7.90E-01	3.28E+03
50-00-0	Formaldehyde	1.20E+04	1.50E+00	7.29E+03
141-78-6	Guthion	NA	NA	1.09E+02
87-82-1	Hexabromobenzene	1.20E+02	5.10E-01	7.29E+01
110-54-3	n-Hexane	5.70E+02	6.20E+00	2.19E+03
78-83-1	Isobutanol	2.30E+04	2.20E+00	1.09E+04
126-98-7	Methacrylonitrile	3.20E+00	2.40E-04	3.65E+00
67-56-1	Methanol	3.10E+04	3.70E+00	1.82E+04

79-20-9	Methyl acetate	7.80E+04	7.60E+00	3.65E+04
74-95-3	Methylene bromide	7.80E+02	9.10E-02	3.65E+02
75-09-2	Methylene chloride	1.10E+01	1.20E-03	5.00E+00
78-93-3	Methyl ethyl ketone (2-Butanone)	2.80E+04	1.50E+00	2.19E+04
108-10-1	Methyl isobutyl ketone	5.30E+03	4.40E-01	2.92E+03
80-62-6	Methyl methacrylate	4.70E+03	3.10E-01	5.10E+04
1634-04-4	Methyl tertbutyl ether (MTBE)	3.90E+01	2.70E-03	4.73E+01
924-16-3	N-Nitrosodi-n-butylamine	9.30E-02	8.60E-06	1.58E-02
57-55-6	Propylene glycol	1.20E+06	1.50E+02	7.29E+05
1569-02-4	Propylene glycol, monoethyl ether	4.30E+04	5.20E+00	2.55E+04
107-98-2	Propylene glycol, monomethyl ether	4.30E+04	5.20E+00	2.55E+04
75-56-9	Propylene oxide	1.90E+00	4.70E-05	3.54E-01
100-42-5	Styrene	6.50E+03	2.00E+00	1.00E+02
630-20-6	1,1,1,2-Tetrachloroethane	2.00E+00	2.10E-04	3.27E+00
79-34-5	1,1,2,2-Tetrachloroethane	5.90E-01	2.80E-05	4.25E-01
127-18-4	Tetrachloroethylene (PCE)	5.70E-01	5.20E-05	5.00E+00
108-88-3	Toluene	5.00E+03	1.70E+00	1.00E+03
71-55-6	1,1,1-Trichloroethane	9.00E+03	3.30E+00	2.00E+02
79-00-5	1,1,2-Trichloroethane	1.10E+00	8.20E-05	5.00E+00
79-01-6	Trichloroethylene (TCE)	2.80E+00	6.10E-04	5.00E+00
75-69-4	Trichlorofluoromethane	8.00E+02	8.40E-01	1.09E+04
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	4.30E+04	1.50E+02	1.09E+06
598-77-6	1,1,2-Trichloropropane	3.90E+02	7.60E-02	1.82E+02
96-18-4	1,2,3-Trichloropropane	9.10E-02	4.40E-06	2.19E+02
96-19-5	1,2,3-Trichloropropene	2.70E+00	1.10E-03	3.65E+02
95-63-6	1,2,4-Trimethylbenzene	6.70E+01	2.40E-02	3.65E+02
108-67-8	1,3,5-Trimethylbenzene	4.70E+01	2.00E-02	1.82E+03
108-05-4	Vinyl acetate	9.90E+02	8.80E-02	3.65E+04
593-60-2	Vinyl bromide (bromoethene)	1.10E-01	4.40E-05	NA
75-01-4	Vinyl chloride	6.00E-02	5.60E-06	2.00E+00
1330-20-7	Xylenes	6.00E+02	2.30E-01	1.00E+04
108-38-3	m-Xylene	4.50E+03	1.60E+00	7.29E+04
95-47-6	o-Xylene	5.30E+03	1.60E+00	7.29E+04
106-42-3	p-Xylene	4.70E+03	1.60E+00	NA
	Semi-Volatile Organic Compounds (SVOCs)			
83-32-9	Acenaphthene (PAH)	3.40E+03	2.70E+01	2.19E+03
98-86-2	Acetophenone	7.80E+03	1.10E+00	3.65E+03
79-06-1	Acrylamide	1.10E-01	3.30E-06	1.89E-02
79-10-7	Acrylic acid	3.00E+04	3.70E+00	1.82E+04
15972-60-8	Alachlor	8.70E+00	6.80E-04	2.00E+00
62-53-3	Aniline	8.50E+01	3.40E-03	1.49E+01
120-12-7	Anthracene (PAH)	1.70E+04	4.50E+02	1.09E+04
140-57-8	Aramite	1.90E+01	1.10E-01	3.40E+00
103-33-3	Azobenzene	4.90E+00	5.10E-04	7.73E-01
56-55-3	Benz[a]anthracene (PAH)	1.50E-01	1.40E-02	1.17E-01
100-52-7	Benzaldehyde	7.80E+03	9.70E-01	3.65E+03
92-87-5	Benzidine	5.00E-04	5.30E-07	3.70E-04
205-99-2	Benzo[b]fluoranthene (PAH)	1.50E-01	4.70E-02	1.17E-01
207-08-9	Benzo[k]fluoranthene (PAH)	1.50E+00	4.60E-01	1.17E+00
50-32-8	Benzo[a]pyrene (PAH)	1.50E-02	4.60E-03	2.00E-01
65-85-0	Benzoic acid	2.40E+05	3.30E+01	1.46E+05
100-51-6	Benzyl alcohol	3.10E+04	4.20E+00	1.82E+04
92-52-4	1,1-Biphenyl	3.90E+03	2.30E+01	1.82E+03
111-44-4	Bis(2-chloroethyl)ether	1.90E-01	2.70E-06	7.73E-02
542-88-1	Bis(chloromethyl)ether	2.70E-04	1.30E-08	NA
39638-32-9	Bis(2-chloroisopropyl)ether	3.50E+00	9.00E-05	1.40E+03
117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)	3.50E+01	1.60E+00	6.00E+00
1689-84-5	Bromoxynil	1.20E+03	7.80E-01	7.29E+02
85-68-7	Butyl benzyl phthalate	2.60E+02	6.70E-01	7.29E+03
105-60-2	Caprolactam	3.10E+04	5.70E+00	1.82E+04
106-47-8	4-Chloroaniline	9.00E+00	4.30E-04	1.46E+02
59-50-7	p-Chloro-m-cresol (4-Chloro-3-methylphenol)	NA	NA	3.00E+03

91-58-7	2-Chloronaphthalene	6.30E+03	1.80E+01	2.92E+03
95-57-8	2-Chlorophenol	3.90E+02	2.00E-01	1.82E+02
218-01-9	Chrysene (PAH)	1.50E+01	1.40E+00	1.17E+01
1163-19-5	Decabromodiphenyl ether	4.30E+02	7.80E+01	1.22E+02
53-70-3	Dibenz[ah]anthracene (PAH)	1.50E-02	1.50E-02	1.17E-02
84-74-2	Dibutyl phthalate (di-n-butyl phthalate)	6.10E+03	1.10E+01	3.65E+03
95-50-1	1,2-Dichlorobenzene	2.00E+03	4.00E-01	6.00E+02
541-73-1	1,3-Dichlorobenzene	NA	NA	3.20E+02
106-46-7	1,4-Dichlorobenzene	2.60E+00	4.60E-04	7.50E+01
91-94-1	3,3-Dichlorobenzidine	1.10E+00	2.30E-03	1.89E-01
120-83-2	2,4-Dichlorophenol	1.80E+02	1.80E-01	1.09E+02
77-73-6	Dicyclopentadiene	2.90E+01	5.60E-02	2.92E+02
84-66-2	Diethyl phthalate	4.90E+04	1.30E+01	2.92E+04
103-23-1	Di(2-ethylhexyl)adipate	4.00E+02	5.50E+00	4.00E+02
1445-75-6	Diisopropyl methylphosphonate (DIMP)	6.30E+03	7.70E-01	2.92E+03
121-69-7	N-N-Dimethylaniline	1.60E+02	2.60E-02	7.29E+01
119-93-7	3,3'-Dimethylbenzidine	4.40E-02	9.30E-05	7.73E-03
105-67-9	2,4-Dimethylphenol	1.20E+03	1.20E+00	7.29E+02
576-26-1	2,6-Dimethylphenol	3.70E+01	3.60E-02	2.19E+01
95-65-8	3,4-Dimethylphenol	6.10E+01	6.00E-02	3.65E+01
756-79-6	Dimethyl methylphosphonate	2.90E-02	8.20E-03	4.92E+01
131-11-3	Dimethyl phthalate	NA	NA	2.70E+05
534-52-1	4,6-Dinitro-o-cresol	6.10E+00	5.10E-03	3.65E+00
99-65-0	1,3-Dinitrobenzene	6.10E+00	2.30E-03	3.65E+00
100-25-4	1,4-Dinitrobenzene	6.10E+00	2.30E-03	3.65E+00
51-28-5	2,4-Dinitrophenol	1.20E+02	6.80E-02	7.29E+01
25321-14-6	Dinitrotoluene mixture	7.10E-01	9.30E-05	1.25E-01
121-14-2	2,4-Dinitrotoluene (re: Dinitrotoluene mixture)	1.20E+02	6.80E-02	7.29E+01
606-20-2	2,6-Dinitrotoluene (re: Dinitrotoluene mixture)	6.10E+01	3.40E-02	3.65E+01
122-39-4	Diphenylamine	1.50E+03	3.60E+00	9.11E+02
122-66-7	1,2-Diphenylhydrazine	6.10E-01	6.00E-04	1.06E-01
505-29-3	1,4-Dithiane	6.10E+02	1.90E-01	3.65E+02
2439-10-3	Dodine	2.40E+02	4.50E+00	1.46E+02
110-80-5	2-Ethoxyethanol	2.40E+04	2.90E+00	1.46E+04
107-21-1	Ethylene glycol	1.20E+05	1.50E+01	7.29E+04
206-44-0	Fluoranthene (PAH)	2.30E+03	2.10E+02	1.46E+03
86-73-7	Fluorene (PAH)	2.30E+03	3.30E+01	1.46E+03
110-00-9	Furan	7.80E+01	1.50E-02	3.65E+01
87-68-3	Hexachlorobutadiene	6.20E+00	1.90E-03	1.09E+00
77-47-4	Hexachlorocyclopentadiene	3.70E+02	8.00E-01	5.00E+01
67-72-1	Hexachloroethane	3.50E+01	3.20E-03	6.08E+00
51235-04-2	Hexazinone	2.00E+03	1.70E+00	1.20E+03
123-31-9	p-Hydroquinone	8.70E+00	1.30E-03	1.52E+00
193-39-5	Indeno[1,2,3-cd]pyrene (PAH)	1.50E-01	1.60E-01	1.17E-01
78-59-1	Isophorone	5.10E+02	2.20E-02	8.95E+01
1832-54-8	Isopropyl methyl phosphonic acid	6.10E+03	7.70E-01	3.65E+03
143-50-0	Kepone (chlordecone)	3.00E-02	1.50E-04	1.82E+01
123-33-1	Maleic hydrazide	3.10E+04	4.00E+00	1.82E+04
101-14-4	4,4'-Methylene bis(2-chloroaniline)	1.20E+00	5.90E-03	8.51E-01
91-57-6	2-Methylnaphthalene	3.10E+02	9.00E-01	1.46E+02
298-00-0	Methyl parathion	1.50E+01	1.10E-02	9.11E+00
95-48-7	2-Methylphenol (o-Cresol)	3.10E+03	2.00E+00	1.82E+03
108-39-4	3-Methylphenol (m-Cresol)	3.10E+03	1.90E+00	1.82E+03
106-44-5	4-Methylphenol (p-Cresol)	3.10E+02	1.90E-01	1.82E+02
25013-15-4	Methyl styrene (mixture)	1.90E+02	1.10E-01	2.19E+02
98-83-9	Methyl styrene (alpha)	5.50E+03	4.70E+00	2.55E+03
51218-45-2	Metolaclor (Dual)	9.20E+03	4.30E+00	5.47E+03
91-20-3	Naphthalene (PAH)	3.90E+00	5.50E-04	7.29E+02
99-09-2	3-Nitroaniline	1.80E+01	9.70E-04	NA
100-01-6	4-Nitroaniline	2.30E+01	9.70E-04	4.25E+00
98-95-3	Nitrobenzene	3.10E+01	2.00E-03	7.29E+01
55-18-5	N-Nitrosodiethylamine	7.70E-04	7.00E-08	5.67E-04
62-75-9	N-Nitrosodimethylamine	2.30E-03	1.20E-07	1.67E-03

86-30-6	N-Nitrosodiphenylamine	9.90E+01	1.70E-01	1.74E+01
621-64-7	N-Nitroso di-n-propylamine	6.90E-02	1.10E-05	1.22E-02
10595-95-6	N-Nitroso-N-methylethylamine	2.20E-02	1.10E-06	3.87E-03
930-55-2	N-Nitrosopyrrolidine	2.30E-01	1.70E-05	4.05E-02
608-93-5	Pentachlorobenzene	4.90E+01	1.20E-01	2.92E+01
82-68-8	Pentachloronitrobenzene	1.90E+00	1.30E-03	1.09E+02
87-86-5	Pentachlorophenol	3.00E+00	3.90E-03	1.00E+00
108-95-2	Phenol	1.80E+04	8.10E+00	1.09E+04
85-44-9	Phthalic anhydride	1.20E+05	1.60E+01	7.29E+04
129-00-0	Pyrene (PAH)	1.70E+03	1.50E+02	1.09E+03
23950-58-5	Pronamide (Kerb)	4.60E+03	9.20E+00	2.73E+03
110-86-1	Pyridine	7.80E+01	9.70E-03	3.65E+01
91-22-5	Quinoline	1.60E-01	8.70E-05	2.84E-02
57-24-9	Strychnine	1.80E+01	1.40E-01	1.09E+01
80-07-9	1,1'-Sulfonylbis (4-chlorobenzene)	3.10E+02	2.80E+00	1.82E+02
95-94-3	1,2,4,5-Tetrachlorobenzene	1.80E+01	2.80E-02	1.09E+01
58-90-2	2,3,4,6-Tetrachlorophenol	1.80E+03	4.60E+00	1.09E+03
961-11-5	Tetrachlorovinphos (Stirofos)	2.00E+01	2.20E-03	1.09E+03
120-82-1	1,2,4-Trichlorobenzene	8.70E+01	1.30E-02	7.00E+01
95-95-4	2,4,5-Trichlorophenol	6.10E+03	9.40E+00	3.65E+03
88-06-2	2,4,6-Trichlorophenol	4.40E+01	1.60E-02	7.73E+00
121-44-8	Triethylamine	1.70E+02	6.10E-03	NA
	Petroleum Products			
	Gasoline-range organics (GRO)	28[a]	[b]	7.30E+03
	Diesel-range organics (DRO)	2.30E+03		1100[a] or 10000[b]
	Crude oil	2.30E+03		1100[a] or 10000[b]
	Oil and Grease	Virtually Free		Virtually Free
	Metals			
7429-90-5	Aluminum	7.70E+04	5.50E+04	3.65E+04
7440-36-0	Antimony	3.10E+01	6.60E-01	6.00E+00
7440-38-2	Arsenic	3.90E-01	1.30E-03	1.00E+01
7440-39-3	Barium	1.50E+04	3.00E+02	2.00E+03
7740-41-7	Beryllium	1.60E+02	5.80E+01	4.00E+00
7440-42-8	Boron	1.60E+04	2.30E+01	7.50E+02
7440-43-9	Cadmium	7.00E+01	1.40E+00	5.00E+00
7440-43-3	Total Chromium (1:6 ratio - Cr VI:Cr III)	2.80E+02	NA	1.00E+02
16065-83-1	Chromium III	1.20E+05	9.90E+07	5.47E+04
18540-29-9	Chromium VI	3.90E+01	2.10E+00	1.09E+02
7440-48-4	Cobalt	2.30E+01	4.90E-01	1.09E+01
7440-50-8	Copper	3.10E+03	5.10E+01	1.30E+03
57-12-5	Cyanide (amenable) (CN-)	1.60E+03	7.40E+00	7.29E+02
57-12-5	Cyanide (free)	NA	NA	2.00E+02
74-90-8	Cyanide (hydrogen)	1.60E+03	NA	7.29E+02
7782-41-4	Flourine (soluble flouride)	4.70E+03	3.30E+02	2.19E+03
7439-89-6	Iron	5.50E+04	6.40E+02	2.55E+04
7439-92-1	Lead	4.00E+02	NA	1.50E+01
78-00-2	Lead (tetraethyl)	6.10E-03	1.40E-05	3.65E-03
7439-93-2	Lithium	1.60E+02	2.20E+01	7.29E+01
7439-96-5	Manganese	1.80E+03	5.70E+01	5.00E+01
7487-94-7	Mercury Chloride	2.30E+01	NA	2.00E+00
7439-97-6	Mercury (elemental)	6.70E+00	3.30E-02	2.00E+00
22967-92-6	Mercury (methyl)	7.80E+00	NA	3.65E+00
7439-98-7	Molybdenum	3.90E+02	3.70E+00	1.82E+02

7440-02-0	Nickel (soluble salts)	1.60E+03	4.80E+01	7.29E+02
7723-14-0	Phosphorus (white)	1.60E+00	2.70E-03	7.29E-01
7782-49-2	Selenium	3.90E+02	9.50E-01	5.00E+01
7440-22-4	Silver	3.90E+02	1.60E+00	1.00E+02
7440-24-6	Strontium, stable	4.70E+04	7.70E+02	2.19E+04
7440-28-0	Thallium	5.10E+00	1.70E-01	2.00E+00
7440-31-5	Tin	4.70E+04	5.50E+03	2.19E+04
7440-61-1	Uranium	2.30E+02	4.90E+01	3.00E+01
7440-62-2	Vanadium	3.90E+02	1.80E+02	2.55E+02
7440-66-6	Zinc	2.30E+04	6.80E+02	5.00E+03
	General Chemistry			
	pH	NA	NA	6.5 - 8.5