APPENDIX A

COMPARISON OF 200 AREA EFFLUENT TREATMENT FACILITY TREATMENT EFFICIENCIES TO PILOT PLANT TEST RESULTS

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Table A-1. Comparison of 200 Area Effluent Treatment Facility Treatment Efficiencies to Pilot Plant Test Results. (3 Sheets)

Treat-ability Group	Constituent	CAS #	Units	242-A Evaporator Process Condensate[1]		Operable Unit UP-1 Groundwater[2]		LERF Basin 44[3]		Historic ETF Treatment Efficiency[5]	Pilot Plant Predicted Treatment Efficiency[6]
				Untreated Upper 95% CI	Treated Upper 95% CI	Untreated Upper 95% CI	Treated Upper 95% CI	Untreated Upper 95% CI	Treated Average[4]		
1	Phenol	108-95-2	µg/L								> 86.4%
2	Pentachlorophenol	87-86-5	µg/L								> 99.7%
3	Benzene	71-43-2	µg/L								> 91.2%
3	Naphthalene	91-20-3	µg/L								> 82.9%
4	Pyrene	129-00-0	µg/L								> 99.9%
5 a	1,4-Dichlorobenzene	106-46-7	µg/L								98.4%
6 a	Hexachloroethane	67-72-1	µg/L								18.8%
7 a	Bis (2-chloroethyl) ether	111-44-4	µg/L								96.8%
7 b	4-Chlorophenyl phenyl ether	7005-72-3	µg/L								100.0%
8	Bis (2-ethylhexyl) phthalate	117-81-7	µg/L								57.4%
8	Di-n-octyl phthalate	117-84-0	µg/L								NT
9 a	1-Butanol	71-36-3	µg/L								> 94.8%
9	2-Butoxyethanol	111-76-2	µg/L	3.6E+02	ND					100%	NT
9	Benzyl alcohol	100-51-6	µg/L	5.7E+00	ND					100%	NT
10 b	Aniline	62-53-3	µg/L								97.4%
10 c	Acetonitrile	75-05-8	µg/L								> 99.3%
10 c	Propionitrile	107-12-0	µg/L	6.0E+00	ND					100%	NT
10 d	Nitrobenzene	98-95-3	µg/L								99.4%
10 e	N-Nitrosodimethylamine	62-75-9	µg/L	4.7E+01	ND					100%	NT
10 e	N-Nitroso-di-n-propylamine	621-64-7	µg/L								> 99.7%
10 f	Pyridine	110-86-1	µg/L								> 99.3%
11	Gamma-BHC (lindane)	58-89-9	µg/L								56.5%
12	4,4'-Dichlorobyphenyl	2050-68-2	µg/L								100.0%
13	1,1,1-Trichloroethane	71-55-6	µg/L								55.6%
13	1,1,2-Trichloroethane	79-00-5	µg/L								30.5%
13	Carbon tetrachloride	56-23-5	µg/L			3.0E+01	ND			100%	35.4%
13	Chloroform	67-66-3	µg/L					6.0E+01	ND	100%	55.6%
13	Methylene chloride	75-09-2	µg/L					1.7E+01	ND	100%	NT

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				Untreated Upper 95% CI	Treated Upper 95% CI	Untreated Upper 95% CI	Treated Upper 95% CI	Untreated Upper 95% CI	Treated Average[4]		
14	Trichloroethene	79-01-6	µg/L								NT
14	Tetrachloroethylene	127-18-4	µg/L								48.6%
15 a	Toluene	108-88-3	µg/L								> 92.9%
17 a	Acrolein	107-02-8	µg/L								96.3%
18 a	Tetrahydrofuran	109-99-9	µg/L	1.3E+02	ND					100%	99.2%
19	2-Butanone	78-93-3	µg/L	2.5E+01	ND					100%	> 75.7%
19	2-Hexanone	591-78-6	µg/L	3.7E+00	ND					100%	NT
19	2-Methyl-4-pentanone (MIBK)	108-10-1	µg/L								> 92.1%
19	2-Pentanone	107-87-9	µg/L	1.1E+01	ND					100%	NT
19	Acetone	67-64-1	µg/L	6.1E+02	4.2E+01					93%	83.6%
19	Acetophenone	98-86-2	µg/L	6.5E+00	1.4E-01					98%	NT
21	Aluminum	7429-90-5	µg/L			6.6E+01	9.4E+00			86%	96.0%
21	Barium	7440-39-3	µg/L			1.1E+02	ND			100%	87.4%
21	Calcium	7440-70-2	µg/L	5.0E+02	2.9E+01	1.2E+05	1.1E+02	1.3E+05	4.3E+01	100%	98.1%
21	Cobalt	7440-48-4	µg/L					1.7E+01	ND	100%	NT
21	Magnesium	7439-95-4	µg/L			3.6E+04	2.4E+01	1.8E+04	ND	100%	98.1%
21	Manganese	7439-96-5	µg/L								98.1%
21	Nickel	7440-02-0	µg/L								98.7%
21	Potassium	7440-09-7	µg/L	1.1E+02	ND	7.2E+03	ND	1.9E+05	ND	100%	93.4%
21	Silicon	7440-21-3	µg/L			2.5E+04	3.6E+01	9.4E+03	ND	100%	NT
21	Silver	7440-22-4	µg/L								85.5%
21	Sodium	7440-23-5	µg/L			2.7E+04	5.3E+02	1.9E+05	ND	100%	98.2%
21	Strontium	7440-24-6	µg/L					6.2E+02	ND	100%	> 98.4%
21	Titanium	7440-32-6	µg/L					4.7E+00	ND	100%	97.5%
21	Vanadium	7440-62-2	µg/L			2.4E+01	1.9E+00			92%	91.5%
21	Zinc	7440-66-6	µg/L								98.5%
22	Antimony	7440-36-0	µg/L					2.6E+02	4.8E+00	98%	NT
22	Arsenic	7440-38-2	µg/L	4.7E-02	ND	2.6E+00	1.9E-01	1.3E+02	3.9E-01	100%	99.7%

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				Untreated Upper 95% CI	Treated Upper 95% CI	Untreated Upper 95% CI	Treated Upper 95% CI	Untreated Upper 95% CI	Treated Average[4]		
22	Cadmium	7440-43-9	µg/L					6.3E-01	ND	100%	99.5%
22	Chromium	7440-47-3	µg/L			6.3E+00	6.6E-01	3.7E+00	ND	100%	99.6%
22	Copper	7440-50-8	µg/L	1.3E+01	1.4E+00			1.7E+01	9.3E-01	95%	99.6%
22	Lead	7439-92-1	µg/L	9.4E+00	2.8E-02			5.2E-01	ND	100%	92.6%
22	Mercury	7439-97-6	µg/L	2.6E-01	1.4E-02			2.1E-01	ND	100%	98.8%
22	Selenium	7782-49-2	µg/L	1.3E-01	ND	5.8E+00	2.8E-01	3.0E+02	1.2E+00	100%	99.5%
22	Uranium (total)	7440-61-1	µg/L			3.7E+02	ND	1.3E+03	ND	100%	NT
23 a	Bromide	24959-67-9	µg/L					3.1E+03	ND	100%	NT
23 a	Chloride	16887-00-6	µg/L			2.2E+04	ND	1.9E+05	ND	100%	99.9%
23 a	Fluoride	16984-48-8	µg/L	1.5E+02	ND	4.1E+02	ND	1.5E+03	ND	100%	96.9%
23	Nitrate (as N)	14797-55-8	µg/L			7.7E+04	ND	7.0E+03	ND	100%	99.9%
23	Nitrite (as N)	14797-65-0	µg/L								99.4%
23	Phosphate	14265-44-2	µg/L								96.3%
23	Sulfate	14808-79-8	µg/L	4.1E+03	4.4E+02	5.1E+04	ND	4.9E+05	ND	100%	100.0%
24	Ammonia (as N)	7664-41-7	µg/L	2.2E+05	3.2E+01					100%	99.8%
24	Cyanide	57-12-5	µg/L			8.8E+00	ND			100%	98.6%
25 a	Tributyl phosphate	126-73-8	µg/L	8.6E+02	ND					100%	> 97.8%
25 b	Tridecane	629-50-5	µg/L								32.7%

Note: Zero was substituted when a constituent was reported as not detected. Blanks indicate either no data available, or insufficient data to determine a treatment efficiency.

CI = Confidence interval. LERF = Liquid Effluent Retention Facility. NT = Not tested.
CAS = Chemical Abstracts Service. ND = Not detected.

[1]Values based on all available 242-A Evaporator process condensate waste stream data.
[2]Statistics based on available data from the first months of UP-1 groundwater treatment (from April 23, 1997 to October 19, 1997). The highest UP-1 influent concentrations were observed during this time.
[3]LERF Basin 44 contents include leachate and fuel basin water, among other sources.
[4]Two samples from the one verification tank of treated LERF Basin 44 wastewater were averaged.
[5]The historical ETF treatment efficiency is the maximum of the treatment efficiencies for the three waste streams shown.
[6]DOE/RL-92-72.

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