APPENDIX F

ESTIMATED STORAGE DAYS FOR LAND TREATMENT USING EPA COMPUTER PROGRAMS

Computer programs have been developed to estimate storage days for land treatment systems based on climatic conditions (Section 4.6.2). Selected locations for which the EPA-1 program have been used are presented in Table F-1 for recurrence intervals of 10 and 20 years. The EPA-2 program (for SR systems) uses soil information as well as rainfall (see reference 35 in Chapter 4 for details). The EPA-3 program (for SR or OF systems) uses temperature, rainfall, and snow depth. Storage days for communities for which EPA-2 has been run are listed in Table F-2 for recurrence intervals of 10 and 20 years. Storage days for communities for which EPA-3 has been run are listed in Table F-3 for recurrence intervals of 10 and 20 years.

TABLE F-1
STORAGE DAYS USING EPA-1 FOR 20 YEAR (5%) AND 10 YEAR (10%) RETURN INTERVALS

		Percentiles				Percentiles	
Station Name	State	0.05	0.10	Station Name	State	0.05	0.10
Bridgeport	CT	68	64	Bismarck	ND	144	140
Boise	ID	87	77	Devils Lake	ND	168	156
Pocatello	ID	125	109	Burns	OR	119	102
Des Moines	IA	111	106	Aberdeen	SD	142	138
Hampton	IA	136	126	Brookings	SD	136	131
Logan	IA	107	105	Pierre	SD	136	126
Shenandoah	IA	95	77	Rapid City	SD	100	99
Greenville	ME	172	169	Burlington	VT	136	134
Muskegon	MI	119	116	Spokane	WA	106	100
International Falls	MN	172	168	Ashland	WI	149	148
Minneapolis	MN	143	143	Eau Claire	WI	147	141
Park Rapids	MN	159	155	Green Bay	WI	139	135
Billings	MT	102	100	Lacrosse	WI	134	127
Bozeman	MT	152	144	Madison	WI	125	119
Great Falls	MT	102	91	Rhinelander	WI	156	149
Missoula	MT	128	121	Weyerhauser	WI	148	145
Buffalo	NY	108	103	Afton	WY	156	144
Rochester	NY	121	115	Casper	WY	101	95
Watertown	NY	128	126	Gillette	WY	113	108
				Ruck Springs	WY	142	136
				Wheatland	WY	66	58

TABLE F-2
STORAGE DAYS USING EPA-2 FOR 20 YEAR (5%)
AND 10 YEAR (10%) RETURN INTERVALS[a]

Station name	State	Percentiles 0.05	Percentiles 0.10
Bay Minette	AL	13	13
Brewton	AL	16	11
Clanton	AL	20	11
Mobile	AL	14	11
Selma	AL	18	11
Thomasville	AL	23	13
Dumas	AR	19	14
Little Rock	AR	12	12
Avon Park	FL	12	9
Belle Glade	FL	10	8
Bradenton	FL	13	12
Clermont	FL	11	7
Daytona Beach	FL	8	8
Orlando	FL	11	9
Punta Gorda	FL	16	11
Tampa	FL	30	17
Augusta	GA	10	9
Macon	GA	11	9
Newnan	GA	15	10
Savannah	GA	16	11
Alexandria	LA	19	14
Franklinton	LA	16	15
Houma	LA	16	11
Lafayette	LA	12	10
Lake Providence	LA	18	14
Leesville	LA	31	16
Monroe	LA	12	12
New Orleans	LA	16	9
Schriever	LA	15	13
Shreveport	LA	10	8
St Joseph	LA	11	11
Winnfield	LA	15	14
Aberdeen	MS	23	13
Biloxi	MS	13	10
Canton	MS	15	11
Clarksdale	MS	16	11
Columbia	MS	27	16
Greenwood	MS	15	12
Jackson	MS	12	10
Meridian	MS	13	11
Pontotoc	MS	19	14
Poplarville	MS	22	13
Stoneville	MS	17	15
Vicksburg	MS	27	23
Charlotte	NC	12	11
Pinehurst	NC	12	9
Raleigh	NC	13	12
Weldon	NC	11	10
Wilmington	NC	10	9
Wilson	NC	12	11
Eugene	OR	34	31
Forest Grove	OR	134	129
Headworks	OR	150	144
Hillsboro	OR	119	111
Medford	OR	19	11
Portland	OR	126	110
Salem	OR	34	25
Arecibo	PR	11	10
Coloso	PR	17	13
Guayama	PR	24	16
Humacao	PR	25	19
San Juan	PR	7	6
Columbia	SC	13	8
Conway	SC	9	9
Darlington	SC	11	9
Hampton	SC	10	8
Summerville	SC	16	8
Bristol	TN	23	19
Crossville	TN	24	22
Brownsville	TX	11	6
Corpus Christi	TX	11	5
Dallas	TX	15	12
Houston	TX	36	26
Luling	TX	40	36
Mexia	TX	42	35
Paris	TX	16	11
Port Isabel	TX	10	9
Sealy	TX	32	26
Sugar Land	TX	77	51
Blackstone	VA	21	16
Buchanan	VA	31	19
Chatham	VA	21	19
Columbia	VA	23	21
Diamond Springs	VA	15	11
Leesville	VA	31	16
Lynchburg	VA	23	18
Norfolk	VA	17	14
Richmond	VA	15	14
Washington DC	VA	22	19
Aberdeen	WA	213	181
Longview	WA	53	35
Olympia	WA	58	38
Seattle	WA	40	24
Vancouver	WA	28	19

a. Available water capacity range from 15 to 30 cm (6 to 12 in.) in top 1.5 m (5 ft) of soil profile. Depletion rate usually set at 1.9 cm/d (0.75 in./d)

TABLE F-3
STORAGE DAYS USING EPA-3 FOR 20 YEAR (5%) AND 10 YEAR (10%) RETURN INTERVALS[a]

Station Name	State	Percentiles 0.05	Percentiles 0.01	Station Name	State	Percentiles 0.05	Percentiles 0.10
Sterling	CO	118	110	Chestertown	MD	73	46
Belle Plaine	IA	133	128	Westminster	MD	86	82
Des Moines	IA	135	128	Freehold	NJ	88	77
Grinnell	IA	139	133	Pemberton	NJ	80	72
Indianola	IA	122	113	Santa Fe	NM	98	88
Keosauqua	IA	111	91	Minden[c]	NV	69	63
Logan	IA	126	114	Reno	NV	61	57
Newton	IA	134	126	Rochester	NY	123	122
Osceola	IA	122	118	Coatesville	PA	89	85
Oskaloosa	IA	130	121	George School	PA	87	83
Shenandoah	IA	114	101	Lancaster	PA	86	84
Winterset	IA	134	127	Philadelphia	PA	80	66
Ashton	ID	151	148	York	PA	85	80
Ottawa	IL	115	89	Corsicana[d]	TX	8	6
Plymouth	MA	95	91	Alta	WY	172	160
Baltimore	MD	77	57	Diversion Dam	WY	140	137
Beltsville[b]	MD	76	58	Lander	WY	146	139
Blackwater Refuge	MD	35	29	Pavillion	WY	140	137
				Riverton	WY	150	144

a. Temperature thresholds: mean 0 °C (32 °F); minimum -4 °C (25 °F); maximum 4.4 °C (40 °F)

Precipitation thresholds: snow 2.54 cm (1 in.); Precipitation 1.27 cm (0.5 in.).

Drawdown rate: ratio of flow output from storage on favorable days to average daily wastewater flow = 0.5.

b. Temperature thresholds: minimum -5.5 °C (22 °F); maximum 1.7 °C (35 °F).

c. Temperature thresholds: minimum -6.7 °C (20 °F); maximum 1.7 °C (35 °F).

d. Temperature thresholds: minimum -2.2 °C (28 °F); maximum 2.2 °C (36 °F).