Part III

Environmental Data and Trends

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Population

Table 1.1 U.S. Population and Population Growth Rate, 1900-1996

Year	Population	Growth rate	Year	Population	Growth rate	Year	Population	Growth rate
	millions	*%*		*millions*	*%*		*millions*	*%*
1900	76.09	na	1933	125.69	0.6	1966	196.56	1.1
1901	77.58	2.0	1934	126.49	0.7	1967	198.71	1.1
1902	79.16	2.0	1935	127.36	0.7	1968	200.71	1.0
1903	80.63	1.9	1936	128.18	0.6	1969	202.68	1.0
1904	82.17	1.9	1937	128.96	0.7	1970	205.05	1.3
1905	83.82	2.0	1938	129.97	0.8	1971	207.66	1.2
1906	85.45	1.9	1939	131.03	0.8	1972	209.90	1.0
1907	87.01	1.8	1940	132.59	0.9	1973	211.91	0.9
1908	88.71	2.0	1941	133.89	1.0	1974	213.85	0.9
1909	90.49	2.0	1942	135.36	1.3	1975	215.97	1.0
1910	92.41	2.1	1943	137.25	1.3	1976	218.04	1.0
1911	93.86	1.6	1944	138.92	1.2	1977	220.24	1.0
1912	95.34	1.6	1945	140.47	1.0	1978	222.59	1.1
1913	97.23	2.0	1946	141.94	1.5	1979	225.06	1.1
1914	99.11	1.9	1947	144.70	1.8	1980	227.73	1.2
1915	100.55	1.4	1948	147.21	1.7	1981	229.97	1.0
1916	101.96	1.4	1949	149.77	1.7	1982	232.19	1.0
1917	103.41	1.4	1950	152.27	1.7	1983	234.31	0.9
1918	104.55	1.1	1951	154.88	1.7	1984	236.35	0.9
1919	105.06	0.5	1952	157.55	1.7	1985	238.47	0.9
1920	106.46	1.3	1953	160.18	1.7	1986	240.65	0.9
1921	108.54	2.0	1954	163.03	1.8	1987	242.80	0.9
1922	110.05	1.4	1955	165.93	1.8	1988	245.02	0.9
1923	111.95	1.7	1956	168.90	1.8	1989	247.34	0.9
1924	114.11	1.9	1957	171.98	1.7	1990	249.91	1.0
1925	115.83	1.5	1958	174.88	1.7	1991	252.65	1.1
1926	117.40	1.4	1959	177.83	1.7	1992	255.42	1.1
1927	119.04	1.4	1960	180.67	1.6	1993	258.14	1.1
1928	120.51	1.2	1961	183.69	1.6	1994	260.66	1.0
1929	121.77	1.0	1962	186.54	1.5	1995	263.03	0.9
1930	123.19	0.9	1963	189.24	1.4	1996	265.56	1.0
1931	124.15	0.7	1964	191.89	1.3			
1932	124.95	0.6	1965	194.30	1.2			

Sources: U.S. Department of Commerce, Bureau of the Census, *Estimates of the Population of the United States to December 31, 1995* (GPO, Washington, DC, 1995).

--, U.S. Population Estimates by Age, Sex, Race, and Hispanic Origin: 1990 to 1996, PPL-57 (GPO, Washington, DC, 1997) and updates on Bureau webpages.

Notes: The population estimates shown here are based on the April 1, 1990, population as enumerated in the 1990 census. Estimates for dates prior to April 1, 1990, have been revised. Annual population estimates are for July 1 of each year. Total population for the years 1900-1916 and 1920-1929 are resident population. Total population for the years 1917-1919, 1930-1939, and 1940-1996 are resident population plus armed forces overseas. All years 1903-1939 exclude Alaska and Hawaii.

Table 1.2 Components of U.S. Population Change, 1940-1996

Year	Births	Deaths	Net civilian immigration	Net change
		millions		
1940	2.570	1.432	0.077	1.221
1945	2.873	1.549	0.162	1.462
1950	3.645	1.468	0.299	2.486
1955	4.128	1.537	0.337	2.925
1960	4.307	1.708	0.328	2.901
1965	3.801	1.830	0.373	2.315
1970	3.739	1.927	0.438	2.617
1975	3.144	1.894	0.449	2.165
1980	3.612	1.990	0.845	2.510
1985	3.761	2.086	0.649	2.171
1990	4.148	2.155	0.556	2.549
1996	3.850	2.349	0.827	2.328

Source: U.S. Department of Commerce, Bureau of the Census, *U.S. Population Estimates, by Age, Sex, Race, and Hispanic Origin*, Current Population Reports, Series P-25, No. 1045 (1990) and No. 1095 (1993) (GPO, Washington, DC), Population Paper Listings, PPL-57 (DOC, Census, Washington, DC, 1997), and updates by agency.

Note: Annual population estimates are for July 1 of each year.

Table 1.3 Age Structure of the U.S. Population, including Armed Forces Overseas, 1940-1996

Year	Age classes, in years							
	< 5	5-14	15-24	25-34	35-44	45-54	55-64	> 64
				millions				
1940	10.6	22.3	24.0	21.5	18.4	15.6	10.7	9.0
1955	16.3	24.5	22.3	23.9	21.6	17.4	13.4	12.4
1960	20.3	35.7	24.6	22.9	24.2	20.6	15.6	16.7
1970	17.2	40.7	36.5	25.3	23.1	23.3	18.7	20.1
1980	16.5	34.8	42.8	37.6	25.9	22.7	21.8	25.7
1985	17.8	33.7	40.2	41.9	31.8	22.5	22.1	28.4
1990	18.8	35.2	36.9	43.1	37.8	25.2	21.1	31.2
1996	19.3	38.4	36.2	40.4	43.4	33.4	21.4	33.9

Sources: U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970*, Part I, Series A 30-37 (GPO, Washington, DC, 1975).

--, U.S. Population Estimates, by Age, Sex, Race, and Hispanic Origin, Current Population Reports, Series P-25, No. 1045 (1990) and No. 1095 (1993) (GPO, Washington, DC), and Population Paper Listing PPL-57 (DOC, Census, Washington, DC, 1997).

Note: Annual population estimates are for July 1 of each year.

Table 1.4 U.S. Population in Urban, Suburban, and Rural Areas, 1950-1994

Year	Urban population		Suburban population		Rural population	
	millions	*%*	*millions*	*%*	*millions*	*%*
1950	49.661	32.8	35.193	23.3	66.472	43.9
1960	58.004	32.3	54.881	30.6	66.438	37.0
1970	63.797	31.4	75.622	37.2	63.793	31.4
1980	67.949	30.0	101.481	44.8	57.115	25.2
1990	77.844	31.3	114.882	46.2	55.984	22.5
1994	75.591	29.4	129.063	50.1	52.687	20.5

Source: U.S. Department of Commerce, Bureau of the Census, Census of Population and Housing, 1950, 1960, 1970, 1980, and 1990, Number of Inhabitants, U.S. Summary (GPO, Washington, DC) and updates by agency.

Notes: Urban refers to population inside central cities of metropolitan areas (MAs). Suburban refers to MA population in suburbs outside central cities. Rural refers to nonmetropolitan population. MAs are defined for each population census.

Table 1.5 U.S. Population by Region, 1900-1996

Year	Northeast	Midwest	South	West
	regional population, in millions			
1900	21.047	26.333	24.524	4.309
1910	25.869	29.889	29.389	7.082
1920	29.662	34.020	33.126	9.214
1930	34.427	38.594	37.858	12.324
1940	35.977	40.143	41.666	14.379
1950	39.478	44.461	47.197	20.190
1960	44.678	51.619	54.973	28.053
1970	49.061	56.590	62.813	34.838
1980	49.137	58.867	75.367	43.171
1990	50.809	59.669	85.446	52.786
1996	51.580	62.082	93.098	58.524

Sources: U.S. Department of Commerce, Bureau of the Census, *1990 Census of Population and Housing,* CPH-2-1 (GPO, Washington, DC, 1993).

--, *Estimates of the Population of States: July 1, 1990 to July 1, 1996*, CB96-224 (GPO, Washington, DC, 1996).

Table 1.6 U.S. Population Migration by Region, 1960-1996

Region	1960-1970	1970-1980	1980-1990	1990-1996
	net migration gains and losses, in millions			
Northeast	0.324	-2.888	-0.592	-2.115
Midwest	-0.752	-2.703	-2.293	-0.290
South	0.593	5.992	5.143	2.529
West	2.855	4.115	4.568	-0.125

Sources: U.S. Department of Commerce, Bureau of the Census, *1990 Census of Population and Housing,* CPH-2-1 (GPO, Washington, DC, 1993).

--, *Estimates of the Population of States: July 1, 1990 to July 1, 1996*, CB96-224 (GPO, Washington, DC, 1996).

Notes: Migration is that portion of population change not attributed to births and deaths. Net migration is the difference between domestic immigration to an area and outmigration from it during the period.

Table 1.7 U.S. Population Density, 1960-1996

Year	Total United States	Counties in coastal regions				Interior of U.S.
		Pacific	Gulf of Mexico	Atlantic	Great Lakes	
	Land area, in thousands of square miles					
1994	3,536.3	509.9	114.5	147.8	115.4	2,648.7
	Population, in millions					
1960	179.3	17.9	8.4	44.5	23.7	84.8
1970	203.3	22.8	10.0	51.1	26.0	93.3
1980	226.5	27.0	13.1	53.7	26.0	106.7
1990	248.7	33.2	15.2	59.0	26.9	115.3
1994	260.3	35.1	16.3	60.7	26.4	121.8
1996	265.3	35.6	16.7	61.4	26.5	125.0
	Population per square mile					
1960	50.7	35.1	73.4	301.1	205.4	32.0
1970	57.5	44.7	87.3	345.7	225.3	35.2
1980	64.0	53.0	114.4	363.3	225.6	40.3
1990	70.3	66.1	136.2	399.2	224.8	43.5
1994	73.6	68.8	142.9	410.7	228.8	46.0
1996	75.0	69.8	145.9	415.4	229.6	47.2

Source: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1997* (GPO, Washington, DC, 1997).

Notes: Coastal area includes 672 counties and independent cities with at least 15 percent of their land area either in a coastal watershed or in a coastal cataloging unit defined in 1992 by the National Oceanic and Atmospheric Administration.

Table 1.8 U.S. Population Below Poverty Level by Race, Residence, and Region, 1969-1996

	Total		Race			Residence			Region			
Year	Number	Rate	White	African American	Hispanic origin	MA central city	MA suburb	Rural	Northeast	Midwest	South	West
	millions	*%*	.....	.....	.....	.....	*millions*	.....	.....	.....	.....	.....
1969	24.15	12.1	16.66	7.10	na	7.99	5.09	11.06	4.11	5.42	11.09	3.53
1970	25.42	12.6	17.48	7.55	na	8.12	5.20	12.10	na	na	11.48	na
1971	25.56	12.5	17.78	7.40	na	8.91	5.65	11.00	4.51	5.76	11.18	4.10
1972	24.46	11.9	16.20	7.71	na	9.18	5.33	9.95	4.27	5.26	10.93	4.01
1973	22.97	11.1	15.14	7.39	2.37	8.59	5.17	9.21	4.21	4.86	10.06	3.84
1974	23.37	11.2	15.74	7.18	2.58	8.37	5.48	9.52	4.47	4.99	10.76	4.04
1975	35.88	12.3	17.77	7.55	2.99	9.09	6.26	10.53	4.90	5.46	11.06	4.45
1976	24.98	11.8	16.71	7.60	2.78	9.48	5.75	9.75	4.95	5.66	10.35	4.02
1977	24.72	11.6	16.42	7.73	2.70	9.20	5.66	9.86	4.96	5.59	10.25	3.93
1978	24.50	11.4	16.26	7.63	2.61	9.29	5.81	9.41	5.05	5.19	10.26	4.00
1979	26.07	11.7	17.21	8.05	2.92	9.72	6.42	9.94	5.03	5.59	10.63	4.10
1980	29.27	13.0	19.70	8.58	3.49	10.64	7.38	11.25	5.37	6.59	12.36	4.96
1981	31.82	14.0	21.55	9.17	3.71	11.23	8.12	12.48	5.82	7.14	13.26	5.61
1982	34.40	15.0	23.52	9.70	4.30	12.70	8.55	13.15	6.36	7.77	13.97	6.30
1983	35.30	15.2	23.98	9.88	4.63	12.87	8.88	13.52	6.56	8.54	13.48	6.68
1984	33.70	14.4	22.96	9.49	4.81	na	na	na	6.53	8.30	12.79	6.07
1985	33.06	14.0	22.86	8.93	5.24	14.18	9.10	9.79	5.75	8.19	12.92	6.20
1986	32.37	13.6	22.18	8.98	5.12	13.30	9.36	9.71	5.21	7.64	13.11	6.41
1987	32.22	13.4	21.20	9.52	5.42	13.70	9.36	9.17	5.48	7.50	13.29	6.29
1988	31.75	13.0	20.72	9.36	5.36	13.62	9.44	8.69	5.09	6.80	13.53	6.32
1989	31.53	12.8	20.79	9.30	5.43	13.59	9.33	8.61	5.06	7.04	12.94	6.48
1990	33.59	13.5	22.33	9.84	6.01	14.25	10.26	9.08	5.79	7.46	13.46	6.88
1991	35.71	14.2	23.75	10.24	6.34	15.31	11.51	8.88	6.18	7.99	13.78	7.76
1992	38.01	14.8	25.26	10.83	7.59	16.35	12.03	9.63	6.41	8.06	15.20	8.34
1993	39.27	15.1	26.23	10.88	8.13	16.81	12.81	9.65	6.84	8.17	15.38	8.88
1994	38.06	14.5	25.38	10.20	8.42	16.10	13.51	8.45	6.60	7.97	14.73	8.77
1995	36.43	13.8	24.42	9.87	8.57	16.27	12.07	8.08	6.45	6.79	14.46	8.74
1996	36.53	13.7	24.65	9.69	8.70	15.65	12.57	8.32	6.56	6.65	14.10	9.22

Source: U.S. Department of Commerce, Bureau of the Census, *March Current Population Survey* (DOC, Census, Washington, DC, 1997).

Notes: na = not available. Poverty rate = percent of persons below poverty level. MA = Metropolitan Area. Total includes other races not shown separately. Persons of Hispanic origin may be of any race. Poverty rate for all races for years not shown are: 1959, 22.4; 1960, 22.2; 1961, 21.9; 1962, 21.0; 1963, 19.5; 1964, 19.0; 1965, 17.3; 1966, 14.7; 1967, 14.2; and 1968, 12.8. Poverty thresholds are updated annually to reflect changes in the consumer price index.

Economy and the Environment

Table 2.1 U.S. Gross Domestic Product, 1959-1996

Year	Gross domestic product		Price deflators for GDP
	Current dollars	Chained (1992) dollars	
	billions		*(1992=100)*
1959	507.2	2,210.2	23.0
1960	526.6	2,262.9	23.3
1961	544.8	2,314.3	23.5
1962	585.2	2,454.8	23.8
1963	617.4	2,559.4	24.1
1964	663.0	2,708.4	24.5
1965	719.1	2,881.1	25.0
1966	787.8	3,069.2	25.7
1967	833.6	3,147.2	26.5
1968	910.6	3,293.9	27.6
1969	982.2	3,393.6	29.0
1970	1,035.6	3,397.6	30.5
1971	1,125.4	3,510.0	32.1
1972	1,237.3	3,702.3	33.4
1973	1,382.6	3,916.3	35.3
1974	1,496.9	3,891.2	38.5
1975	1,630.6	3,873.9	42.1
1976	1,819.0	4,082.9	44.6
1977	2,026.9	4,273.6	47.4
1978	2,291.4	4,503.0	51.0
1979	2,557.5	4,630.6	55.2
1980	2,784.2	4,615.0	60.3
1981	3,115.9	4,720.7	66.0
1982	3,242.1	4,620.3	70.2
1983	3,514.5	4,803.7	73.2
1984	3,902.4	5,140.1	75.9
1985	4,180.7	5,323.5	78.5
1986	4,422.2	5,487.7	80.6
1987	4,692.3	5,649.5	83.1
1988	5,049.6	5,865.2	86.1
1989	5,438.7	6,062.0	89.7
1990	5,743.8	6,136.3	93.6
1991	5,916.7	6,079.4	97.3
1992	6,244.4	6,244.4	100.0
1993	6,558.1	6,389.6	102.6
1994	6,947.0	6,610.7	105.1
1995	7,265.4	6,742.1	107.8
1996	7,636.0	6,928.4	110.2

Source: U.S. Department of Commerce, Bureau of Economic Analysis, "Summary National Income and Product Series, 1929-96," *Survey of Current Business* (GPO, Washington, DC, August 1997).

Table 2.2 U.S. Pollution Abatement and Control Expenditures by Function, 1972-1994

Year	Pollution abatement		Regulation & monitoring		Research & development		Total	
	billion dollars	*price index*	*billion dollars*	*price index*	*billion dollars*	*price index*	*billion dollars*	*price index*
1972	15.45	31.5	0.37	31.6	0.82	30.0	16.64	31.5
1973	17.93	34.5	0.49	33.8	0.90	31.9	19.33	34.5
1974	21.85	40.6	0.60	37.6	0.99	35.4	23.43	40.4
1975	26.55	43.8	0.65	40.2	1.10	39.2	28.30	43.6
1976	29.80	46.3	0.73	42.4	1.28	41.8	31.80	46.2
1977	32.79	49.4	0.83	45.9	1.48	44.8	35.10	49.3
1978	36.90	53.2	0.95	49.0	1.65	48.6	39.50	53.0
1979	42.43	61.0	1.07	52.9	1.78	53.2	45.27	59.8
1980	47.75	67.9	1.26	58.9	1.75	59.8	50.76	67.4
1981	51.39	74.8	1.31	64.7	1.71	66.4	54.41	74.3
1982	52.99	77.8	1.32	69.7	1.64	71.5	55.95	77.5
1983	56.23	80.3	1.30	73.0	1.60	74.8	59.12	80.0
1984	63.26	82.8	1.29	75.7	1.51	77.6	66.06	82.5
1985	68.73	85.2	1.25	78.5	1.38	79.5	71.36	84.9
1986	72.91	84.8	1.46	81.4	1.67	80.5	76.04	84.6
1987	75.61	86.8	1.65	84.2	1.69	82.3	78.95	86.6
1988	80.55	89.3	1.66	86.4	1.54	86.3	83.75	89.2
1989	85.10	92.8	1.73	89.5	1.68	90.0	88.51	92.7
1990	91.61	96.1	1.79	92.9	1.42	93.0	94.82	95.9
1991	93.75	98.3	2.29	97.3	1.87	96.6	97.90	98.2
1992	100.46	100.0	2.60	100.0	1.56	100.0	104.83	100.0
1993	105.84	102.6	2.34	101.9	1.87	102.9	110.05	102.6
1994	117.62	106.0	2.20	101.5	1.99	103.2	121.81	105.8

Source: Vogan, C.R., "Pollution Abatement and Control Expenditures, 1972-94," *Survey of Current Business* (GPO, Washington, DC, September 1996).

Notes: Dollars = current dollars. Price index = chained-type price index, 1992 = 100. Expenditures are for goods and services that U.S. residents use to produce cleaner air and water and to manage solid waste. Pollution abatement directly reduces emissions by preventing the generation of pollutants, by recycling the pollutants, or by treating the pollutants prior to discharge. Regulation and monitoring are government activities that stimulate and guide action to reduce pollutant emissions. Research and development by business and government not only support abatement but also help increase the efficiency of regulation and monitoring. Totals may not agree with sum of components due to independent rounding. This series was discontinued after 1994.

Table 2.3 U.S. Pollution Abatement and Control Expenditures by Type, 1972-1994

Year	Air		Water		Solid waste		Other	
	billion dollars	*price index*	*billion dollars*	*price index*	*billion dollars*	*price index*	*billion dollars*	*price index*
1972	6.43	32.5	7.21	32.1	3.18	30.4	-0.19	38.3
1973	7.68	34.9	8.21	36.0	3.59	32.7	-0.15	49.8
1974	9.68	43.3	9.77	40.9	4.18	36.5	-0.19	72.0
1975	11.92	47.3	12.07	43.7	4.52	39.2	-0.22	76.2
1976	13.03	49.4	14.06	46.7	5.00	41.7	-0.28	77.3
1977	14.72	52.6	14.96	50.2	5.72	44.1	-0.29	79.1
1978	16.38	56.1	17.00	54.8	6.51	46.6	-0.39	85.8
1979	19.40	65.0	19.19	60.7	7.28	51.6	-0.59	103.9
1980	22.35	76.5	20.64	66.4	8.52	56.4	-0.75	122.2
1981	25.42	84.0	20.15	72.5	9.69	64.0	-0.86	130.6
1982	25.96	86.1	20.70	76.1	9.80	68.4	-0.52	120.3
1983	26.68	87.3	21.71	79.9	11.12	70.9	-0.39	111.1
1984	29.42	88.9	24.18	83.1	13.03	74.0	-0.56	111.9
1985	30.68	90.5	26.17	86.2	15.18	76.7	-0.66	103.2
1986	31.43	87.4	28.23	86.9	17.06	79.1	-0.69	92.7
1987	29.36	89.5	30.76	88.5	19.43	81.7	-0.61	96.8
1988	31.33	91.6	31.29	91.1	22.43	85.0	-1.30	102.7
1989	29.34	94.8	33.68	94.2	26.66	89.4	-1.17	108.3
1990	28.33	97.3	37.13	96.7	30.64	94.2	-1.28	111.1
1991	27.79	98.7	37.92	98.9	32.83	97.3	-0.63	104.0
1992	29.79	100.0	39.07	100.0	36.58	100.0	-0.81	100.0
1993	32.48	101.6	39.38	103.8	38.37	102.2	-0.18	0.97
1994	37.60	104.6	42.38	108.1	41.74	104.6	+0.09	-0.91

Source: Vogan, C.R., "Pollution Abatement and Control Expenditures, 1972-94," *Survey of Current Business* (GPO, Washington, DC, September 1996).

Notes: Dollars = current dollars. Price index = chained-type price index, 1992 = 100. Expenditures cover most, but not all, pollution abatement and control activities, which are defined as those resulting from rules, policies and conventions, and formal regulations restricting the release of pollutants into common-property media such as the air and water. Solid waste management includes the collection and disposal of solid waste and the alteration of production processes that generate less solid waste. Other consists of the value of reclaimed materials and energy that can not be assigned to a specific media category. This series was discontinued after 1994.

Table 2.4 U.S. Pollution Abatement Expenditures by Sector, 1972-1994

Year	Personal consumption		Business		Government	
	billion dollars	*price index*	*billion dollars*	*price index*	*billion dollars*	*price index*
1972	1.35	32.3	10.69	30.9	3.41	32.0
1973	1.86	34.4	12.20	34.1	3.86	34.7
1974	2.33	43.0	14.59	40.1	4.93	39.5
1975	3.25	46.2	16.41	44.0	6.89	41.1
1976	3.81	48.6	18.38	46.4	7.62	43.8
1977	4.34	51.3	21.04	49.6	7.41	46.8
1978	4.85	54.3	23.40	53.3	8.65	51.0
1979	5.52	65.5	26.97	59.7	9.94	56.9
1980	6.65	79.8	29.99	67.4	11.11	61.6
1981	8.20	86.5	32.51	74.7	10.68	67.4
1982	8.36	86.6	33.54	78.4	11.09	70.4
1983	9.76	86.9	35.02	80.9	11.45	74.1
1984	11.04	88.0	39.36	83.7	12.86	76.9
1985	12.16	90.1	42.04	85.6	14.54	80.9
1986	12.68	86.4	44.11	85.3	16.11	82.7
1987	11.34	89.5	46.73	87.0	18.54	84.7
1988	12.48	91.2	48.40	89.5	19.67	88.1
1989	11.09	94.0	52.23	93.2	21.77	91.1
1990	9.33	96.2	58.30	96.6	23.99	94.5
1991	7.43	97.5	61.09	98.6	25.23	97.9
1992	7.90	100.0	65.93	100.0	26.64	100.0
1993	8.44	102.5	69.01	102.7	28.39	102.5
1994	9.76	106.0	76.63	106.2	31.23	105.5

Source: Vogan, C.R., "Pollution Abatement and Control Expenditures, 1972-94," *Survey of Current Business* (GPO, Washington, DC, September 1996).

Notes: Dollars = current dollars. Price index = chained-type price index, 1992 = 100. Expenditures are attributed to the sector that performs the air or water pollution abatement or solid waste collection and disposal. Personal consumption refers to expenditures to purchase and operate motor vehicle emission abatement devices. Government refers to pollution abatement expenditures by federal, state, and local governments and government enterprise fixed capital for publicly-owned electric utilities and public sewer systems. This series was discontinued after 1994.

Table 2.5 U.S. Pollution Abatement Expenditures by Industry, 1973-1994

Year	Capital expenditures				Operating costs				Cost offsets
	Air	Water	Solid waste	Total	Air	Water	Solid waste	Total	
	millions of current dollars								
Chemicals and allied products									
1973	164.4	214.6	16.8	395.9	174.1	247.6	80.2	502.3	83.1
1974	250.6	264.4	24.1	539.2	203.8	335.6	104.0	643.3	104.5
1975	359.5	387.7	35.0	780.2	249.9	430.9	126.7	807.4	140.7
1976	319.8	577.4	44.7	942.0	295.6	514.7	173.2	983.5	188.7
1977	339.9	593.1	49.6	982.5	335.5	685.2	217.6	1,238.3	206.4
1978	376.3	385.9	65.1	827.5	398.8	794.1	280.1	1,473.0	231.3
1979	314.6	360.7	95.6	770.9	485.3	895.2	287.0	1,667.5	230.4
1980	325.9	350.0	104.8	780.7	539.9	942.9	368.8	1,851.8	305.9
1981	335.0	322.2	95.6	752.8	571.7	1,069.1	406.9	2,047.8	341.1
1982	272.8	256.5	98.3	627.6	556.1	1,112.3	438.2	2,106.5	345.2
1983	159.0	187.4	49.0	395.4	624.9	1,106.0	467.4	2,198.2	297.4
1984	142.9	212.4	32.7	418.1	622.0	1,206.3	517.1	2,345.4	357.5
1985	193.7	271.5	272.5	738.1	672.9	1,267.7	599.4	2,540.0	268.6
1986	197.8	325.5	101.0	624.4	646.5	1,301.8	705.9	2,654.3	336.4
1988	370.7	487.8	236.5	1,095.0	706.4	1,428.5	940.1	3,074.9	443.8
1989	380.3	598.6	215.9	1,194.8	794.0	1,613.8	1,101.4	3,509.2	395.9
1990	596.2	995.0	260.9	1,852.1	841.9	1,799.0	1,302.5	3,943.4	405.7
1991	816.4	942.3	307.5	2,066.1	879.6	1,786.9	1,380.5	4,046.9	353.7
1992	774.5	1,017.3	329.1	2,120.9	1,026.9	1,946.8	1,451.3	4,425.1	511.2
1993	767.5	937.9	252.5	1,957.9	1,013.6	1,957.0	1,377.6	4,348.2	362.1
1994	676.9	1,005.6	248.4	1,931.0	1,138.7	1,996.7	1,431.5	4,566.9	321.0
Petroleum and coal products									
1973	222.5	96.1	3.2	321.8	192.5	125.4	19.9	337.8	44.3
1974	341.3	119.7	1.3	462.3	238.3	153.3	28.5	420.1	83.5
1975	398.2	155.7	1.7	555.7	339.4	192.1	31.7	563.1	137.7
1976	236.5	199.8	5.2	441.4	466.1	263.3	45.3	774.8	183.8
1977	167.7	195.6	5.3	368.5	601.3	289.3	57.4	948.0	238.4
1978	311.2	100.5	7.6	419.3	636.4	304.1	57.0	997.4	261.8
1979	397.8	119.4	17.1	534.3	750.7	370.8	25.3	1,173.8	324.1
1980	402.3	114.2	15.4	531.9	910.1	406.9	101.0	1,418.0	506.7
1981	440.8	131.7	18.2	590.6	1,118.0	437.2	130.2	1,685.5	565.6
1982	533.2	165.7	13.1	712.1	1,195.1	472.0	133.7	1,800.8	335.3
1983	308.2	164.7	12.0	485.0	1,203.6	552.3	137.9	1,893.7	524.9
1984	195.1	96.8	19.8	311.7	1,327.9	583.8	171.1	2,083.5	552.8
1985	175.0	88.4	27.0	290.4	1,278.5	586.5	198.5	2,063.4	500.0
1986	273.6	121.5	29.2	424.3	1,230.9	578.0	196.4	2,005.2	498.2
1988	208.2	203.7	70.8	482.8	1,175.8	561.7	268.0	2,005.5	480.0
1989	146.5	230.4	40.7	417.6	1,258.2	578.7	333.0	2,170.0	523.1
1990	425.7	400.8	90.3	916.8	1,472.2	701.9	530.8	2,704.9	562.0
1991	996.7	373.3	92.5	1,462.5	1,464.7	793.9	590.4	2,849.0	480.5
1992	2,079.8	492.6	112.6	2,685.0	1,428.9	742.8	413.7	2,585.4	475.9
1993	1,974.7	567.2	106.6	2,648.5	1,585.3	685.2	377.4	2,647.9	419.4
1994	1,982.3	466.9	122.9	2,572.0	1,742.0	755.7	417.2	2,914.9	337.8

See next page for continuation of table.

Table 2.5 U.S. Pollution Abatement Expenditures by Industry, 1973-1994 (continued)

Year	Capital expenditures				Operating costs				Cost offsets
	Air	Water	Solid waste	Total	Air	Water	Solid waste	Total	
	millions of current dollars								
Primary metal industries									
1973	397.2	84.7	16.8	498.6	264.7	148.3	53.8	466.8	51.5
1974	510.5	132.7	12.5	646.8	339.6	181.2	69.5	590.2	76.9
1975	640.6	187.5	5.4	833.5	429.9	209.4	75.9	715.2	95.3
1976	632.5	197.8	3.4	833.7	575.7	229.5	90.7	895.8	100.7
1977	616.0	250.2	8.4	874.6	721.6	268.3	132.3	1,122.3	126.3
1978	563.3	219.1	9.4	791.8	809.6	333.0	178.9	1,321.4	141.7
1979	588.8	227.3	6.9	823.1	981.7	442.0	163.5	1,587.2	241.8
1980	539.7	180.7	19.6	740.0	998.2	463.2	215.3	1,677.3	169.5
1981	567.2	144.1	16.9	728.2	1,111.9	549.2	250.7	1,911.8	189.7
1982	423.1	133.7	13.0	569.8	897.2	448.4	167.6	1,513.6	148.5
1983	147.6	100.2	7.5	225.3	904.3	454.6	256.7	1,615.6	95.4
1984	175.2	72.9	26.0	274.0	1,017.3	450.7	301.7	1,769.7	171.6
1985	142.9	84.3	25.6	252.9	1,067.0	517.4	278.7	1,863.0	136.8
1986	102.8	74.6	48.4	225.9	968.5	509.4	264.1	1,721.9	184.6
1988	167.3	100.6	41.8	309.8	965.8	516.1	327.2	1,809.0	189.8
1989	216.3	138.7	52.1	407.0	883.1	574.3	473.7	1,931.1	190.4
1990	278.6	166.8	53.7	499.1	943.7	565.4	516.4	2,025.5	206.3
1991	499.2	131.9	42.2	673.4	911.7	564.0	526.9	2,002.6	185.1
1992	342.6	123.5	59.5	525.7	933.1	575.0	485.3	1,993.4	164.2
1993	280.7	92.0	69.5	442.2	944.5	598.2	474.6	2,017.2	136.4
1994	290.1	98.5	39.4	428.0	982.1	692.2	537.2	2,211.5	133.8
Transportation equipment									
1973	52.6	41.7	6.9	101.2	35.2	51.1	43.4	129.8	20.1
1974	52.7	41.5	9.2	103.4	44.8	59.5	50.5	154.8	13.6
1975	32.1	36.4	6.8	75.4	52.2	66.4	49.7	168.3	13.4
1976	21.1	53.6	3.8	78.5	56.9	83.5	57.6	197.9	14.5
1977	36.9	39.4	6.3	82.6	60.6	97.3	76.1	233.9	13.5
1978	71.0	57.9	10.7	139.5	77.3	110.2	93.0	280.5	16.6
1979	120.1	59.5	9.9	189.5	96.4	126.3	109.1	331.8	36.9
1980	201.4	60.7	12.9	275.0	110.7	137.4	153.2	401.5	24.6
1981	209.2	60.0	14.2	283.3	117.5	150.7	157.7	426.1	19.3
1982	59.7	36.5	12.1	108.3	105.6	153.5	137.6	396.5	18.2
1983	33.0	55.0	10.2	98.3	157.5	224.2	178.6	560.3	22.3
1984	71.3	116.9	19.4	207.6	192.9	280.1	212.6	685.6	22.7
1985	254.5	165.1	36.9	456.5	194.5	283.9	260.3	738.8	23.7
1986	432.4	81.8	26.8	541.1	195.7	338.5	304.9	839.0	28.2
1988	87.6	80.4	42.2	210.2	215.7	299.2	459.5	974.4	38.7
1989	156.0	84.6	46.2	286.8	212.2	318.1	470.1	1,000.3	43.1
1990	206.6	142.6	46.1	395.3	247.3	373.1	611.6	1,232.0	41.2
1991	175.8	94.7	30.8	301.4	254.7	319.6	544.0	1,118.3	45.9
1992	179.4	69.2	32.5	281.0	298.5	347.0	526.2	1,171.7	68.7
1993	178.7	67.1	31.8	277.6	302.4	350.9	541.2	1,194.4	64.1
1994	244.8	60.8	31.3	336.9	293.7	342.5	480.2	1,116.4	71.4

See next page for continuation of table.

Table 2.5 U.S. Pollution Abatement Expenditures by Industry, 1973-1994 (continued)

Year	Capital expenditures				Operating costs				Cost offsets
	Air	Water	Solid waste	Total	Air	Water	Solid waste	Total	
	millions of current dollars								
Food and kindred products									
1973	77.6	104.8	14.3	196.7	39.1	110.4	53.6	203.1	32.6
1974	73.4	111.7	14.3	199.2	48.8	143.5	76.8	268.9	52.2
1975	75.6	93.9	11.4	180.9	53.2	153.7	87.7	294.2	62.6
1976	102.5	97.6	7.4	207.5	57.7	187.5	100.5	345.9	63.7
1977	67.9	103.6	12.5	183.9	56.2	211.6	89.5	357.1	53.3
1978	67.7	94.4	12.9	175.0	69.4	243.2	99.4	412.0	57.1
1979	57.9	111.1	13.6	182.7	91.0	297.9	115.3	504.2	80.3
1980	61.7	133.0	13.5	208.2	81.6	314.3	123.6	519.4	79.5
1981	53.9	104.8	14.8	173.5	78.3	343.3	157.5	579.1	91.2
1982	47.4	110.9	11.0	169.3	77.1	328.1	116.2	522.1	51.1
1983	37.7	105.1	10.9	153.8	96.1	402.3	151.3	649.6	32.7
1984	50.6	91.8	12.2	154.5	101.3	458.1	155.0	714.4	43.7
1985	66.2	77.4	11.7	155.1	106.3	525.2	201.0	832.1	33.4
1986	61.9	108.2	15.7	185.8	126.0	559.9	246.1	932.1	w/h
1988	100.2	91.0	19.8	211.0	157.8	673.3	328.9	1,160.0	110.6
1989	51.7	183.6	25.2	260.6	137.4	663.5	255.3	1,056.2	82.0
1990	64.6	163.3	21.1	249.0	145.9	692.4	270.4	1,108.8	87.0
1991	94.6	359.5	27.7	481.8	149.6	788.5	316.1	1,254.2	71.6
1992	85.1	202.6	29.1	316.8	162.7	835.7	313.6	1,312.0	82.2
1993	73.9	113.6	32.4	219.9	156.1	857.8	325.4	1,339.3	65.1
1994	105.9	152.8	15.5	274.3	172.4	940.5	334.7	1,447.6	91.5
Paper and allied products									
1973	166.4	161.0	12.1	339.6	59.2	118.1	43.2	220.5	54.6
1974	270.8	193.2	12.9	476.9	81.2	152.0	55.7	289.0	84.8
1975	323.0	266.0	16.3	605.3	100.9	185.5	57.5	344.0	112.2
1976	180.6	278.6	27.3	486.6	123.3	239.1	67.3	430.3	137.6
1977	134.1	261.7	31.6	427.4	133.5	309.0	86.4	529.0	150.8
1978	123.9	189.0	28.7	341.6	158.4	357.6	105.6	622.0	175.6
1979	207.0	180.6	38.8	426.4	176.6	400.5	121.1	698.2	161.5
1980	197.4	111.2	31.0	339.6	196.2	436.7	129.1	762.1	248.1
1981	168.0	86.5	31.1	285.5	211.8	469.9	148.0	829.7	298.5
1982	190.0	93.7	29.7	313.4	206.7	455.2	134.1	796.0	213.7
1983	122.3	65.9	27.9	216.1	226.5	508.9	183.6	919.1	255.3
1984	151.9	68.2	42.1	262.3	280.7	566.1	213.2	1,060.1	118.4
1985	190.9	106.0	35.6	332.4	313.0	573.4	234.4	1,120.8	107.3
1986	137.1	96.9	37.3	271.3	319.2	565.7	269.7	1,154.6	133.8
1988	233.4	97.2	87.1	417.7	372.4	627.7	343.2	1,343.3	245.6
1989	392.4	261.0	154.9	808.2	388.1	686.8	374.2	1,449.0	264.9
1990	414.0	509.6	151.7	1,075.2	397.5	788.3	421.0	1,606.8	266.4
1991	480.8	552.7	199.0	1,232.6	400.8	790.7	443.5	1,635.0	170.4
1992	396.7	373.4	234.5	1,004.6	535.6	822.7	502.4	1,860.7	254.6
1993	307.3	289.2	119.2	715.6	511.2	852.7	537.5	1,901.5	234.0
1994	241.9	195.9	198.1	635.9	536.9	829.5	513.1	1,879.5	285.1

See next page for continuation of table.

Table 2.5 U.S. Pollution Abatement Expenditures by Industry,1973-1994 (continued)

	Rubber and miscellaneous plastic products								
	Capital expenditures				Operating costs				
Year	Air	Water	Solid waste	Total	Air	Water	Solid waste	Total	Cost offsets
	millions of current dollars								
1973	13.5	7.3	3.3	24.2	12.2	10.1	20.4	42.6	4.6
1974	22.2	13.5	2.2	37.9	15.7	15.1	28.2	58.8	19.5
1975	22.2	6.6	3.1	31.9	20.7	18.4	25.7	64.8	12.5
1976	24.2	10.0	3.1	37.4	22.3	24.0	34.0	80.3	15.8
1977	17.4	13.8	5.4	36.6	19.8	18.9	35.1	73.8	7.7
1978	18.7	5.5	3.4	27.7	17.7	23.9	43.3	84.9	8.0
1979	12.9	9.3	2.9	25.1	32.2	29.6	49.9	111.7	13.6
1980	12.6	6.9	2.3	21.7	30.4	27.6	50.2	108.2	18.1
1981	15.3	5.9	6.5	21.8	29.8	29.4	58.8	118.3	14.0
1982	14.8	7.7	2.7	25.2	22.2	28.2	39.8	90.2	7.0
1983	12.0	3.8	7.8	23.6	50.9	52.8	62.0	165.8	6.6
1984	20.5	7.0	5.8	33.4	51.1	48.7	68.1	168.0	9.9
1985	21.3	3.2	5.2	29.7	46.7	55.6	90.8	193.1	10.0
1986	20.1	9.7	6.2	36.0	50.9	52.0	123.3	226.2	15.1
1988	21.7	11.3	7.8	40.7	62.5	62.2	153.3	277.9	18.7
1989	50.3	16.0	12.0	78.2	85.3	99.6	218.4	403.3	25.6
1990	68.9	11.0	13.9	93.8	96.6	113.4	217.6	427.6	24.3
1991	50.8	18.8	12.2	81.7	121.0	76.9	243.0	440.9	29.4
1992	71.1	18.2	7.3	96.7	105.7	73.3	200.5	379.6	26.7
1993	44.0	11.6	7.6	63.3	104.6	83.5	197.1	385.2	24.9
1994	52.4	17.2	5.6	75.2	119.2	90.7	229.8	439.6	35.5

Source: U.S. Department of Commerce, Bureau of the Census, *Pollution Abatement Costs and Expenditures*, Current Industrial Reports (GPO, Washington, DC, annual).

Notes: Data for 1987 not available. w/h = withheld by industry. Data are for selected industries. Does not include all industries covered in the survey. This series was discontinued after 1994.

Table 2.6 Employment and Revenues in U.S. Environmental Industries, 1980 to 1996

Industry	Employment			Revenues		
	1980	1990	1996	1980	1990	1996
	thousands			*billions of dollars*		
Analytical services[1]	6.0	20.2	16.5	0.4	1.5	1.5
Water treatment works[2]	53.9	95.0	120.9	9.2	19.8	26.6
Solid waste management[3]	83.2	209.5	234.6	8.5	26.1	33.8
Hazardous waste management[4]	6.8	56.9	51.2	0.6	6.3	6.0
Remediation/industrial services	6.9	107.2	95.3	0.4	8.5	8.6
Consulting & engineering	20.5	144.2	159.7	1.5	12.5	15.6
Water equipment & chemicals	62.4	97.9	123.3	6.3	13.5	17.4
Instrument manufacturing	2.5	18.8	26.6	0.2	2.0	3.2
Air pollution control equipment[5]	28.3	82.7	82.6	3.0	10.7	11.8
Waste management equipment[6]	41.9	88.8	94.9	4.0	10.4	12.1
Process & prevention technology	2.1	8.9	20.3	0.1	0.4	0.9
Water utilities[7]	76.9	104.7	122.2	11.9	19.8	26.3
Resource recovery[8]	48.7	118.4	131.3	4.4	13.1	16.3
Environmental energy sources[9]	22.4	21.1	26.7	1.5	1.8	2.4
Total[10]	462.5	1,174.3	1,306.1	52.0	146.4	184.3

Source: Environmental Business International, Inc., *Environmental Business Journal*, (Environmental Business International, Inc., San Diego, CA, monthly).

Notes: [1]Covers environmental laboratory testing and services. [2]Mostly revenues collected by municipal entities. [3]Covers activities such as collection, transportation, transfer stations, disposal, landfill ownership, and management for solid waste. [4]Transportation and disposal of hazardous, medical, and nuclear waste. [5]Includes stationary and mobile sources. [6]Includes vehicles, containers, liners, processing, and remedial equipment. [7]Revenues generated from the sale year. [8]Revenues generated from the sale of recovered metals, paper, plastic, etc. [9]Includes solar, geothermal, and conservation devices. [10]Covers approximately 59,000 private and public companies engaged in environmental activities.

Public Lands and Recreation

Table 3.1 Lands Under the Control of Selected Federal Agencies, 1970-1996

Year	National Park System	National Wildlife Refuge System	National Forest System	Bureau of Reclamation	Bureau of Land Management
			million acres		
1970	29.6	30.7	182.6	9.4	451.1
1971	29.9	30.9	182.6	8.2	451.0
1972	30.4	31.1	182.8	8.3	450.9
1973	30.5	31.1	183.0	8.2	450.8
1974	31.1	33.9	182.1	8.2	447.3
1975	31.0	34.1	183.3	8.0	447.3
1976	31.3	34.4	183.4	7.3	446.8
1977	31.3	34.5	183.5	7.3	427.2
1978	76.7	34.6	183.6	7.1	457.4
1979	76.7	46.8	183.2	7.1	397.5
1980	77.0	71.9	183.1	7.2	343.0
1981	79.1	88.8	186.4	7.1	343.4
1982	79.4	88.8	186.6	7.1	341.1
1983	79.4	88.9	186.5	7.0	342.3
1984	79.4	90.2	186.4	7.9	341.9
1985	79.5	90.4	186.3	7.8	337.1
1986	79.5	90.5	186.5	9.0	334.1
1987	79.6	90.6	186.5	8.5	333.6
1988	80.0	90.8	186.3	8.8	270.4
1989	80.1	91.3	186.9	8.6	269.6
1990	80.2	90.6	187.1	9.0	272.0
1991	80.3	90.8	187.0	8.6	269.0
1992	80.7	91.0	187.1	8.6	268.5
1993	80.3	91.5	187.2	8.6	267.6
1994	83.3	91.8	187.3	8.6	267.1
1995	83.2	92.3	187.2	8.6	264.3
1996	83.2	92.6	187.3	8.6	264.3

Sources: U.S. Department of Agriculture, Forest Service, *Land Areas of the National Forest System* (USDA, FS, Washington, DC, annual).

U.S. Department of the Interior, Fish and Wildlife Service, *Lands Under the Control of the U.S. Fish and Wildlife Service* (DOI, FWS, Washington, DC, annual).

U.S. Department of the Interior, National Park Service, *Areas Administered by the National Park Service: Information Tables* (DOI, NPS, Washington, DC, annual).

U.S. Department of the Interior, Bureau of Land Management, *Public Land Statistics* (DOI, BLM, Washington, DC, annual).

U.S. Department of the Interior, Bureau of Reclamation, unpublished, Denver, CO, 1994.

Notes: na = not available. Data reflect year-end cumulative totals. National Park Service data for 1978-1996 are not directly comparable with data for earlier years due to reclassification of several sites within the system.

Table 3.2 National Wilderness Preservation System and National Wild and Scenic River System, 1968-1996

Year	National Wilderness Preservation System	National Wild and Scenic River System
	million acres	*river miles*
1968	10.03	773
1969	10.19	773
1970	10.40	868
1971	10.40	868
1972	11.03	895
1973	11.03	961
1974	11.38	1,018
1975	12.72	1,145
1976	14.45	1,610
1977	14.49	1,610
1978	19.00	2,299
1979	19.00	2,299
1980	79.71	5,662
1981	79.84	6,908
1982	79.88	6,908
1983	80.21	6,908
1984	88.55	7,217
1985	88.70	7,224
1986	88.80	7,363
1987	88.99	7,709
1988	90.81	9,264
1989	91.46	9,281
1990	94.97	9,318
1991	95.03	9,463
1992	95.39	10,295
1993	95.44	10,516
1994	103.72	10,734
1995	103.60	10,734
1996	103.60	10,815

Sources: U.S. Department of Agriculture, Forest Service, National Wilderness Preservation System Fact Sheet, unpublished, Washington, DC, annual.

U.S. Department of the Interior, National Park Service, River Mileage Classifications for Components of the National Wild and Scenic River System, unpublished, Washington, DC, annual.

Notes: na = not available. Data reflect year-end cumulative totals.

Table 3.3 National Estuarine Research Reserves and National Marine Sanctuaries, 1975-1996

Year	Estuarine Research Reserves		Marine Sanctuaries	
	number	*acres*	*number*	*sq. nmi.*
1975	1	4,700	2	101.0
1976	3	14,205	2	101.0
1977	3	14,205	2	101.0
1978	4	22,605	2	101.0
1979	5	216,363	2	101.0
1980	9	223,426	3	1,353.0
1981	11	229,652	6	2,323.3
1982	14	240,571	6	2,323.3
1984	15	242,121	6	2,323.3
1986	16	245,149	7	2,323.6
1987	16	245,149	7	2,323.6
1988	17	247,348	7	2,323.6
1989	18	253,477	8	2,720.7
1990	18	259,945	9	5,415.3
1991	19	399,302	9	5,415.3
1992	21	400,559	13	11,419.3
1993	22	401,570	13	11,419.3
1994	22	433,864	14	11,419.3
1995	22	433,865	14	11,419.3
1996	21[1]	427,528	14	11,419.3

Source: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Office of Ocean and Coastal Resources Management, Sanctuaries and Reserves Division, unpublished, Washington, DC, 1996.

Notes: sq. nmi. = square nautical miles. [1]The Waimanu, Hawaii National Estuarine Research Reserve (NERR) site was withdrawn from the NERR System on May 1, 1996.

Table 3.4 National Register of Historic Places, 1967-1996

Year	Properties listed	Properties removed	Year	Properties listed	Properties removed
	number			*number*	
1967	873	2	1982	29,999	420
1968	903	3	1983	35,112	434
1969	1,106	4	1984	39,121	440
1970	1,888	19	1985	42,538	445
1971	3,026	51	1986	45,936	452
1972	4,376	93	1987	48,254	525
1973	6,646	144	1988	51,286	574
1974	8,247	188	1989	53,838	635
1975	10,805	231	1990	56,688	651
1976	12,561	265	1991	58,209	683
1977	14,203	290	1992	60,500	716
1978	16,575	338	1993	62,095	749
1979	20,589	366	1994	63,710	792
1980	24,680	403	1995	65,255	810
1981	26,499	406	1996	66,805	833

Source: U.S. Department of the Interior, National Park Service, The National Register of Historic Places, unpublished, Washington, DC, 1996.

Note: Data are year-end cumulative totals.

Table 3.5 Recreational Fishing and Hunting in the United States, 1955-1996

Year	Fishermen			Hunters				Total sportsmen
	Freshwater	Saltwater	Total	Small game	Big game	Waterfowl	Total	
	millions							
1955	18.42	4.56	20.81	9.82	4.41	1.99	11.78	24.92
1960	21.68	6.29	25.32	12.11	6.28	1.96	14.64	30.44
1965	23.96	8.31	28.34	10.58	6.57	1.65	13.58	32.88
1970	29.36	9.46	33.15	11.67	7.77	2.89	14.34	36.28
1975	36.60	13.74	41.29	14.18	11.04	4.28	17.09	45.77
1980	35.78	11.97	41.87	12.50	11.05	3.18	16.76	46.97
1985	39.12	12.89	45.35	11.13	12.58	3.20	16.34	49.83
1991	31.04	8.89	39.98	7.64	10.75	3.01	14.06	39.98
1966	29.73	9.44	39.69	6.93	11.27	3.04	13.98	39.69

Year	Fishing days			Hunting days				Total sporting days
	Freshwater	Saltwater	Total	Small game	Big game	Waterfowl	Total	
	millions							
1955	338.83	58.62	397.45	118.63	30.83	19.96	169.42	566.87
1960	385.17	80.60	465.77	138.19	39.19	15.16	192.54	658.31
1965	426.92	95.84	522.76	128.45	43.85	13.53	185.82	708.58
1970	592.49	113.69	706.19	124.04	54.54	25.11	203.69	909.88
1975	890.58	167.50	1,050.08	269.65	100.60	31.22	401.48	1,459.55
1980	788.39	164.04	952.42	225.79	117.41	26.18	348.54	1,300.98
1985	895.03	171.06	1,064.99	214.54	135.45	25.93	350.39	1,415.38
1991	439.54	74.70	511.24	77.13	128.41	22.24	227.78	761.33
1996	513.74	103.03	623.54	75.02	153.72	26.50	255.56	879.10

Sources: U.S. Department of the Interior, Fish and Wildlife Service, *National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* (DOI, FWS, Washington, DC, 1993).

--, *1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation: National Overview* (DOI, FWS, Washington, DC, 1997).

Notes: Number of fishermen and hunters includes persons 16 years and older. Total number of hunters includes 1,411 hunters of other animals in 1991 and 1,472 in 1996. Totals may not agree with sum of components due to independent rounding and because of multiple responses (e.g., where sportsmen participate in more than one activity per outing). The survey methodology used in 1996 was similar to that used for the 1991 survey so the estimates are comparable. However, these estimates are not strictly comparable with estimates from previous years.

Table 3.6 U.S. Marine Recreational Fisheries by Region, 1981-1996

	North Atlantic			Mid-Atlantic			South Atlantic		
Year	Fishing trips	Fish caught	Fish weight	Fishing trips	Fish caught	Fish weight	Fishing trips	Fish caught	Fish weight
	number in millions		*million pounds*	*number in millions*		*million pounds*	*number in millions*		*million pounds*
1981	5.76	36.98	68.79	14.01	100.82	118.56	8.55	44.48	37.87
1982	7.04	46.75	85.71	15.50	81.15	105.42	13.63	64.15	48.53
1983	7.10	35.20	68.38	18.57	125.02	124.65	14.46	62.99	65.20
1984	5.32	24.58	39.63	15.76	101.11	100.53	15.09	59.77	50.05
1985	7.07	41.08	59.43	14.74	90.85	79.40	15.32	67.18	59.96
1986	7.48	49.89	81.97	18.84	153.94	135.53	14.90	59.42	53.56
1987	5.78	34.29	55.17	14.72	99.92	116.72	16.95	50.30	51.56
1988	5.74	25.72	39.73	14.90	77.90	85.89	18.82	56.08	54.85
1989	5.23	24.58	33.10	12.17	64.58	76.97	16.36	46.05	46.35
1990	5.54	18.65	28.89	13.35	84.59	56.80	13.57	40.78	35.77
1991	6.80	26.69	35.63	15.98	126.00	65.19	17.39	54.95	47.66
1992	5.70	17.74	21.17	12.22	75.03	47.33	16.74	54.09	45.00
1993	6.23	20.99	24.30	15.29	97.57	55.08	16.80	50.89	37.35
1994	6.28	25.88	23.92	16.24	94.95	45.86	19.93	72.17	50.09
1995	6.51	21.98	19.79	15.58	88.52	58.87	18.75	65.24	50.44
1966	6.76	23.43	21.29	16.50	86.42	55.74	16.82	51.26	43.76

	Gulf of Mexico			Total Atlantic & Gulf			Pacific		
Year	Fishing trips	Fish caught	Fish weight	Fishing trips	Fish caught	Fish weight	Fishing trips	Fish caught	Fish weight
	number in millions		*million pounds*	*number in millions*		*million pounds*	*number in millions*		*million pounds*
1981	12.06	87.39	53.00	40.38	269.67	278.22	11.00	51.00	na
1982	13.42	113.33	75.70	49.59	305.38	315.36	11.00	53.00	na
1983	19.98	146.17	80.92	60.11	369.38	339.15	11.00	44.52	na
1984	19.64	133.87	71.75	55.81	319.33	261.97	10.00	46.84	na
1985	15.42	101.20	65.45	52.55	300.30	264.23	9.90	43.18	na
1986	19.04	144.08	96.56	60.26	407.32	367.62	11.03	55.31	na
1987	16.09	101.56	66.54	53.54	286.08	289.98	9.97	47.54	na
1988	19.74	130.95	70.85	59.20	290.65	251.31	12.42	51.22	na
1989	15.62	113.91	66.90	48.38	249.11	223.32	9.45	41.29	na
1990	13.31	106.38	51.55	45.77	250.40	173.00	na	na	na
1991	18.17	177.34	79.77	58.34	284.98	228.24	na	na	na
1992	18.08	145.03	68.93	52.74	291.88	182.40	na	na	na
1993	17.43	147.33	68.52	54.75	316.78	185.24	6.89	30.92	20.94
1994	17.50	148.86	63.57	59.95	341.85	183.44	7.19	27.17	17.92
1995	17.12	135.78	73.06	57.96	311.53	202.16	7.22	27.61	24.31
1996	16.32	118.63	64.57	56.40	279.73	185.35	7.85	34.05	22.96

Source: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Fisheries of the United States 1996* (GPO, Washington, DC, 1997).

Notes: na = not available. Gulf of Mexico totals do not include Texas. No data are available for the Pacific Coast for 1990, 1991, and 1992. The 1993-1996 estimates for the Pacific Coast do not include Washington State data. Data for 1996 are preliminary.

Table 3.7 Visits to Selected U.S. Federal Recreation Areas, 1977-1996

Year	National Parks	National Wildlife Refuges	Bureau of Reclamation Recreation Areas	National Forests	Army Corps of Engineers Reservoirs	Bureau of Land Management Lands
	million visits	*million visitors*			*million visitor days*	
1977	211	27	55	205	424	na
1978	222	26	63	219	439	na
1979	205	25	59	220	449	na
1980	198	23	60	234	457	na
1981	210	26	69	236	469	64
1982	214	24	63	233	480	40
1983	217	22	66	228	480	42
1984	218	23	76	228	482	34
1985	216	24	76	225	502	31
1986	237	25	80	237	506	36
1987	246	25	80	239	181	64
1988	250	26	82	242	191	57
1989	256	26	84	253	191	50
1990	263	27	80	263	190	70
1991	268	28	80	279	192	68
1992	275	28	83	287	203	65
1993	273	28	84	296	200	39
1994	269	27	na	330	205	40
1995	270	28	na	345	206	73
1996	266	30	na	341	212	73

Sources: U.S. Army Corps of Engineers, Directorate of Civil Works, Operations, Construction and Readiness Division, Natural Resources Management Branch, Visitation to Corps Recreation Areas, unpublished, Washington, DC, 1997.

U.S Department of Agriculture, Forest Service, *Report of the Forest Service* (USDA, FS, Washington, DC, annual).

U.S. Department of the Interior, Bureau of Land Management, *Public Land Statistics* (DOI, BLM, Washington, DC, annual).

U.S. Department of the Interior, Bureau of Reclamation, Utilization of Recreation Areas on Reclamation Projects, unpublished, Denver, CO, 1994.

U.S. Department of the Interior, Fish and Wildlife Service, Refuge Division, Refuge Management Information System, unpublished, Washington, DC, 1997.

U.S. Department of the Interior, National Park Service, Statistical Office, *National Park Statistical Abstract*, (DOI, NPS, Denver, CO, annual).

Notes: Visitor day = 12 hours. Data for Army Corps of Engineers refer to recreation days of use for years 1977 through 1986 and 12-hour visitor days thereafter.

Ecosystems and Biodiversity

Table 4.1 Trends in Selected U.S. Resident and Neotropical Migrant Bird Species, 1966-1996, 1966-1979, and 1980-1996

	Resident/short distance migrant bird species		
Common name	Long-term trend (1966-1996)	Mid-term trend (1966-1979)	Short-term trend (1980-1996)
	% change per year		
Northern bobwhite	- 2.5	- 1.0	- 3.3
Mourning dove	- 0.3	1.2	- 0.8
Great horned owl	1.1	3.0	- 0.8
Red-headed woodpecker	- 2.2	0.7	- 4.7
Downy woodpecker	- 0.5	0.1	- 1.3
Hairy woodpecker	0.1	1.7	- 0.1
Pileated woodpecker	1.1	1.1	0.8
Red-cockaded woodpecker	- 2.0	8.8	- 8.8
Horned lark	- 1.2	- 0.4	- 1.8
Blue jay	- 1.6	- 1.1	- 1.3
Black-capped chickadee	1.5	1.6	0.1
Carolina chickadee	- 0.9	- 0.8	- 1.7
Tufted titmouse	1.0	- 1.9	2.4
Brown-headed nuthatch	- 2.2	- 2.0	- 2.4
Brown creeper	- 1.5	- 2.6	- 0.9
Carolina wren	0.8	0.0	2.1
Marsh wren	3.9	- 3.1	6.7
Brown thrasher	- 1.1	- 0.9	- 1.1
American robin	0.9	0.7	0.8
Eastern bluebird	2.4	- 4.9	3.9
Northern mockingbird	- 0.9	- 2.0	0.3
Northern cardinal	0.0	- 0.8	0.9
Song sparrow	- 0.1	- 1.9	1.0
Field sparrow	- 3.3	- 5.6	- 2.2
White-throated sparrow	- 1.0	- 2.2	- 0.4
Slate-colored junco	0.0	- 0.5	0.3

	Neotropical migrant bird species		
Common name	Long-term trend (1966-1996)	Mid-term trend (1966-1979)	Short-term trend (1980-1996)
	% change per year		
Yellow-billed cuckoo	- 1.6	3.2	- 3.1
Chuck-will's-widow	- 1.5	- 1.0	- 0.8
Whip-poor-will	- 1.1	- 1.9	- 0.9
Ruby-throated hummingbird	1.5	1.3	2.1
Eastern wood pewee	- 1.6	- 2.1	- 1.2
Least flycatcher	- 1.5	- 2.3	- 0.6
Olive-sided flycatcher	- 4.1	- 2.3	- 3.9
Yellow-bellied flycatcher	0.8	2.7	4.9
Great-crested flycatcher	- 0.1	0.6	0.3

See next page for continuation of table.

Table 4.1 Trends in Selected U.S. Resident and Neotropical Migrant Bird Species, 1966-1996, 1966-1979, and 1980-1996 (continued)

	Neotropical migrant bird species		
Common name	Long-term trend (1966-1996)	Mid-term trend (1966-1979)	Short-term trend (1980-1996)
	% change per year		
Purple martin	- 0.1	3.1	- 2.0
Barn swallow	1.0	4.2	- 1.6
Blue-gray gnatcatcher	1.0	0.8	2.2
Veery	- 1.1	0.8	- 1.6
Wood thrush	- 1.7	0.5	- 1.2
Gray catbird	- 0.2	0.5	0.2
White-eyed vireo	- 0.1	0.2	0.2
Red-eyed vireo	1.1	2.2	1.6
Solitary vireo	3.0	3.4	3.6
Golden-winged warbler	- 2.5	- 3.2	2.1
Tennessee warbler	6.5	8.5	6.5
Northern parula	0.2	0.2	0.2
Cape May warbler	0.9	14.8	- 10.4
Blue-winged warbler	0.5	1.3	0.7
Prairie warbler	- 2.6	- 5.2	- 0.9
Cerulean warbler	- 3.8	- 5.7	- 0.4
Blackpoll warbler	- 3.1	9.6	- 1.8
Chestnut-sided warbler	- 0.3	0.2	0.6
Wilson's warbler	- 0.3	- 1.9	- 2.0
Nashville warbler	0.6	- 2.8	0.7
Kentucky warbler	- 1.0	0.2	- 1.4
American redstart	- 0.5	- 1.2	0.4
Prothonotary warbler	- 1.6	1.0	- 2.2
Ovenbird	1.4	0.7	2.0
Northern waterthrush	0.8	4.7	- 0.5
Louisiana waterthrush	0.3	0.5	- 1.2
Common yellowthroat	- 0.2	0.7	- 0.6
Yellow-breasted chat	- 0.3	- 3.5	1.0
Scarlet tanager	0.1	3.3	- 0.4
Summer tanager	- 0.2	0.2	- 0.5
Baltimore oriole	- 0.4	2.0	- 1.4
Orchard oriole	- 1.8	- 2.6	- 1.0
Rose-breasted grosbeak	0.1	3.3	- 1.3
Indigo bunting	- 0.7	0.1	- 1.0
Grasshopper sparrow	- 3.5	- 4.6	- 1.8
Chipping sparrow	0.0	- 2.1	0.5

Source: Sauer, J.R., J.E. Hines, G. Gough, I. Thomas and B.G. Peterjohn, *The North American Breeding Bird Survey Results and Analysis*, *Version 96.4* (U.S. Department of the Interior, Patuxent Wildlife Research Center, Laurel, MD, 1997).

Table 4.2 North American Duck Population Estimates, 1955-1996

Year	Northern pintail	Mallard	Canvasback	Redhead	Gadwall	Green wing teal	Blue wing teal	Scaup	Am. widgeon	No. shoveler	Black duck (Atlan)	Black duck (Miss)
	millions											
1955	9.78	8.78	0.59	0.54	0.65	1.81	5.31	5.62	3.32	1.64	0.58	0.18
1956	10.37	10.45	0.70	0.76	0.77	1.53	5.00	5.99	3.15	1.78	0.42	0.21
1957	6.61	9.30	0.63	0.51	0.67	1.10	4.30	5.77	2.92	1.48	0.42	0.23
1958	6.04	11.23	0.75	0.46	0.50	1.35	5.46	5.35	2.55	1.38	0.28	0.26
1959	5.87	9.02	0.49	0.50	0.59	2.65	5.10	7.04	3.79	1.58	0.31	0.18
1960	5.72	7.37	0.61	0.50	0.78	1.43	4.29	4.87	2.99	1.82	0.34	0.17
1961	4.22	7.33	0.44	0.32	0.66	1.73	3.66	5.38	3.05	1.38	0.32	0.16
1962	3.62	5.54	0.36	0.51	0.91	0.72	3.01	5.29	1.96	1.27	0.34	0.11
1963	3.85	6.75	0.51	0.41	1.06	1.24	3.72	5.44	1.83	1.40	0.33	0.14
1964	3.29	6.06	0.64	0.53	0.87	1.56	4.02	5.13	2.59	1.72	0.37	0.22
1965	3.59	5.13	0.52	0.60	1.26	1.28	3.60	4.64	2.30	1.42	0.33	0.16
1966	4.81	6.73	0.66	0.71	1.68	1.62	3.73	4.44	2.32	2.15	0.30	0.15
1967	5.28	7.51	0.50	0.74	1.39	1.59	4.49	4.93	2.33	2.32	0.29	0.21
1968	3.49	7.09	0.56	0.50	1.95	1.43	3.46	4.41	2.30	1.69	0.34	0.14
1969	5.90	7.53	0.50	0.63	1.57	1.49	4.14	5.14	2.94	2.16	0.33	0.15
1970	6.39	9.99	0.58	0.62	1.61	2.18	4.86	5.66	3.47	2.23	0.28	0.14
1971	5.85	9.42	0.45	0.53	1.61	1.89	4.61	5.14	3.27	2.01	0.26	0.13
1972	6.98	9.27	0.43	0.55	1.62	1.95	4.28	8.00	3.20	2.47	0.27	0.14
1973	4.36	8.08	0.62	0.50	1.25	1.95	3.33	6.26	2.88	1.62	0.27	0.15
1974	6.60	6.88	0.51	0.63	1.59	1.87	4.98	5.78	2.67	2.01	0.25	0.08
1975	5.90	7.73	0.60	0.83	1.64	1.67	5.89	6.46	2.78	1.98	0.24	0.12
1976	5.48	7.93	0.61	0.67	1.25	1.55	4.75	5.82	2.51	1.75	0.28	0.15
1977	3.93	7.40	0.66	0.63	1.30	1.29	4.46	6.26	2.58	1.45	0.26	0.10
1978	5.11	7.43	0.37	0.73	1.56	2.17	4.50	5.98	3.28	1.98	0.27	0.09
1979	5.38	7.88	0.58	0.70	1.76	2.07	4.88	7.66	3.11	2.41	0.24	0.08
1980	4.51	7.71	0.74	0.73	1.39	2.05	4.90	6.38	3.60	1.91	0.20	0.08
1981	3.48	6.41	0.62	0.60	1.40	1.91	3.72	5.99	2.95	2.33	0.24	0.08
1982	3.71	6.41	0.51	0.62	1.63	1.54	3.66	5.53	2.46	2.15	0.24	0.07
1983	3.51	6.46	0.53	0.72	1.52	1.88	3.37	7.17	2.64	1.88	0.20	0.09
1984	2.97	5.42	0.53	0.67	1.52	1.41	3.98	7.02	3.02	1.62	0.23	0.06
1985	2.52	4.96	0.38	0.58	1.30	1.48	3.50	5.10	2.05	1.70	0.22	0.06
1986	2.74	6.12	0.44	0.56	1.55	1.68	4.48	5.24	1.74	2.13	0.23	0.10
1987	2.63	5.79	0.45	0.50	1.31	2.01	3.53	4.86	2.01	1.95	0.20	0.07
1988	2.01	6.37	0.44	0.44	1.35	2.06	4.01	4.67	2.21	1.68	0.23	0.11
1989	2.11	5.65	0.48	0.51	1.42	1.84	3.13	4.34	1.97	1.54	0.24	0.07
1990	2.26	5.45	0.54	0.48	1.67	1.79	2.78	4.29	1.86	1.76	0.23	0.01
1991	1.80	5.45	0.49	0.45	1.58	1.56	3.76	5.26	2.25	1.72	0.23	0.05
1992	2.10	5.98	0.48	0.60	2.03	1.77	4.33	4.64	2.21	1.95	0.20	0.08
1993	2.05	5.71	0.47	0.49	1.76	1.70	3.19	4.08	2.05	2.05	0.21	0.08
1994	2.97	6.98	0.53	0.65	2.32	2.11	4.62	4.53	2.38	2.91	0.22	0.08
1995	2.76	8.27	0.77	0.89	2.84	2.30	5.14	4.45	2.62	2.86	0.22	0.09
1996	2.74	7.94	0.85	0.83	2.98	2.50	6.41	4.22	2.27	3.45	na	na

Source: U.S. Department of the Interior, Fish and Wildlife Service, Office of Migratory Bird Management in Conjunction with the Canadian Wildlife Service, *Status of Waterfowl and Fall Flight Forecast* (DOI, FWS, Washington, DC, annual).

Notes: Am. = American. No. = Northern. Atlan = Atlantic Flyway. Miss = Mississippi River Flyway.

Table 4.3 North American Goose and Swan Population Estimates, 1970-1996

Year	Canada goose	Snow goose	Greater white-fronted goose	Brant	Tundra swan	
					Eastern	Western
	millions		*thousands*			
1970	0.295	0.908	50.6	141.7	55	31
1971	0.432	1.191	39.3	300.2	58	99
1972	0.611	1.467	45.8	197.8	63	83
1973	0.702	1.168	43.0	166.0	57	34
1974	0.593	1.355	43.2	218.7	64	70
1975	0.593	1.251	40.4	211.4	67	54
1976	0.876	1.764	53.4	249.0	79	51
1977	0.789	1.341	50.4	221.0	76	47
1978	0.784	2.454	53.1	208.9	70	46
1979	0.690	1.486	49.3	173.4	79	54
1980	0.696	1.872	132.1	215.4	64	65
1981	1.035	1.615	161.0	291.2	93	84
1982	1.143	2.007	182.1	227.0	73	91
1983	1.179	1.974	153.7	233.3	87	67
1984	0.971	1.768	183.2	260.4	81	62
1985	1.167	2.282	181.5	290.8	94	49
1986	1.108	1.818	172.4	246.2	91	66
1987	1.379	2.805	178.6	219.9	95	53
1988	1.541	1.797	207.3	278.0	77	59
1989	2.735	2.394	278.0	273.2	91	79
1990	2.906	2.131	322.1	287.0	90	40
1991	2.595	2.596	376.5	279.4	97	49
1992	3.523	2.544	409.4	302.5	110	64
1993	3.172	2.207	330.1	225.0	76	62
1994	3.703	3.647	1,125.7	287.2	84	79
1995	4.220	3.484	1,186.5	281.9	81	53
1996	4.037	3.076	1,552.0	232.8	79	98

Source: U.S. Department of the Interior, Fish and Wildlife Service, Office of Migratory Bird Management in Conjunction with the Canadian Wildlife Service, *Status of Waterfowl and Fall Flight Forecast* (DOI, FWS, Washington, DC, annual).

Notes: Data for Canada goose are aggregate population totals for 13 separate populations that nest in North America. Data for snow goose are aggregate population totals for the greater snow goose, lesser snow goose, and Ross' goose populations. The 1995 survey of the western tundra swan population was incomplete.

Table 4.4 Status of Marine Mammal Stocks in U.S. Waters, 1995

	Marine mammals of the Pacific				
Species	Stock area	Nmin	PBR	Total annual mortality	Trend
Pygmy killer whale	Hawaii	na	na	na	U
Pilot whale (short finned)	Hawaii	na	na	na	U
Risso's dolphin	Hawaii	na	na	na	U
Killer whale	Hawaii	na	na	0.0	U
Melon-headed whale	Hawaii	na	na	0.0	U
False killer whale	Hawaii	na	na	na	U
Pantropical spotted dolphin	Hawaii	na	na	na	U
Stripped dolphin	Hawaii	na	na	na	U
Spinner dolphin	Hawaii	677	6.8	1.0	U
Rough-toothed dolphin	Hawaii	na	na	na	U
Bottlenose dolphin	Hawaii	na	na	0.0	U
Pygmy sperm whale	Hawaii	na	na	na	U
Dwarf sperm whale	Hawaii	na	na	0.0	U
Sperm whale	Hawaii	na	na	na	U
Cuvier's beaked whale	Hawaii	na	na	0.0	U
Blainville's beaked whale	Hawaii	na	na	0.0	U
California sea lion	U.S.	84,195	5,052	2,434	I
Harbor seal	California	32,800	1,968	729	I
Harbor seal	WA inland	13,053	783	14	I
Harbor seal	OR/WA	28,322	850	233	I
Northern elephant seal	CA breeding	42,000	1,743	166	I
Northern fur seal	San Miguel Is.	10,536	227	0	I
Guadalupe fur seal	Mexico to CA	3,028	104	0	I
Hawaiian monk seal	Hawaii	1,300	4.6	1	D
NE spotted dolphin	E. Trop. Pacific	648,900	6,489	934	D
W/S offshore spotted dolphin	E. Trop. Pacific	1,145,100	11,451	1,226	S
Eastern spinner dolphin	E. Trop. Pacific	518,500	5,185	743	S
Whitebelly spinner dolphin	E. Trop. Pacific	872,000	8,720	619	S
Common dolphin (northern)	E. Trop. Pacific	3,531,000	3,531	101	S
Common dolphin (central)	E. Trop. Pacific	297,400	2,974	151	S
Common dolphin (southern)	E. Trop. Pacific	1,845,600	18,456	0	S
Stripped dolphin	E. Trop. Pacific	1,745,900	17,459	11	S
Coastal spotted dolphin	E. Trop. Pacific	22,500	225	na	S
Central Am. spinner dolphin	E. Trop. Pacific	na	na	11	S
Sea otter	Central CA	na	na	na	I
Sea otter	WA	na	na	na	I

See next page for continuation of table.

Table 4.4 Status of Marine Mammal Stocks in U.S. Waters, 1995 (continued)

Marine Mammals of the Atlantic and Gulf of Mexico					
Species	Stock area	Nmin	PBR	Total annual mortality	Trend
No. Atlantic right whale	W. No. Atlantic	395	0.4	2.5	I
Humpback whale	W. No. Atlantic	4,848	9.7	1	U
Fin whale	W. No. Atlantic	1,704	3.4	na	U
Sei whale	W. No. Atlantic	155	0.3	0.3	U
Minke whale	E. Coast Canada	2,053	21.0	2.5	U
Blue whale	W. No. Atlantic	na	na	0.0	U
Sperm whale	W. No. Atlantic	226	0.5	1.6	U
Dwarf sperm whale	W. No. Atlantic	na	na	na	U
Pygmy sperm whale	W. No. Atlantic	na	na	na	U
Killer whale	W. No. Atlantic	na	na	0	U
Pygmy killer whale	W. No. Atlantic	6	0.1	0	U
Northern bottlenose whale	W. No. Atlantic	na	na	0	U
Cuvier's beaked whale	W. No. Atlantic	na	na	34	U
True's beaked whale	W. No. Atlantic	na	na	34	U
Gervais beaked whale	W. No. Atlantic	na	na	34	U
Blainville's beaked whale	W. No. Atlantic	na	na	34	U
Sowerby's beaked whale	W. No. Atlantic	na	na	34	U
Risso's dolphin	W. No. Atlantic	11,140	111	68	U
Pilot whale (long-finned)	W. No. Atlantic	3,537	28	109	U
Pilot whale (short-finned)	W. No. Atlantic	457	3.7	109	U
Atlantic white-sided dolphin	W. No. Atlantic	12,538	125	127	U
White-beaked dolphin	W. No. Atlantic	na	na	0.0	U
Common dolphin	W. No. Atlantic	3,233	32	449	U
Atlantic spotted dolphin	W. No. Atlantic	4,885	9.8	31	U
Pantropical spotted dolphin	W. No. Atlantic	na	na	31	U
Stripped dolphin	W. No. Atlantic	9,165	73	63	U
Spinner dolphin	W. No. Atlantic	na	na	1.0	U
Bottlenose dolphin	Mid-Atl. offshore	9,195	92	128	U
Bottlenose dolphin	Mid-Atl. coastal	2,482	25	29	S
Harbor porpoise	Gulf of Maine*	40,279	403	1,876	U
Harbor seal	W. No. Atlantic	28,810	1,729	476	I
Gray seal	N. W. No. Atlantic	2.035	122	4.5	I
Harp seal	N. W. No. Atlantic	na	na	0	I
Hooded seal	N. W. No. Atlantic	na	na	0	I
Sperm whale	N. Gulf of Mexico	411	0.8	0	U
Bryde's whale	N. Gulf of Mexico	17	0.2	0	U
Cuvier's beaked whale	N. Gulf of Mexico	20	0.2	0	U
Blainsville's beaked whale	N. Gulf of Mexico	na	na	0	U
Gervais' beaked whale	N. Gulf of Mexico	na	na	0	U
Bottlenose dolphin	G. of Mexico OCS	43,233	432	5	U
Bottlenose dolphin	G. of Mexico S&S	4,530	45	5	U
Bottlenose dolphin	W. G. of Mexico coast	2,938	29	13	U
Bottlenose dolphin	E. G. of Mexico coast	8,963	90	8	U
Bottlenose dolphin	G. of Mexico inland**	na	39.7	30	U

See next page for continuation of table.

Table 4.4 Status of Marine Mammal Stocks in U.S. Waters, 1995 (continued)

Marine Mammals of the Atlantic and Gulf of Mexico					
Species	Stock area	Nmin	PBR	Total annual mortality	Trend
Atlantic spotted dolphin	N. Gulf of Mexico	2,555	23	1.5	U
Pantropical spotted dolphin	N. Gulf of Mexico	26,510	265	1.5	U
Stripped dolphin	N. Gulf of Mexico	3,409	34	0	U
Spinner dolphin	N. Gulf of Mexico	4,465	45	0	U
Rough-toothed dolphin	N. Gulf of Mexico	660	6.6	0	U
Clymene dolphin	N. Gulf of Mexico	4,120	41	0	U
Fraser's dolphin	N. Gulf of Mexico	66	0.7	0	U
Killer whale	N. Gulf of Mexico	197	2	0	U
False killer whale	N. Gulf of Mexico	236	2.4	0	U
Pygmy killer whale	N. Gulf of Mexico	285	2.8	0	U
Dwarf sperm whale	N. Gulf of Mexico	na	na	0	U
Pygmy sperm whale	N. Gulf of Mexico	na	na	0	U
Melon-headed whale	N. Gulf of Mexico	2,888	29	0	U
Risso's dolphin	N. Gulf of Mexico	2,199	22	19	U
Pilot whale (short-finned)	N. Gulf of Mexico	186	1.9	0.3	U
West Indian manatee	Florida	na	na	na	D
West Indian manatee	Antillean	na	na	na	D

Source: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Our Living Oceans, Report on the Status of U.S. Living Marine Resources, 1995*, NOAA Technical Memorandum NMFS-F/SPO-19 (DOC, NOAA, NMFS, Washington, DC, 1996).

Notes: N_{min} = minimum population. PBR = potential biological removal. Trend is increasing (I), decreasing (D), stable (S), and unknown (U). na = not available. *Also includes the Bay of Fundy. **Represents at least 33 individually recognized stocks of bottlenose dolphin in U.S. Gulf of Mexico bays, sounds, and other estuaries. OCS = Outer Continental Shelf. S&S = Shelf and Slope. Three species of marine mammals in the Pacific have Endangered Species Act status: sperm whale (endangered); Guadalupe fur seal (threatened); and Hawaiian monk seal (endangered). Two species of marine mammals in the Pacific have Marine Mammal Protection Act status: northeastern spotted dolphin (depleted) and eastern spinner dolphin (depleted). Nine species of marine mammals in the Atlantic and Gulf of Mexico have Endangered Species Act status: North Atlantic right whale (endangered); humpback whale (endangered); fin whale (endangered); sei whale (endangered); blue whale (endangered); W. North Atlantic sperm whale (endangered); Gulf of Mexico sperm whale (endangered); Florida West Indian manatee (endangered); and Antillean West Indian manatee (endangered). One marine mammal species in the Atlantic and Gulf of Mexico has Marine Mammal Protection Act status: Mid-Atlantic coastal bottlenose dolphin (depleted).

Table 4.5 Status of Sea Turtle Stocks in U.S. Waters, 1995

Region/ Species (ESA status)	Historic level	Current level	Current trend
		number of nesting females	
Atlantic			
Loggerhead (T)	Unknown	20,000 to 28,000[1]	Stable[2]
Green (T,E[3])	Unknown	500 to 500[1]	Increasing
Kemp's ridley (E)	40,000	700 to 800[4]	Stable[2]
Leatherback (E)	Unknown	Unknown	Unknown
Hawksbill (E)	Unknown	Unknown	Declining
Pacific			
Loggerhead (T)	Unknown	Unknown	Declining
Green (T)	10,000	500[5]	Increasing[6]
Olive ridley (T)	Unknown	Unknown	Unknown
Leatherback (E)	Unknown	Unknown	Unknown
Hawksbill (E)	Unknown	>75[7]	Unknown

Source: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Our Living Oceans, Report on the Status of U.S. Living Marine Resources, 1995*, NOAA Technical Memorandum NMFS-F/SPO-19 (DOC, NOAA, NMFS, Washington, DC, 1996).

Notes: ESA = Endangered Species Act. [1]Based on estimate using 2.5 nests per female. [2]Stable, but critically low. [3]Listed as endangered in Florida; threatened in the U.S. Atlantic and Pacific. [4]Based on estimate using 1.5 nests per female. Kemp's ridley turtles nest only on one Mexican beach. [5]Historic level for Hawaii only. Estimated 1995 total adult female population is 1,500 in Hawaii; 100-300 in American Samoa; current level in Guam is unknown. [6]Trend in Hawaii only, monitored at French Frigate Shoals; however, great concern exists over increasing frequency of fibropapilloma disease in all Hawaiian green turtles. [7]Estimated total adult population in Hawaii; average number of female hawksbill turtles nesting annually in Hawaii is about 15. Current abundance in Guam and American Samoa is unknown.

Table 4.6 U.S. Threatened and Endangered Species, 1980-1996

	Threatened animal species by taxonomic group										Threatened plant species	Total
	Mammals	Birds	Reptiles	Amphibians	Fish	Crustaceans	Snails	Insects	Arachnids	Clams		
	number of species											
1980	4	3	12	3	14	0	5	7	0	0	9	57
1981	4	3	12	3	14	0	5	6	0	0	10	57
1982	4	3	12	3	14	1	5	6	0	0	10	58
1983	4	3	12	3	15	1	5	6	0	0	11	60
1984	5	3	12	3	18	1	5	5	0	0	11	63
1985	5	4	12	3	24	1	5	5	0	0	25	84
1986	6	4	14	3	28	1	5	7	0	0	27	95
1987	6	9	17	4	32	1	5	7	0	0	35	116
1988	6	9	17	4	31	1	5	7	0	0	48	128
1989	7	9	17	5	32	1	6	7	0	0	51	135
1990	8	11	17	5	33	2	6	9	0	2	61	154
1991	8	11	17	5	34	2	6	9	0	2	64	159
1992	9	12	18	5	36	2	7	9	0	2	74	174
1993	9	16	19	5	37	2	7	9	0	3	80	187
1994	9	16	19	5	39	3	7	9	0	3	90	200
1995	9	16	19	5	39	3	7	9	0	6	93	206
1996	9	16	19	6	40	3	7	9	0	6	101	216

	Endangered animal species by taxonomic group										Endangered plant species	Total
	Mammals	Birds	Reptiles	Amphibians	Fish	Crustaceans	Snails	Insects	Arachnids	Clams		
	number of species											
1980	32	58	13	5	33	1	2	7	0	23	50	223
1981	32	58	13	5	33	1	3	7	0	23	51	225
1982	32	58	14	5	35	2	3	7	0	23	57	235
1983	35	53	14	5	34	3	3	7	0	23	58	234
1984	37	66	14	5	33	3	3	8	0	22	71	261
1985	43	68	14	5	40	3	3	8	0	23	93	299
1986	43	71	14	5	42	4	3	8	0	23	114	326
1987	46	73	15	5	42	5	3	8	0	28	139	362
1988	50	72	15	5	46	8	3	11	4	31	153	397
1989	51	72	15	6	50	8	3	12	4	34	166	420
1990	53	72	15	6	53	8	3	12	4	37	179	441
1991	56	72	15	6	54	8	7	14	4	40	238	513
1992	56	72	15	6	55	9	11	16	4	40	295	578
1993	56	72	14	6	61	11	12	17	4	50	323	626
1994	57	74	14	7	66	14	15	19	4	51	420	741
1995	57	75	14	7	66	14	15	20	5	51	432	756
1996	57	74	14	7	67	14	15	20	5	51	513	837

Source: U.S. Department of the Interior, Fish and Wildlife Service, Division of Endangered Species.

Notes: Grizzly bear, gray wolf, bald eagle, piping plover, roseate tern, green sea turtle, and olive ridley sea turtle are listed both as threatened and endangered. Data are cumulative year-end totals.

Air Quality and Climate

Table 5.1 U.S. Emissions of Carbon Monoxide by Source, Ten-Year Intervals, 1940-1980, and Annually, 1985-1996

	Fuel combustion				Transportation			Miscellaneous	
Year	Electric utilities	Industrial	Other	Total	On-road vehicles	Non-road engines & vehicles	Total	Forest wildfires	Other
	million tons								
1940	0.004	0.435	14.890	15.329	30.121	8.051	38.172	25.130	na
1950	0.110	0.549	10.656	11.315	45.196	11.610	56.806	11.159	3.976
1960	0.110	0.661	6.250	7.021	64.266	11.575	75.841	4.487	6.523
1970	0.237	0.770	3.625	4.632	88.034	11.287	99.321	5.620	2.289
1980	0.322	0.750	6.230	7.302	78.049	13.758	91.807	5.396	2.948
1985	0.295	0.670	7.525	8.490	77.387	14.626	92.013	2.957	4.970
1986	0.296	0.650	6.607	7.553	73.347	15.184	88.531	2.271	5.015
1987	0.307	0.649	6.011	6.967	71.250	14.959	86.209	3.795	5.057
1988	0.320	0.669	6.390	7.379	71.081	15.780	86.861	10.709	5.186
1989	0.327	0.672	6.450	7.449	66.050	15.781	81.831	3.009	5.144
1990	0.363	0.879	4.269	5.511	57.848	16.117	73.965	5.928	5.280
1991	0.349	0.920	4.587	5.856	62.074	16.040	78.114	3.430	5.321
1992	0.350	0.955	4.849	6.154	59.859	16.374	76.233	1.674	5.378
1993	0.363	1.043	4.181	5.587	60.202	16.592	76.794	1.586	5.427
1994	0.370	1.041	4.108	5.519	61.833	16.873	78.706	4.114	5.500
1995	0.372	1.056	4.506	5.934	54.106	16.841	70.947	1.469	5.581
1996	0.377	1.072	4.513	5.962	52.944	17.002	69.946	1.469	5.630

	Industrial processes								
Year	Chemical industries	Metals processing	Petroleum industries	Other industries	Solvent utilization	Storage and transport	Waste disposal and recycling	Total	Total all sources
	million tons								
1940	4.190	2.750	0.221	0.114	na	na	3.630	10.905	93.615
1950	5.844	2.910	2.651	0.231	na	na	4.717	16.353	102.609
1960	3.982	2.866	3.086	0.342	na	na	5.597	15.873	109.745
1970	3.397	3.644	2.179	0.620	na	na	7.059	16.899	128.761
1980	2.151	2.246	1.723	0.830	na	na	2.300	9.250	116.702
1985	1.845	2.223	0.462	0.694	0.002	0.049	1.941	7.216	115.644
1986	1.853	2.079	0.451	0.715	0.002	0.051	1.916	7.067	110.437
1987	1.798	1.984	0.455	0.713	0.002	0.050	1.850	6.851	108.879
1988	1.917	2.101	0.441	0.711	0.002	0.056	1.806	7.034	117.169
1989	1.925	2.132	0.436	0.716	0.002	0.055	1.747	7.013	104.447
1990	1.183	2.640	0.333	0.537	0.005	0.076	1.079	5.853	96.535
1991	1.127	2.571	0.345	0.548	0.005	0.028	1.116	5.740	98.461
1992	1.112	2.496	0.371	0.544	0.005	0.017	1.138	5.683	95.123
1993	1.093	2.536	0.371	0.594	0.005	0.051	1.248	5.898	95.291
1994	1.171	2.475	0.338	0.600	0.005	0.024	1.225	5.838	99.677
1995	1.223	2.380	0.348	0.624	0.006	0.025	1.185	5.791	89.721
1996	1.223	2.378	0.348	0.635	0.006	0.025	1.203	5.818	88.822

Note: See Table 5.6 for Source.

Table 5.2 U.S. Emissions of Nitrogen Oxides by Source, Ten-Year Intervals, 1940-1980, and Annually, 1985-1996

	Fuel combustion				Transportation			Miscellaneous	
Year	Electric utilities	Industrial	Other	Total	On-road vehicles	Non-road engines & vehicles	Total	Forest wildfires	Other
	million tons								
1940	0.660	2.543	0.529	3.732	1.330	0.991	2.321	na	0.990
1950	1.316	3.192	0.647	5.155	2.143	1.538	3.681	na	0.665
1960	2.536	4.075	0.760	7.371	3.982	1.443	5.425	na	0.441
1970	4.900	4.325	0.836	10.061	7.390	2.642	10.032	na	0.330
1980	7.024	3.555	0.741	11.318	8.621	4.017	12.638	na	0.248
1985	6.127	3.209	0.712	10.048	8.089	4.150	12.239	na	0.310
1986	6.111	3.065	0.694	9.870	7.773	4.555	12.328	na	0.259
1987	6.246	3.063	0.706	10.015	7.651	3.947	11.598	na	0.352
1988	6.545	3.187	0.740	10.472	7.661	4.806	12.467	na	0.727
1989	6.593	3.209	0.736	10.538	7.682	4.693	12.375	na	0.293
1990	6.663	3.035	1.196	10.894	7.040	4.593	11.633	na	0.371
1991	6.519	2.979	1.281	10.779	7.373	4.518	11.891	na	0.286
1992	6.504	3.071	1.353	10.928	7.440	4.658	12.098	na	0.254
1993	6.651	3.151	1.308	11.110	7.510	4.776	12.286	na	0.225
1994	6.565	3.147	1.303	11.015	7.672	4.944	12.616	na	0.383
1995	6.384	3.144	1.298	10.826	7.323	4.675	11.998	na	0.237
1996	6.034	3.170	1.289	10.493	7.171	4.610	11.781	na	0.239

	Industrial processes								
Year	Chemical industries	Metals processing	Petroleum industries	Other industries	Solvent utilization	Storage and transport	Waste disposal and recycling	Total	Total all sources
	million tons								
1940	0.006	0.004	0.105	0.107	na	na	0.110	0.332	7.374
1950	0.063	0.110	0.110	0.093	na	na	0.215	0.591	10.093
1960	0.110	0.110	0.220	0.131	na	na	0.331	0.902	14.140
1970	0.271	0.077	0.240	0.187	na	na	0.440	1.215	21.639
1980	0.216	0.065	0.072	0.205	na	na	0.111	0.669	24.875
1985	0.262	0.087	0.124	0.327	0.002	0.002	0.087	0.891	23.488
1986	0.264	0.080	0.109	0.328	0.003	0.002	0.087	0.872	23.329
1987	0.255	0.075	0.101	0.320	0.003	0.002	0.085	0.841	22.806
1988	0.274	0.082	0.100	0.315	0.003	0.002	0.085	0.860	24.526
1989	0.273	0.083	0.097	0.311	0.003	0.002	0.084	0.852	24.057
1990	0.168	0.097	0.153	0.378	0.001	0.003	0.091	0.891	23.792
1991	0.165	0.076	0.121	0.352	0.002	0.006	0.095	0.817	23.772
1992	0.163	0.081	0.148	0.361	0.003	0.005	0.096	0.857	24.137
1993	0.155	0.083	0.123	0.370	0.003	0.005	0.123	0.862	24.482
1994	0.160	0.091	0.117	0.389	0.003	0.005	0.114	0.879	24.892
1995	0.158	0.098	0.110	0.399	0.003	0.006	0.099	0.873	23.935
1996	0.159	0.098	0.110	0.403	0.003	0.006	0.100	0.879	23.393

Note: See Table 5.6 for Source.

Table 5.3 U.S. Emissions of Volatile Organic Compounds by Source, Ten-Year Intervals, 1940-1980, and Annually, 1985-1996

	Fuel combustion				Transportation			Miscellaneous	
Year	Electric utilities	Industrial	Other	Total	On-road vehicles	Non-road engines & vehicles	Total	Forest wildfires	Other
	million tons								
1940	0.002	0.108	1.867	1.977	4.817	0.778	5.595	3.420	0.659
1950	0.009	0.098	1.336	1.443	7.251	1.213	8.464	1.510	1.020
1960	0.009	0.106	0.768	0.883	10.506	1.215	11.721	0.768	0.805
1970	0.030	0.150	0.541	0.694	12.972	1.713	14.685	0.770	0.331
1980	0.045	0.157	0.848	1.050	8.979	2.142	11.121	0.739	0.395
1985	0.033	0.134	1.403	1.570	9.376	2.240	11.616	0.283	0.283
1986	0.034	0.133	1.230	1.397	8.874	2.342	11.216	0.259	0.288
1987	0.035	0.131	1.117	1.283	8.477	2.244	10.721	0.361	0.294
1988	0.037	0.136	1.188	1.361	8.290	2.432	10.722	0.918	0.312
1989	0.038	0.134	1.200	1.372	7.192	2.422	9.614	0.335	0.307
1990	0.047	0.182	0.776	1.005	6.313	2.502	8.815	0.749	0.401
1991	0.044	0.196	0.835	1.075	6.499	2.503	9.002	0.439	0.392
1992	0.044	0.187	0.884	1.115	6.072	2.551	8.623	0.164	0.401
1993	0.045	0.186	0.762	0.993	6.103	2.581	8.684	0.212	0.415
1994	0.045	0.196	0.748	0.989	6.401	2.619	9.020	0.379	0.405
1995	0.044	0.206	0.823	1.073	5.701	2.433	8.134	0.171	0.415
1996	0.045	0.208	0.822	1.075	5.502	2.426	7.928	0.171	0.416

	Industrial processes								
Year	Chemical industries	Metals processing	Petroleum industries	Other industries	Solvent utilization	Storage and transport	Waste disposal and recycling	Total	Total all sources
	million tons								
1940	0.884	0.325	0.571	0.130	1.971	0.639	0.990	5.510	17.161
1950	1.324	0.442	0.548	0.184	3.679	1.218	1.104	8.499	20.936
1960	0.991	0.342	1.034	0.202	4.403	1.762	1.546	10.280	24.459
1970	1.341	0.394	1.194	0.270	7.174	1.954	1.984	14.311	30.817
1980	1.595	0.273	1.440	0.237	6.584	1.975	0.758	12.861	26.167
1985	0.881	0.076	0.703	0.390	5.699	1.747	0.979	10.475	24.227
1986	0.916	0.073	0.666	0.395	5.626	1.673	0.971	10.320	23.480
1987	0.923	0.070	0.655	0.394	5.743	1.801	0.950	10.536	23.193
1988	0.982	0.074	0.645	0.408	5.945	1.842	0.959	10.855	24.167
1989	0.980	0.074	0.639	0.403	5.964	1.753	0.941	10.754	22.383
1990	0.634	0.122	0.612	0.401	5.750	1.495	0.986	10.000	20.985
1991	0.710	0.123	0.640	0.391	5.782	1.532	0.999	10.177	21.100
1992	0.715	0.124	0.632	0.414	5.901	1.583	1.010	10.379	20.695
1993	0.701	0.124	0.649	0.442	6.016	1.600	1.046	10.578	20.895
1994	0.691	0.126	0.647	0.438	6.162	1.629	1.046	10.739	21.546
1995	0.660	0.125	0.642	0.450	6.183	1.652	1.067	10.779	20.586
1996	0.436	0.070	0.517	0.439	6.273	1.312	0.433	9.480	19.086

Note: See Table 5.6 for Source.

Table 5.4 U.S. Emissions of Sulfur Dioxide by Source, Ten-Year Intervals, 1940-1980, and Annually, 1985-1996

	Fuel combustion				Transportation			Miscellaneous	
Year	Electric utilities	Industrial	Other	Total	On-road vehicles	Non-road engines & vehicles	Total	Forest wildfires	Other
	million tons								
1940	2.427	6.060	3.642	12.129	0.003	3.190	3.193	n/a	0.545
1950	4.515	5.725	3.964	14.204	0.103	2.392	2.495	n/a	0.545
1960	9.264	3.864	2.319	15.447	0.114	0.321	0.435	n/a	0.554
1970	17.398	4.568	1.490	23.456	0.411	0.083	0.494	n/a	0.110
1980	17.469	2.951	0.971	21.391	0.521	0.175	0.696	n/a	0.011
1985	16.273	3.169	0.579	20.021	0.522	0.208	0.730	n/a	0.011
1986	15.804	3.116	0.611	19.531	0.527	0.221	0.748	n/a	0.009
1987	15.819	3.068	0.662	19.549	0.538	0.233	0.771	n/a	0.013
1988	16.110	3.111	0.660	19.881	0.553	0.253	0.806	n/a	0.027
1989	16.340	3.086	0.624	20.050	0.570	0.267	0.837	n/a	0.011
1990	15.909	3.550	0.831	20.290	0.542	0.392	0.934	n/a	0.012
1991	15.784	3.256	0.755	19.795	0.570	0.399	0.969	n/a	0.011
1992	15.416	3.292	0.784	19.492	0.578	0.402	0.980	n/a	0.010
1993	15.189	3.284	0.772	19.245	0.517	0.385	0.902	n/a	0.009
1994	14.889	3.218	0.780	18.887	0.301	0.384	0.685	n/a	0.015
1995	12.080	3.357	0.793	16.230	0.304	0.372	0.676	n/a	0.009
1996	12.604	3.399	0.782	16.785	0.307	0.368	0.675	n/a	0.009

	Industrial processes								
Year	Chemical industries	Metals processing	Petroleum industries	Other industries	Solvent utilization	Storage and transport	Waste disposal and recycling	Total	Total all sources
	million tons								
1940	0.215	3.309	0.224	0.334	na	na	0.003	4.085	19.953
1950	0.427	3.747	0.340	0.596	na	na	0.003	5.113	22.358
1960	0.447	3.986	0.676	0.671	na	na	0.010	5.790	22.227
1970	0.591	4.775	0.881	0.846	na	na	0.008	7.100	31.161
1980	0.280	1.842	0.734	0.918	na	na	0.033	3.773	25.905
1985	0.456	1.042	0.505	0.425	0.001	0.004	0.034	2.467	23.230
1986	0.432	0.888	0.469	0.427	0.001	0.004	0.035	2.256	22.544
1987	0.425	0.648	0.445	0.418	0.001	0.004	0.035	1.976	22.308
1988	0.449	0.707	0.443	0.411	0.001	0.005	0.036	2.052	22.767
1989	0.440	0.695	0.429	0.405	0.001	0.005	0.036	2.010	22.907
1990	0.297	0.726	0.430	0.399	0.000	0.007	0.042	1.901	23.136
1991	0.280	0.612	0.378	0.396	0.000	0.010	0.044	1.720	22.496
1992	0.278	0.615	0.416	0.396	0.001	0.009	0.044	1.759	22.240
1993	0.269	0.603	0.383	0.392	0.001	0.005	0.071	1.724	21.879
1994	0.275	0.562	0.379	0.398	0.001	0.002	0.060	1.677	21.262
1995	0.286	0.530	0.369	0.403	0.001	0.002	0.047	1.638	18.552
1996	0.287	0.530	0.368	0.409	0.001	0.002	0.048	1.645	19.113

Note: See Table 5.6 for Source.

Table 5.5 U.S. Emissions of PM-10 Particulates by Source, Ten-Year Intervals, 1940-1980, and Annually, 1985-1996

	Fuel combustion				Transportation				
Year	Electric utilities	Industrial	Other	Total	On-road vehicles	Non-road engines & vehicles	Total	Natural (wind erosion)	Miscellaneous[1]
	million tons								
1940	0.962	0.708	2.338	4.008	0.210	2.480	2.690	na	na
1950	1.467	0.604	1.674	3.745	0.314	1.788	2.102	na	na
1960	2.117	0.331	1.113	3.561	0.554	0.201	0.755	na	na
1970	1.775	0.641	0.455	2.871	0.443	0.369	0.812	na	0.839
1980	0.879	0.679	0.887	2.445	0.397	0.566	0.963	na	0.852
1985	0.282	0.247	1.009	1.538	0.363	0.561	0.924	4.047	37.736
1986	0.287	0.244	0.889	1.420	0.356	0.634	0.990	10.324	37.077
1987	0.284	0.239	0.812	1.335	0.360	0.520	0.880	1.577	37.453
1988	0.279	0.244	0.862	1.385	0.369	0.672	1.041	18.110	39.444
1989	0.274	0.243	0.869	1.386	0.367	0.649	1.016	12.101	37.461
1990	0.295	0.270	0.631	1.196	0.336	0.598	0.934	2.092	24.419
1991	0.257	0.233	0.657	1.147	0.349	0.598	0.947	2.077	24.122
1992	0.257	0.243	0.383	0.883	0.343	0.618	0.961	2.227	23.865
1993	0.279	0.257	0.588	1.124	0.321	0.633	0.954	0.509	24.196
1994	0.273	0.270	0.570	1.113	0.320	0.652	0.972	2.160	25.461
1995	0.268	0.302	0.610	1.180	0.293	0.585	0.878	1.145	22.454
1996	0.282	0.306	0.598	1.186	0.274	0.591	0.865	5.316	22.702

	Industrial processes								
Year	Chemical industries	Metals processing	Petroleum industries	Other industries	Solvent utilization	Storage and transport	Waste disposal and recycling	Total	Total all sources
	million tons								
1940	0.330	1.208	0.366	3.996	na	na	0.392	6.292	15.956
1950	0.455	1.027	0.412	6.954	na	na	0.505	9.353	17.133
1960	0.309	1.026	0.689	7.211	na	na	0.764	9.999	15.558
1970	0.235	1.316	0.286	5.832	na	na	0.999	8.668	13.190
1980	0.148	0.622	0.138	1.846	na	na	0.273	3.027	7.287
1985	0.058	0.220	0.063	0.611	0.002	0.107	0.278	1.339	45.584
1986	0.059	0.203	0.063	0.620	0.002	0.104	0.274	1.325	51.136
1987	0.058	0.194	0.062	0.606	0.002	0.100	0.265	1.287	42.533
1988	0.062	0.208	0.060	0.601	0.002	0.101	0.259	1.293	61.275
1989	0.063	0.211	0.058	0.591	0.002	0.101	0.251	1.277	53.240
1990	0.077	0.214	0.055	0.583	0.004	0.102	0.271	1.306	29.947
1991	0.068	0.251	0.043	0.520	0.005	0.101	0.276	1.264	29.557
1992	0.071	0.250	0.043	0.506	0.005	0.117	0.278	1.270	29.506
1993	0.066	0.181	0.038	0.501	0.006	0.114	0.334	1.240	28.023
1994	0.076	0.184	0.038	0.495	0.006	0.106	0.313	1.218	30.926
1995	0.067	0.212	0.040	0.511	0.006	0.109	0.287	1.232	26.888
1996	0.067	0.211	0.040	0.510	0.006	0.109	0.290	1.233	31.301

Notes: See Table 5.6 for Source. [1]See Table 5.6 for breakdown of miscellaneous sources.

Table 5.6 Miscellaneous Sources of U.S. PM-10 Emissions, 1985-1996

	Miscellaneous PM-10 (detail from Table 5.5)							
		Fugitive dust					Wildfires	
Year	Agriculture and forestry	Unpaved roads	Paved roads	Construction	Wind erosion & other	Total fugitive dust	and other combustion	Total all sources
	million tons							
1985	7.108	11.644	5.080	12.670	0.339	29.734	0.894	37.736
1986	7.183	11.673	5.262	11.825	0.314	29.075	0.819	37.077
1987	7.326	11.110	5.530	12.121	0.377	29.139	0.988	37.453
1988	7.453	12.379	5.900	11.662	0.346	30.287	1.704	39.444
1989	7.320	11.798	5.769	11.269	0.392	29.229	0.912	37.461
1990	5.146	11.234	2.248	4.249	0.337	18.069	1.203	24.419
1991	5.106	11.206	2.399	4.092	0.378	18.076	0.941	24.122
1992	4.909	10.918	2.423	4.460	0.370	18.171	0.785	23.865
1993	4.475	11.430	2.462	4.651	0.410	18.954	0.768	24.196
1994	4.690	11.370	2.538	5.245	0.570	19.722	1.048	25.461
1995	4.661	11.362	2.409	3.654	0.587	17.013	0.778	22.454
1996	4.708	10.303	2.417	3.950	0.539	17.209	0.783	22.702

Source: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *National Air Quality and Emissions Trends Report, 1996,* Tables A-1 through A-5 (EPA, OAQPS, Research Triangle Park, NC, 1997) and earlier trends reports.

Notes: n/a = not applicable. na = not available. PM-10 refers to particulate matter with a diameter 10 micrometers or less. Totals may not agree with sum of components due to independent rounding.

Table 5.7 U.S. Emissions of Lead by Source, Five-Year Intervals, 1970-1980, and Annually, 1985-1996

	Fuel combustion				Transportation			Miscellaneous	
Year	Electric utilities	Industrial	Other	Total	On-road vehicles	Non-road engines & vehicles	Total	Forest wildfires	Other
	thousand tons								
1970	0.327	0.237	10.052	10.616	171.961	9.737	181.698	n/a	n/a
1975	0.230	0.075	10.042	10.347	130.206	6.130	136.336	n/a	n/a
1980	0.129	0.060	4.111	4.299	60.501	4.205	64.706	n/a	n/a
1985	0.064	0.030	0.421	0.515	18.052	0.921	18.973	n/a	n/a
1986	0.069	0.025	0.422	0.516	10.245	1.030	11.275	n/a	n/a
1987	0.064	0.022	0.425	0.510	3.317	0.850	4.167	n/a	n/a
1988	0.066	0.019	0.426	0.511	2.566	0.885	3.451	n/a	n/a
1989	0.067	0.018	0.420	0.505	0.982	0.820	1.802	n/a	n/a
1990	0.064	0.018	0.418	0.500	0.421	0.776	1.197	n/a	n/a
1991	0.061	0.018	0.416	0.495	0.018	0.574	0.592	n/a	n/a
1992	0.059	0.018	0.414	0.491	0.018	0.565	0.583	n/a	n/a
1993	0.061	0.019	0.415	0.495	0.019	0.529	0.548	n/a	n/a
1994	0.061	0.018	0.415	0.494	0.019	0.525	0.544	n/a	n/a
1995	0.057	0.016	0.414	0.487	0.019	0.545	0.564	n/a	n/a
1996	0.062	0.017	0.414	0.493	0.019	0.545	0.564	n/a	n/a

	Industrial processes								
Year	Chemical industries	Metals processing	Petroleum industries	Other industries	Solvent utilization	Storage and transport	Waste disposal and recycling	Total	Grand total
	thousand tons								
1970	0.103	24.224	n/a	2.028	n/a	n/a	2.200	28.555	220.869
1975	0.120	9.923	n/a	1.337	n/a	n/a	1.595	12.975	159.659
1980	0.104	3.026	n/a	0.808	n/a	n/a	1.210	5.148	74.153
1985	0.118	2.097	n/a	0.316	n/a	n/a	0.871	3.402	22.890
1986	0.108	1.820	n/a	0.199	n/a	n/a	0.844	2.972	14.763
1987	0.123	1.835	n/a	0.202	n/a	n/a	0.844	3.004	7.681
1988	0.136	1.965	n/a	0.172	n/a	n/a	0.817	3.090	7.053
1989	0.136	2.088	n/a	0.173	n/a	n/a	0.765	3.161	5.468
1990	0.136	2.169	n/a	0.169	n/a	n/a	0.804	3.278	4.975
1991	0.132	1.975	n/a	0.167	n/a	n/a	0.807	3.081	4.168
1992	0.093	1.773	n/a	0.056	n/a	n/a	0.812	2.734	3.808
1993	0.092	1.889	n/a	0.054	n/a	n/a	0.824	2.869	3.911
1994	0.096	2.027	n/a	0.053	n/a	n/a	0.829	3.005	4.043
1995	0.144	2.067	n/a	0.059	n/a	n/a	0.622	2.892	3.943
1996	0.117	2.000	n/a	0.057	n/a	n/a	0.638	2.812	3.869

Source: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *National Air Quality and Emissions Trends Report, 1996,* Table A-6 (EPA, OAQPS, Research Triangle Park, NC, 1997) and earlier trends reports.

Note: n/a = not applicable.

Table 5.8 U.S. Emissions of Greenhouse Gases by Source, 1989-1996

Gas/Source	1989	1990	1991	1992	1993	1994	1995	1996
				million metric tons of carbon				
Carbon dioxide								
Energy use	1,360.9	1,345.8	1,330.6	1,351.5	1,380.9	1,401.3	1,411.4	1,463.0
Adjustments	9.2	9.1	10.7	9.6	10.6	11.4	11.2	10.8
Other sources	18.6	18.8	18.8	18.9	20.1	20.8	22.1	22.1
Total	1,388.7	1,373.7	1,360.2	1,379.9	1,411.6	1,433.5	1,444.6	1,495.9
				million metric tons of gas				
Methane								
Energy sources	11.95	12.07	11.97	11.96	11.08	11.42	11.15	11.57
Waste mgt.	11.04	11.11	11	10.89	10.83	10.73	10.6	10.44
Agriculture	8.18	8.29	8.55	8.77	8.79	9.11	9.05	8.75
Industrial sources	0.12	0.12	0.11	0.12	0.12	0.13	0.13	0.13
Total	31.29	31.59	31.63	31.74	30.82	31.38	30.93	30.90
				thousand *metric tons of gas*				
Nitrous oxide								
Agriculture	159	164	167	168	176	179	159	146
Energy use	184	188	185	188	186	186	187	189
Industrial sources	100	97	100	96	101	107	108	111
Total	444	449	452	452	463	472	454	446
CFC-11	80	60	54	48	39	37	36	10
CFC-12	114	113	108	97	90	59	52	47
CFC-113	78	50	39	28	20	17	17	16
Halons	0	3	3	3	3	3	3	2
HCFC-22	76	72	82	92	100	105	92	93
HFC-23	5	4	4	4	4	4	4	4
PFCs	3	3	3	3	2	2	3	3
Carbon tetrachloride	0	30	0	26	22	16	5	5
Methyl chloroform	296	316	224	215	122	78	46	26
Sulfur hexafluoride	1	1	1	1	1	1	1	1

Source: U.S. Department of Energy, Energy Information Administration, *Emissions of Greenhouse Gases in the United States, 1996,* DOE/EIA-0573(96) (GPO, Washington, DC, 1997).

Notes: CFC = Chlorofluorocarbon. HCFC = Hydrochlorofluorocarbon. HFC = Hydrofluorocarbon. PFC = Perfluorocarbon. na = not available. Emissions include direct and indirect effects. Other carbon dioxide emissions are from cement production, gas flaring, and other industrial processes.

Table 5.9 U.S. Precipitation Chemistry by Region, 1985-1995

Year	Ph	Hydrogen ion	Sulfate ion	Nitrate ion	Ammonium ion	Calcium ion	Precipitation
	units	*ug/l*	*milligrams per liter*				*cm*
Eastern United States							
1985	4.43	37.57	2.02	1.25	0.23	0.15	106.7
1986	4.42	38.16	2.14	1.30	0.24	0.13	102.2
1987	4.42	38.06	2.09	1.33	0.26	0.14	100.7
1988	4.43	37.05	2.14	1.33	0.21	0.17	95.9
1989	4.47	34.25	2.01	1.35	0.31	0.15	110.8
1990	4.49	32.71	1.80	1.18	0.27	0.12	122.6
1991	4.47	34.00	1.87	1.27	0.26	0.14	111.0
1992	4.49	32.04	1.77	1.22	0.25	0.12	108.4
1993	4.47	33.64	1.78	1.28	0.26	0.11	113.7
1994	4.48	33.07	1.71	1.24	0.28	0.13	111.9
1995	4.55	28.17	1.47	1.23	0.28	0.13	109.3
Western United States							
1985	5.13	7.40	0.82	0.71	0.18	0.23	62.0
1986	5.18	6.57	0.78	0.68	0.17	0.19	72.4
1987	5.11	7.82	0.83	0.83	0.24	0.19	62.2
1988	5.10	7.93	0.93	0.83	0.16	0.27	56.6
1989	5.23	5.84	0.87	0.91	0.29	0.25	56.7
1990	5.21	6.22	0.80	0.87	0.29	0.22	66.2
1991	5.20	6.31	0.77	0.80	0.24	0.21	68.4
1992	5.23	5.86	0.77	0.83	0.28	0.18	65.1
1993	5.27	5.41	0.71	0.76	0.23	0.18	74.4
1994	5.07	8.53	0.76	0.92	0.28	0.20	62.0
1995	5.11	7.73	0.70	0.79	0.27	0.19	77.7
Entire United States							
1985	4.57	27.07	1.60	1.06	0.21	0.17	91.1
1986	4.57	27.16	1.67	1.08	0.21	0.15	91.8
1987	4.56	27.53	1.65	1.15	0.25	0.15	87.3
1988	4.57	26.91	1.72	1.16	0.19	0.21	82.2
1989	4.61	24.35	1.61	1.20	0.30	0.19	91.9
1990	4.63	23.49	1.45	1.07	0.28	0.16	102.9
1991	4.61	24.36	1.49	1.11	0.26	0.16	96.1
1992	4.64	22.92	1.42	1.09	0.26	0.14	93.3
1993	4.62	23.81	1.41	1.10	0.25	0.14	100.0
1994	4.61	24.53	1.38	1.13	0.28	0.15	94.5
1995	4.68	21.04	1.20	1.08	0.28	0.15	98.3

Source: National Trends Network of the National Atmospheric Deposition Program, unpublished, Fort Collins, C0, 1997.

Notes: ug/l = micrograms per liter. cm = centimeters. Data are from 73 sites in the eastern United States and 39 sites in the western United States. Sites included in the computations are those where (1) precipitation amounts are available for at least 90% of the summary period and (2) at least 60% of the precipitation during the summary period is represented by valid samples.

Table 5.10 U.S. National Composite Mean Ambient Concentrations of Criteria Air Pollutants, 1977-1996

Year	Carbon monoxide	Nitrogen dioxide	Ozone	Lead	PM-10 particulates	Sulfur dioxide
	ppm	ppm	ppm	ug/m3	ug/m3	ppm
	(168 sites)	(65 sites)	(238 sites)	(122 sites)	(na)	(278 sites)
1977	10.9	0.026	0.152	1.35	na	0.0133
1978	10.5	0.027	0.156	1.26	na	0.0128
1979	10.1	0.026	0.141	1.06	na	0.0125
1980	9.3	0.024	0.143	0.73	na	0.0112
1981	8.9	0.023	0.131	0.59	na	0.0108
1982	8.2	0.022	0.127	0.50	na	0.0100
1983	8.2	0.022	0.144	0.40	na	0.0097
1984	8.1	0.023	0.128	0.36	na	0.0099
1985	7.3	0.023	0.127	0.25	na	0.0092
1986	7.3	0.022	0.122	0.16	na	0.0091
	(345 sites)	(214 sites)	(600 sites)	(208 sites)	(900 sites)	(479 sites)
1987	6.7	0.021	0.124	0.16	na	0.0089
1988	6.4	0.022	0.133	0.12	32.2	0.0089
1989	6.4	0.021	0.116	0.09	32.0	0.0087
1990	5.9	0.020	0.113	0.09	29.4	0.0081
1991	5.6	0.020	0.114	0.07	29.1	0.0078
1992	5.2	0.019	0.106	0.06	26.8	0.0073
1993	4.9	0.019	0.108	0.05	26.0	0.0071
1994	5.1	0.020	0.108	0.04	26.2	0.0068
1995	4.5	0.019	0.113	0.04	25.1	0.0056
1996	4.2	0.019	0.106	0.04	24.2	0.0056

Source: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *National Air Quality and Emissions Trends Report, 1996,* Table A-9 (EPA, OAQPS, Research Triangle Park, NC, 1997).

Notes: ppm = parts per million. ug/m3 = micrograms per cubic meter. n/a = not applicable. Sulfur dioxide and nitrogen dioxide records are annual arithmetic means, Carbon monoxide records are arithmetic means of second maximum non-overlapping 8-hour concentrations. Ozone records are arithmetic means of second daily maximum 1-hour concentrations. Lead records are arithmetic means of maximum quarterly measurements. PM-10 records are weighted annual arithmetic means. The National Ambient Air Quality Standards for these pollutants are as follows: sulfur dioxide, 0.03 ppm; carbon monoxide, 9 ppm; ozone, 0.12 ppm; nitrogen dioxide, 0.053 ppm; PM-10, 50 ug/m3; and lead, 1.5 ug/m3.

Table 5.11 Air Quality Trends in Selected U.S. Urban Areas, 1987-1996

PMSA	Trend sites	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
	#	*number of PSI days greater then 100*									
Atlanta	8	27	21	3	17	6	5	17	4	19	6
Baltimore	15	28	43	9	12	20	5	14	17	14	3
Boston	24	5	15	4	1	4	1	3	1	1	0
Chicago	44	17	23	4	3	8	7	1	8	4	3
Cleveland	24	6	21	4	2	3	2	2	4	4	1
Dallas	8	10	14	7	8	1	3	5	1	13	2
Denver	21	37	19	11	9	7	7	3	2	2	1
Detroit	28	9	17	10	3	8	1	2	8	11	3
El Paso	17	32	16	33	27	13	17	10	10	4	9
Houston	28	67	61	41	59	42	30	26	29	54	28
Kansas City	24	6	4	2	2	2	1	2	0	6	3
Los Angeles	36	201	239	226	180	184	185	146	136	103	88
Miami	10	4	5	4	1	2	0	0	0	0	1
Minn/St. Paul	23	14	3	7	3	2	1	0	5	3	1
New York	26	44	46	18	18	22	4	6	8	8	4
Philadelphia	37	35	35	19	14	25	3	21	6	14	5
Phoenix	25	42	27	30	9	4	10	7	9	13	5
Pittsburgh	37	10	20	9	8	4	1	3	2	7	0
San Diego	20	61	84	91	61	40	37	17	16	14	4
San Francisco	9	1	2	1	0	0	0	0	0	1	0
Seattle	14	14	20	8	5	2	1	0	0	0	0
St. Louis	53	17	20	13	8	6	3	6	11	14	4
Wash, DC	34	26	37	8	5	16	2	13	7	8	2
Subtotal	565	713	792	562	455	421	326	304	284	317	173
Other sites	768	852	1,195	738	595	622	386	401	351	408	307
All sites	1,333	1,565	1,987	1,300	1,050	1,043	712	705	635	725	480

Source: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *National Air Quality and Emissions Trends Report, 1996,* Table A-17 (EPA, OAQPS, Research Triangle Park, NC, 1997).

Notes: PMSA = Primary Metropolitan Statistical Area. PSI = Pollutant Standards Index. Minn = Minneapolis. The PSI index integrates information from many pollutants across an entire monitoring network into a single number which represents the worst daily air quality experienced in an urban area. Only carbon monoxide and ozone monitoring sites with adequate historical data are included in the PSI trend analysis above, except for Pittsburgh, where sulfur dioxide contributes a significant number of days in the PSI high range. PSI index ranges and health effect descriptor words are as follows: 0 to 50 (good); 51 to 100 (moderate); 101 to 199 (unhealthful); 200 to 299 (very unhealthful); and 300 and above (hazardous). The table above shows the number of days when the PSI was greater than 100 (= unhealthful or worse).

Table 5.12 Number of People Living in U.S. Counties with Air Quality Concentrations Above the Level of the National Ambient Air Quality Standards, 1985-1996

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
	millions											
SO_2	2.2	0.9	1.6	1.7	0.1	1.4	5.2	0.0	1.4	0.04	0.0	0.2
NO_2	7.5	7.5	7.5	8.3	8.5	8.5	8.9	0.0	0.0	0.0	0.0	0.0
CO	39.6	41.4	29.4	29.5	33.6	21.7	19.9	14.3	11.6	15.3	12.0	12.7
O_3	76.4	75.0	88.6	111.9	66.7	62.9	69.7	44.6	51.3	50.2	70.8	39.3
Pb	4.5	4.5	1.7	1.6	1.6	5.3	14.7	4.7	5.5	4.4	4.8	4.1
PM-10	na	41.7	21.5	25.6	27.4	18.8	21.5	25.8	9.4	13.1	24.4	7.3
Any NAAQS	na	na	101.8	121.3	84.4	47.4	86.4	53.6	59.1	62.0	79.8	46.6

Source: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *National Air Quality and Emissions Trends Report, 1996*, Figure 1-2, p. 3 (EPA, OAQPS, Research Triangle Park, NC, 1997) and earlier trends reports.

Notes: NAAQS = National Ambient Air Quality Standards. PM-10 = Particulate matter with a diameter of 10 micrometers or less.

Table 5.13 Population in U.S. Nonattainment Areas Not Meeting at Least One of the National Ambient Air Quality Standards, 1991-1996

	1991	1992	1993	1994	1995	1996
	1990 population in millions					
Population	150.53	148.86	147.07	145.28	132.48	122.75

Source: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, *National Air Quality and Emissions Trends Report, 1996* (EPA, OAQPS, Research Triangle Park, NC, 1997) and earlier trends reports.

Aquatic Resources

Table 6.1 U.S. Annual Average Precipitation Trends, 1895-1996

Year	Mean	Index	Trend	Year	Mean	Index	Trend	Year	Mean	Index	Trend
	inches	*standardized z-score*			*inches*	*standardized z-score*			*inches*	*standardized z-score*	
1895	26.73	-1.04	-0.53	1929	29.51	-0.10	-0.44	1963	24.77	-1.59	-0.60
1896	28.73	-0.13	-0.40	1930	25.01	-1.39	-0.61	1964	29.23	-0.30	-0.52
1897	28.35	-0.08	-0.34	1931	26.79	-0.65	-0.64	1965	28.95	0.42	-0.39
1898	28.93	-0.31	-0.38	1932	29.60	0.26	-0.72	1966	26.67	-1.12	-0.28
1899	27.64	-0.70	-0.48	1933	26.80	-1.12	-0.90	1967	28.61	-0.13	-0.15
1900	30.02	-0.47	-0.55	1934	25.05	-2.06	-1.01	1968	29.52	0.36	0.00
1901	26.85	-0.83	-0.57	1935	28.85	-0.41	-0.89	1969	29.79	0.36	0.09
1902	29.63	-0.28	-0.55	1936	26.59	-1.15	-0.60	1970	28.54	-0.46	0.16
1903	28.54	-0.57	-0.42	1937	29.72	0.28	-0.33	1971	29.29	0.34	0.31
1904	27.09	-1.22	-0.07	1938	28.85	0.44	-0.18	1972	30.77	0.51	0.50
1905	32.14	1.14	0.41	1939	25.82	-1.47	-0.01	1973	33.99	1.45	0.58
1906	31.49	1.60	0.73	1940	29.63	0.52	0.24	1974	29.72	-0.29	0.46
1907	30.01	0.73	0.69	1941	31.85	1.69	0.39	1975	32.02	1.44	0.23
1908	29.07	0.25	0.34	1942	30.58	0.32	0.29	1976	25.62	-1.61	0.09
1909	29.95	0.67	-0.09	1943	26.07	-1.19	0.17	1977	29.62	0.52	0.15
1910	24.17	-2.29	-0.30	1944	30.08	0.43	0.24	1978	29.17	0.49	0.30
1911	28.81	0.22	-0.18	1945	32.25	1.12	0.38	1979	32.02	1.06	0.38
1912	29.56	0.58	0.10	1946	30.42	0.56	0.37	1980	27.38	-0.51	0.47
1913	29.12	0.48	0.30	1947	28.57	-0.37	0.25	1981	29.17	0.02	0.76
1914	28.01	-0.25	0.34	1948	29.65	0.36	0.15	1982	32.99	2.17	1.16
1915	31.69	1.28	0.19	1949	29.70	0.22	0.09	1983	33.81	2.13	1.31
1916	28.61	0.34	-0.11	1950	29.99	-0.30	-0.04	1984	30.48	0.87	1.10
1917	24.37	-2.44	-0.29	1951	30.33	0.80	-0.32	1985	29.41	0.48	0.70
1918	28.02	0.39	-0.14	1952	25.63	-1.63	-0.71	1986	30.61	0.61	0.25
1919	30.94	0.55	0.17	1953	27.51	-0.84	-1.06	1987	28.46	-0.04	-0.15
1920	30.37	0.89	0.35	1954	25.23	-1.70	-1.25	1988	25.25	-1.52	-0.32
1921	27.68	-0.26	0.34	1955	26.81	-1.04	-1.16	1989	28.42	-0.63	-0.10
1922	29.09	0.37	0.21	1956	24.57	-2.38	-0.78	1990	31.40	1.15	0.37
1923	30.78	1.20	-0.05	1957	32.90	1.39	-0.30	1991	31.77	0.90	0.78
1924	25.75	-1.75	-0.29	1958	29.25	0.12	-0.02	1992	30.67	1.02	0.97
1925	26.06	-0.80	-0.30	1959	29.88	-0.04	-0.01	1993	31.41	1.40	0.99
1926	29.95	0.33	-0.10	1960	27.95	-0.44	-0.14	1994	29.46	0.44	0.96
1927	30.93	1.07	0.00	1961	30.41	0.21	-0.33	1995	31.03	1.05	0.97
1928	28.59	-0.76	-0.16	1962	27.80	-0.52	-0.52	1996	32.60	1.18	1.02

Source: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center, *Climate Variations Bulletin,* Vol. 7 (DOC, NOAA, NCDC, Asheville, NC, December 1996).

Notes: The U.S. national precipitation index is computed from data from the Cooperative Station Network. The contiguous United States is divided into 344 climate divisions. The monthly precipitation for all stations within each division is averaged to compute a divisional monthly precipitation. The divisional precipitation values are standardized using the gamma distribution over the 1931-90 period. The divisional standardized precipitation index values are then weighted by area to compute a national precipitation index value. A national annual value is computed from the monthly national values. The annual index values are then normalized over the period of record.

Table 6.2 Severe to Extreme Drought and Wetness in the Conterminous United States, 1900-1996

Year	Severe to extreme drought	Severe to extreme wetness	Year	Severe to extreme drought	Severe to extreme wetness	Year	Severe to extreme drought	Severe to extreme wetness
	% area			*% area*			*% area*	
1900	15.7	5.4	1933	13.6	3.2	1966	10.0	5.8
1901	19.8	3.4	1934	48.8	0.5	1967	7.3	5.2
1902	24.7	5.7	1935	23.4	3.1	1968	3.9	7.6
1903	7.9	11.8	1936	24.7	2.3	1969	0.9	10.7
1904	13.7	7.3	1937	19.6	5.1	1970	0.9	4.4
1905	6.9	17.7	1938	9.3	6.0	1971	5.2	8.6
1906	1.0	22.7	1939	19.4	2.9	1972	4.8	13.3
1907	0.9	26.4	1940	22.2	2.2	1973	3.2	31.2
1908	2.1	12.8	1941	11.6	26.0	1974	4.9	16.0
1909	4.4	16.0	1942	4.2	26.0	1975	0.5	20.8
1910	14.2	5.4	1943	4.2	10.0	1976	6.9	9.2
1911	18.3	3.8	1944	5.8	7.6	1977	22.7	4.7
1912	0.5	14.3	1945	2.7	17.0	1978	2.8	14.0
1913	3.3	13.8	1946	3.4	9.7	1979	1.1	21.9
1914	6.1	14.3	1947	4.7	11.6	1980	5.1	11.6
1915	3.8	24.1	1948	6.1	9.3	1981	13.1	4.5
1916	0.5	26.7	1949	4.8	6.2	1982	1.1	17.5
1917	8.5	14.8	1950	8.4	9.6	1983	0.0	36.0
1918	13.3	1.4	1951	12.3	14.6	1984	2.2	26.3
1919	5.2	11.3	1952	12.7	10.3	1985	2.9	21.0
1920	1.4	18.4	1953	19.9	4.1	1986	4.4	15.1
1921	2.8	6.4	1954	39.5	2.9	1987	7.8	16.5
1922	4.1	3.0	1955	29.4	1.5	1988	22.2	5.8
1923	4.4	8.1	1956	37.0	5.0	1989	18.7	6.9
1924	11.6	8.2	1957	15.5	10.5	1990	19.0	7.2
1925	16.7	0.7	1958	2.7	18.1	1991	9.2	9.0
1926	9.6	4.6	1959	11.1	4.4	1992	10.8	18.3
1927	5.3	15.9	1960	12.3	7.1	1993	1.2	35.1
1928	5.6	12.3	1961	14.6	7.7	1994	6.9	14.8
1929	6.8	10.8	1962	4.4	5.9	1995	1.6	24.8
1930	12.9	2.0	1963	18.4	2.0	1996	7.9	23.2
1931	30.0	5.3	1964	20.6	3.2			
1932	10.2	9.5	1965	7.6	13.7			

Source: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center, *Climate Variations Bulletin,* Vol. 7 (DOC, NOAA, NCDC, Asheville, NC, December 1996).

Notes: This table presents the average annual values of the percent area experiencing severe to extreme drought and wet conditions based on the Palmer Drought Severity Index (PDSI). PDSI is based on a water balance model that consists of a hydrologic accounting between water supply and demand. The index values range from negative (indicating drought), to zero (near normal conditions), to positive (wet spell). The index has been calculated on a monthly basis for the contiguous United States since 1896.

Table 6.3 U.S. Water Use by Source and End-use Sector, 1900-1995

	Source		End-use sector					
Year	Ground water	Surface water	Public supply	Rural domestic and livestock	Irrigation	Thermoelectric utility	Commercial and other industrial	Total
	billions of gallons per day							
1900	na	na	3.0	2.0	20.0	5.0	10.0	40.0
1910	na	na	5.0	2.2	39.0	7.0	14.0	67.2
1920	na	na	6.0	2.4	56.0	9.0	18.0	91.4
1930	na	na	8.0	2.9	60.0	18.0	21.0	109.9
1940	na	na	10.0	3.1	71.0	23.0	29.0	136.1
1945	na	na	12.0	3.4	80.0	31.5	35.0	161.9
1950	34.0	150.0	14.0	3.6	89.0	40.0	37.0	183.6
1955	47.6	198.0	17.0	3.6	110.0	72.0	39.0	241.6
1960	50.4	221.0	21.0	3.6	110.0	100.0	38.0	272.6
1965	60.5	253.0	24.0	4.0	120.0	130.0	46.0	324.0
1970	69.0	303.0	27.0	4.5	130.0	170.0	47.0	378.5
1975	83.0	329.0	29.0	4.9	140.0	200.0	45.0	418.9
1980	83.9	361.0	34.0	5.6	150.0	210.0	45.0	444.6
1985	73.7	320.0	37.0	7.8	140.0	190.0	31.0	405.8
1990	80.6	327.2	38.5	7.9	137.0	195.0	29.9	408.8
1995	77.4	323.0	40.2	8.8	134.0	189.9	28.0	400.8

Sources: U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970*, Series J 92-103 (GPO, Washington, DC, 1975).

Solley, W.B., *Preliminary Estimates of Water Use in the United States, 1995,* USGS Open-File Report 97-645 (U.S. Department of the Interior, Geological Survey, Reston, VA, 1997) and earlier reports in this series.

Note: na = not available. Totals may not agree with sum of components due to independent rounding.

Table 6.4 Designated-use Support in Surface Waters of the United States, 1996

Designated-use support	Rivers and streams	Lakes, ponds and reservoirs	Estuaries
	miles	*acres*	*square miles*
Fully supporting	386,161	7,787,615	14,586
Threatened	53,324	2,054,724	1,976
Impaired	201,558	4,357,127	7,358
Total surface waters surveyed	641,611	14,200,153	23,921
Total surface waters not surveyed	2,992,541	37,327,775	15,918
Total surface waters	3,634,152	41,654,902	39,839

Source: U.S. Environmental Protection Agency, Office of Water, *National Water Quality Inventory: 1996 Report to Congress* (EPA, OW, Washington, DC, 1998).

Table 6.5 Trends in U.S. Stream Water Quality, 1980-1989

Water quality indicators	NASQAN* stations analyzed	Flow-adjusted concentrations		
		Upward trend	Downward trend	No trend
		number of stations		
Dissolved solids	340	28	46	266
Nitrate	344	22	27	295
Total phosphorus	410	19	92	299
Suspended sediments	324	5	37	282
Dissolved oxygen	424	38	26	360
Fecal coliform	313	10	40	263

Source: Smith, R.A., R.B. Alexander and K.J. Lanfear, "Stream Water Quality in the Conterminous United States -- Status and Trends of Selected Indicators During the 1980's," In *National Water Summary 1990-91, Hydrologic Events and Stream Water Quality*, R.W. Paulson, E.B. Chase, J.S. Williams and D.W. Moody, Compilers, Water Supply Paper 2400 (U.S. Department of the Interior, Geological Survey, Reston, VA, 1993), Figures 38-43.

Notes: *Analyses were made on data from the U.S. Geological Survey's National Stream Quality Accounting Network (NASQAN) stations. Data for total phosphorus cover the period 1982-1989.

Table 6.6 Ambient Water Quality in U.S. Rivers and Streams: Violation Rates, 1975-1995

Year	Fecal coliform bacteria	Dissolved oxygen	Total phosphorus	Total cadmium, dissolved	Total lead, dissolved
	percent of all measurements exceeding national water quality criteria				
1975	36	5	5	*	*
1976	32	6	5	*	*
1977	34	11	5	*	*
1978	35	5	5	*	*
1979	34	4	3	4	13
1980	31	5	4	1	5
1981	30	4	4	1	3
1982	33	5	3	1	2
1983	34	4	3	1	5
1984	30	3	4	<1	<1
1985	28	3	3	<1	<1
1986	24	3	3	<1	<1
1987	23	2	3	<1	<1
1988	22	2	4	<1	<1
1989	30	3	2	<1	<1
1990	26	2	3	<1	<1
1991	15	2	2	<1	<1
1992	28	2	2	<1	<1
1993	31	<1	2	na	na
1994	28	2	2	na	na
1995	35	1	4	na	na

Source: U.S. Geological Survey, national-level data, unpublished, Reston, VA, 1996.

Notes: *Base figure too small to meet statistical standards for reliability of derived figures. na = not available. Violation levels are based on the following U.S. Environmental Protection Agency water quality criteria: fecal coliform bacteria—above 200 cells per 100 ml; dissolved oxygen—below 5 milligrams per liter; total phosphorus—above 1.0 milligrams per liter; cadmium, dissolved—above 10 micrograms per liter; and total lead, dissolved—above 50 micrograms per liter.

Table 6.7 Estimated Phosphorus Loadings to the Great Lakes, 1976-1991

Year	Lake Superior	Lake Michigan	Lake Huron	Lake Erie	Lake Ontario
			metric tons		
1976	3,550	6,656	4,802	18,480	12,695
1977	3,661	4,666	3,763	14,576	8,935
1978	5,990	6,245	5,255	19,431	9,547
1979	6,619	7,659	4,881	11,941	8,988
1980	6,412	6,574	5,307	14,855	8,579
1981	3,412	4,091	3,481	10,452	7,437
1982	3,160	4,084	4,689	12,349	8,891
1983	3,407	4,515	3,978	9,880	6,779
1984	3,642	3,611	3,452	12,874	7,948
1985	2,864	3,956	5,758	11,216	7,083
1986	3,059	4,981	4,210	11,118	9,561
1987	1,949	3,298	2,909	8,381	7,640
1988	2,067	2,907	3,165	7,841	6,521
1989	2,323	4,360	3,227	8,568	6,728
1990	1,750	3,006	2,639	12,899	8,542
1991	2,709	3,478	4,460	11,113	10,475

Source: Great Lakes Water Quality Board, *Great Lakes Water Quality Surveillance Subcommittee Report to the International Joint Commission,* United States and Canada, (International Joint Commission, Windsor, ON, Canada, biennial).

Notes: The 1978 Great Lakes Water Quality Agreement set target loadings for each lake (in metric tons per year): Lake Superior, 3,400; Lake Michigan, 5,600; Lake Huron, 4,360; Lake Erie, 11,000; and Lake Ontario, 7,000. Data do not include loadings to the St. Lawrence River. Data analysis was discontinued after 1991.

Table 6.8 Oil Polluting Incidents Reported In and Around U.S. Waters, 1970-1995

Year	Number	Volume	Year	Number	Volume
	thousands	*million gallons*		*thousands*	*million gallons*
1970	3.71	15.25	1983	7.92	8.38
1971	8.74	8.84	1984	8.26	18.01
1972	9.93	18.81	1985	6.17	8.44
1973	9.01	15.25	1986	4.99	4.28
1974	9.99	15.72	1987	4.84	3.61
1975	9.30	21.52	1988	5.00	6.59
1976	9.42	18.52	1989	6.61	13.48
1977	9.46	8.19	1990	8.18	7.97
1978	10.64	10.86	1991	8.57	3.76
1979	9.83	20.89	1992	9.49	1.88
1980	8.38	12.60	1993	8.97	2.07
1981	7.81	8.92	1994	9.44	19.51
1982	7.48	10.35	1995	6.49	1.98

Source: U.S. Department of Transportation, United States Coast Guard, Marine Safety and Environment Protection, G-MRI-1, Oil Spill Database, unpublished, Washington, DC, 1997.

Notes: Data for 1995 are preliminary. Includes oil spill data for vessels and non-vessels (e.g., facilities, pipelines, and other unknown sources).

Table 6.9 U.S. Shellfish Growing Waters, 1966-1995

Year	1966	1971	1974	1980	1985	1990	1995
				thousand acres			
Approved for harvest	8,100	10,362	10,560	10,685	11,402	12,304	14,853
Harvested limited	2,090	3,738	4,232	3,533	5,435	6,398	6,721
Conditionally approved	88	410	387	587	1,463	1,571	1,695
Restricted	na	30	34	55	637	463	2,106
Conditionally restricted	na	na	na	na	na	0	119
Prohibited	2,002	3,298	3,811	2,891	3,335	4,364	2,801
Total	10,190	14,100	14,792	14,218	16,837	18,702	21,574

Source: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Survey, Office of Ocean Resources Conservation and Assessment, Strategic Environmental Assessments Division, *The 1995 National Shellfish Register of Classified Growing Waters* (DOC, NOAA, ORCA, Silver Spring, MD, 1997).

Notes: Based on National Shellfish Registers published only in years indicated. Data do not include Alaska, Hawaii, or waters designated as unclassified. The total acreage of classified shellfish growing waters varies with each register. There may be several reasons why shellfish harvest is prohibited, including water quality problems, lack of funding for complete surveying and monitoring, conservation measures, and other management/administrative actions.

Table 6.10 Status of Stock Levels of U.S. Fisheries, 1992-1994

Fishery	Current status relative to the level producing LTPY				
	Below	Near	Above	Unknown	Total
	number of species				
Northeast demersals	19	3	2	1	25
Northeast pelagics	1	2	3	0	6
Atlantic anadromous	4	0	1	0	5
Northeast invertebrates	0	3	2	1	6
Atlantic highly migratory pelagics	4	4	0	2	10
Atlantic sharks	1	0	1	1	3
Atlantic/Gulf coastal migratory pelagics	1	3	0	3	7
Atlantic/Gulf reef fish	9	2	0	17	28
Southeast drum and croaker	4	0	0	3	7
Southeast menhaden	0	2	0	0	2
Southeast/Caribbean invertebrates	3	6	0	5	14
Pacific coast salmon	2	3	0	0	5
Alaska salmon	1	1	3	0	5
Pacific coast and Alaska pelagics	3	4	0	0	7
Pacific coast groundfish	6	4	4	5	19
Western Pacific invertebrates	1	0	0	0	1
Western Pacific bottomfish*	3	3	0	0	6
Pacific highly migratory pelagics	2	12	0	1	15
Alaska groundfish	6	8	8	3	25
Alaska shellfish	3	0	1	1	5
Subtotal	73	60	25	43	201
Nearshore species	10	14	0	50	74
Total assessed species	83	74	25	93	275

Source: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Our Living Oceans, Report on the Status of U.S. Living Marine Resources, 1995*, NOAA Technical Memorandum NMFS-F/SPO-19 (DOC, NOAA, NMFS, Washington, DC, 1996).

Notes: LTPY is long-term potential yield or the maximum long-term average catch that can be achieved from the resource. This term is analogous to the concept of maximum sustainable yield. Stock level relative to LTPY is a measure of stock status. The present abundance level of the stock is compared with the level of abundance which on average would support the LTPY harvest. This level is expressed as below, near, above, or unknown relative to the abundance level that would produce LTPY. Demersal = bottom-dwelling fishes such as flounders, skates, and dogfish. Pelagic = mid-water fishes such as blue fish, anchovies, sardines, and squids. Anadromous = fishes which ascend rivers to spawn, such as salmon, shad, and striped bass. Invertebrates = lobsters, clams, scallops, shrimp, etc. Highly migratory = high-seas (oceanic) fishes such as tunas, swordfish, and billfishes. Coastal migratory = fishes that range from the shore to the outer edge of the U.S. continental shelf, such as king and Spanish mackeral, dolphin fish, and cobia. Reef fish = fishes that prefer coral reefs, artificial structures, and other hard bottom areas, such as snappers, groupers, and amberjacks. Reef fish also include tilefishes that prefer sand bottom areas. *Also includes armorhead.

Table 6.11 Waterborne Disease Outbreaks and Cases in the United States, 1971-1994

Year	Waterborne disease outbreaks by water supply system				Total cases
	Community	Non-community	Individual	Total	
		number			*number*
1971	8	8	4	20	5,184
1972	9	19	2	30	1,650
1973	6	16	3	25	1,762
1974	11	9	5	25	8,356
1975	6	16	2	24	10,879
1976	9	23	3	35	5,068
1977	14	18	2	34	3,860
1978	10	19	3	32	11,435
1979	24	13	8	45	9,841
1980	26	20	7	53	20,045
1981	14	18	4	36	4,537
1982	26	15	3	44	3,588
1983	30	9	4	43	21,036
1984	12	5	10	27	1,800
1985	7	14	1	22	1,946
1986	10	10	2	22	1,569
1987	8	6	1	15	22,149
1988	6	10	1	16	2,169
1989	6	6	1	13	2,670
1990	6	7	2	15	1,748
1991	2	13	0	15	12,960
1992	6	10	3	19	4,504
1993	9	4	5	18	404,190
1994	5	5	2	12	649

Source: M.H. Kramer, B.L. Herwaldt, G.F. Craun, R.L. Calderon and D.D. Juranek, "Surveillance for Waterborne-Disease Outbreaks—United States, 1993-1994," In *CDC Surveillance Summaries,* April 12, 1996, Morbidity and Mortality Weekly Report 42(SS-5) (U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, Atlanta, GA), pp. 7-8, and earlier reports in this series.

Notes: The number of waterborne disease outbreaks and the number of affected people or cases reported to the Centers for Disease Control and Prevention and to the U.S. Environmental Protection Agency represents a fraction of the total number that occur. Therefore, these data should not be used to draw firm conclusions about the true incidence of waterborne disease outbreaks.

Table 6.12 U.S. Wetlands by Type, Mid-1950s to Mid-1990s

Wetlands type	Mid-1950s	Mid-1970s	Mid-1980s	Mid-1990s
		million acres		
Estuarine wetlands	5.59	5.53	5.10	5.09
Palustrine marshes	33.07	24.31	25.88	25.01
Palustrine shrub wetlands	11.00	15.51	15.60	17.07
Palustrine forested wetlands	55.09	55.15	50.39	47.93
Other palustrine wetlands	2.70	5.35	5.14	5.79
Total wetland acreage	107.45	105.85	102.12	100.91

Sources: Dahl, T.E., R.D. Young and M.C. Caldwell, *Status and Trends of Wetlands in the Conterminous United States, 1980s to 1990s* (U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC, Draft).

Dahl, T.E. and C.E. Johnson, *Status and Trends of Wetlands in the Conterminous United States, 1970s to 1980s* (U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC, 1991).

Frayer, W.E., T.J. Monahan, D.C. Bowden and F.A. Graybill, *Status and Trends of Wetlands and Deepwater Habitats in the Conterminous United States, 1950s to 1970s* (Colorado State University, Fort Collins, CO, 1983).

Note: Totals may not agree with sum of components due to independent rounding.

Table 6.13 Wetlands Losses by Current State Boundaries, 1780s-1980s

State	Total surface area of state	Wetlands area 1780s	Wetlands area 1980s	Wetlands losses
		million acres		*%*
Alabama	33.03	7.57	3.78	50
Alaska	375.30	170.20	170.00	<1
Arizona	72.90	0.93	0.60	36
Arkansas	33.99	9.85	2.76	72
California	101.56	5.00	0.45	91
Colorado	66.72	2.00	1.00	50
Connecticut	3.21	0.67	0.17	74
Delaware	1.32	0.48	0.22	54
Florida	37.48	20.33	11.04	46
Georgia	37.68	6.84	5.30	23
Hawaii	4.12	0.06	0.05	12
Idaho	53.47	0.88	0.39	56
Illinois	36.10	8.21	1.25	85
Indiana	23.23	5.60	0.75	87
Iowa	36.03	4.00	0.42	89
Kansas	52.65	0.84	0.44	48
Kentucky	25.85	1.57	0.30	81
Louisiana	31.05	16.19	8.78	46

See next page for continuation of table.

Table 6.13 Wetlands Losses by Current State Boundaries, 1780s-1980s (continued)

State	Total surface area of state	Wetlands area 1780s	Wetlands area 1980s	Wetlands losses
	million acres			*%*
Maine	21.26	6.46	5.20	20
Maryland	6.77	1.65	0.44	73
Massachusetts	5.28	0.82	0.59	28
Michigan	37.26	11.20	5.58	50
Minnesota	53.80	15.07	8.70	42
Mississippi	30.54	9.87	4.07	59
Missouri	44.60	4.84	0.64	87
Montana	94.17	1.15	0.84	27
Nebraska	49.43	2.91	1.91	35
Nevada	70.75	0.49	0.24	52
New Hampshire	5.95	0.22	0.20	9
New Jersey	5.02	1.50	0.92	39
New Mexico	77.87	0.72	0.48	33
New York	31.73	2.56	1.03	60
North Carolina	33.66	11.09	5.69	49
North Dakota	45.23	4.93	2.49	49
Ohio	26.38	5.00	0.48	90
Oklahoma	44.75	2.84	0.95	67
Oregon	62.07	2.26	1.39	38
Pennsylvania	29.01	1.13	0.50	56
Rhode Island	0.78	0.10	0.07	37
South Carolina	19.88	6.41	4.66	27
South Dakota	49.31	2.74	1.78	35
Tennessee	27.04	1.94	0.79	59
Texas	171.10	16.00	7.61	52
Utah	54.35	0.80	0.56	30
Vermont	6.15	0.34	0.22	35
Virginia	26.12	1.85	1.07	42
Washington	43.64	1.35	0.94	31
West Virginia	15.48	0.13	0.10	24
Wisconsin	35.94	9.80	5.33	46
Wyoming	62.66	2.00	1.25	38

Source: Dahl, T.E., *Wetlands Losses in the United States 1780s to 1980s* (U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC, 1991).

Table 6.14 Average Annual Acres of U.S. Wetlands Converted to Upland Uses, Mid-1950s to Mid-1990s

Post-conversion land use	1954-1974[1]	1974-1983[2]	1985-1995[3]
	thousands of acres per year (average)		
Agriculture	398.5	156.6	na
Urban use	36.6	14.5	na
Other upland uses	23.4	118.9	na
Total	458.0	290.0	117.0
	percent of average annual conversion		
Agriculture	87	54	na
Urban use	8	5	na
Other upland uses	5	41	na
Total	100	100	100

Sources: [1]Frayer, W.E., T.J. Monahan, D.C. Bowden and F.A. Graybill, *Status and Trends of Wetlands and Deepwater Habitats in the Conterminous United States, 1950s to 1970s* (U.S. Department of the Interior, Fish and Wildlife Service, Fort Collins, CO, 1983).

[2]Dahl, T.E. and C.E. Johnson, *Status and Trends of Wetlands in the Conterminous United States, 1970s to 1980s* (U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC, 1991).

[3]Dahl, T.E., R.D. Young and M.C. Caldwell, *Status and Trends of Wetlands in the Conterminous United States, 1980s to 1990s* (U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC, Draft).

Notes: Data reflect net wetlands losses (= losses plus gains) by category. Other upland uses include silvicultural activities, residential and recreational development in rural areas, and highway construction and improvements in rural areas. A significant portion of lands classified as "other" in the 1970s-1980s study were wetlands that had been drained and cleared of vegetation, but the land had not been put to an identifiable use (as determined by interpretation of aerial photography and groundtruthing).

Terrestrial Resources

Table 7.1 Land Use and Ownership in the United States, 1900-1992

Year	Land use					Ownership	
	Crop-land	Grazing land	Forest-land	Other land	Total	Private & other public	Federal
	million acres					*%*	
1900	319	1,044	366	175	1,904	52.7	47.3
1910	347	814	562	181	1,904	68.5	31.5
1920	402	750	567	185	1,904	73.8	26.2
1930	413	708	607	176	1,904	74.0	26.0
1945	451	660	602	193	1,905	73.7	26.3
1949	478	631	606	189	1,904	73.5	26.5
1954	465	632	615	191	1,904	73.5	26.5
1959	458	633	728	452	2,271	61.0	39.0
1964	444	640	732	450	2,266	60.4	39.6
1969	472	604	723	465	2,264	66.5	33.5
1974	465	598	718	483	2,264	66.5	33.5
1978	471	587	703	503	2,264	67.2	32.9
1982	469	597	655	544	2,265	67.9	32.2
1987	464	591	648	562	2,265	68.1	31.9
1992	460	591	648	564	2,263	71.3	28.7

Sources: Daugherty, A.B., *Major Uses of Land in the United States: 1992*, Table 3, p. 4, Agricultural Economic Report No. 723 (GPO, Washington, DC, 1995) and earlier reports in this series.

U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States* (GPO, Washington, DC, annual).

Notes: Prior to 1959, excludes Alaska and Hawaii. Other changes in total land area result from refinements in measuring techniques. Federal includes original public-domain lands vested in the U.S. government by virtue of its sovereignty as well as lands acquired by the U.S. government by purchase, condemnation, and gift. Historical estimates are based on imperfect data. Other land includes rural transportation areas, areas used primarily for recreation and wildlife purposes, various public installations and facilities, farmsteads and farm roads, urban areas, areas in miscellaneous uses not inventoried, marshes, open swamps, bare rock areas, desert, tundra, and other land generally having low value for agricultural purposes. Land-use and land-ownership estimates are not strictly comparable. Totals may not agree with sum of components due to independent rounding.

Table 7.2 Special Uses of Land in the United States, 1945-1992

Land use	1945	1949	1959	1969	1974	1978	1982	1987	1992
	million acres								
Transportation	22.6	22.9	25.2	26.0	26.3	26.6	26.7	25.7	25.2
Parks & wildlife	22.6	27.6	46.9	81.3	87.5	98.0	211.0	224.9	228.9
National defense	24.8	21.5	31.2	25.6	25.0	24.9	24.0	20.9	20.5
Urban	15.0	18.3	27.2	31.0	34.8	44.6	50.2	56.6	58.8
Farmsteads	15.1	15.1	11.4	10.3	8.1	8.4	8.0	7.1	6.2
Total	100.0	105.4	141.9	174.2	181.7	202.5	319.9	335.2	339.5

Source: Daugherty, A.B., *Major Uses of Land in the United States: 1992*, Table 14, p. 17, Agricultural Economic Report No. 723 (GPO, Washington, DC, 1995) and earlier reports in this series.

Note: Categories of special-use lands are a subset of those listed as other in Table 7.1.

Table 7.3 Number of Farms and Land in Farms in the United States, 1900-1992

	Farm size									
	1 - 49 acres		50 - 499 acres		500 - 999 acres		1,000 + acres		Total	
Year	Number	Acres	Number	Acres	Number	Acres	Number	Acres	Number	Acres
	millions									
1900	1.93	49	3.37	520	0.10	68	0.05	200	5.74	837
1910	2.25	49	3.93	570	0.13	84	0.05	167	6.37	870
1920	2.31	59	3.93	580	0.15	100	0.07	221	6.45	960
1925	2.42	57	3.75	550	0.14	97	0.06	224	6.37	928
1930	2.36	56	3.69	550	0.16	109	0.08	277	6.30	992
1935	2.69	59	3.86	540	0.17	114	0.09	310	6.81	1,023
1940	2.29	50	3.55	540	0.16	112	0.10	366	6.10	1,068
1945	2.25	47	3.32	520	0.17	119	0.11	460	5.86	1,146
1950	1.97	39	3.12	500	0.18	126	0.12	495	5.39	1,160
1954	1.70	32	2.76	460	0.19	132	0.13	531	4.78	1,155
1959	1.06	22	2.32	410	0.20	137	0.14	555	3.71	1,124
1964	0.82	17	1.98	360	0.21	145	0.15	585	3.16	1,107
1969	0.64	14	1.73	320	0.22	148	0.15	578	2.73	1,060
1974	0.51	11	1.44	273	0.21	142	0.16	590	2.31	1,024
1978	0.54	12	1.34	256	0.21	147	0.16	600	2.26	1,015
1982	0.64	13	1.24	233	0.20	141	0.16	600	2.24	987
1987	0.60	12	1.12	212	0.20	139	0.17	602	2.09	965
1992	0.56	11	1.01	190	0.19	129	0.17	615	1.93	945

Sources: U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970* (GPO, Washington, DC, 1975).

--, *Census of Agriculture for 1992*, *Vol. I: Geographic Area Series, Part 51 United States Summary and State Data*, Table 8, p. 18, AC92-A-51 (GPO, Washington, DC, 1994) and earlier census reports.

Table 7.4 Major Uses of U.S. Cropland, Agricultural Census Years, 1945-1992, and Annually, 1993-1996

Year	Cropland used for crops						Cropland idled by federal programs
	Harvested	Failed	Cultivated summer fallow	Idle cropland	Cropland pasture	Total	
	million acres						
1945	336	9	18	40	47	454	4.1
1949	352	9	26	22	67	478	0.0
1954	339	13	28	19	66	465	0.0
1959	317	10	31	33	66	457	22.5
1964	292	6	37	52	57	444	55.0
1969	286	6	41	51	88	472	57.5
1974	322	8	31	21	83	465	2.7
1978	330	7	32	26	76	471	18.3
1982	347	5	31	21	65	469	11.1
1987	293	6	32	68	65	464	76.2
1992	305	8	24	56	67	460	54.9
1993	297	11	22	na	na	na	59.8
1994	310	7	22	na	na	na	49.2
1995	302	8	22	na	na	na	54.8
1996	314	10	22	na	na	na	34.4

Sources: U.S. Department of Agriculture, Economic Research Service, *AREI Updates: Cropland Use in 1996,* Table 1, p. 2 (USDA, ERS, Washington, DC, 1996).

U.S. Department of Commerce, Bureau of the Census, *Census of Agriculture for 1992*, *Vol. I: Geographic Area Series, Part 51 United States Summary and State Data*, Table 7, p. 17, AC92-A-51 (GPO, Washington, DC, 1994) and earlier census reports.

Notes: na = not available except in years coinciding with Census of Agriculture. Excludes Alaska and Hawaii. A double-cropped acre is counted as one acre. Cropland has been idled under various federal farm programs including the Agricultural Conservation Program (1936-1947), Soil Bank (1956-1970), Cropland Adjustment Program (1961-1977), Agricultural Reduction Program (1961-1995), and Conservation Reserve Program (1986-1996).

Table 7.5 Cropland Tillage Practices Used in Production of U.S. Field Crops, 1989-1996

	Total area planted	Conventional tillage	Reduced tillage	Conservation tillage			
				No-till	Ridge-till	Mulch-till	Total
	million acres						
1989	279.6	137.3	70.7	14.1	2.7	54.7	71.7
1990	280.9	136.7	71.0	16.9	3.0	53.3	73.2
1991	281.2	129.8	72.3	20.6	3.2	55.3	79.1
1992	282.9	120.8	73.4	28.1	3.4	57.3	88.7
1993	278.1	107.9	73.2	34.8	3.5	58.9	97.1
1994	283.9	111.4	73.2	39.0	3.6	56.8	99.3
1995	278.7	109.7	70.1	40.9	3.4	54.6	98.9
1996	290.2	111.6	74.8	42.9	3.4	57.5	103.8
	percent of planted acres						
1989	100	49.1	25.3	5.1	1.0	19.6	25.6
1990	100	48.7	25.3	6.0	1.1	19.0	26.1
1991	100	46.1	25.7	7.3	1.1	19.7	28.1
1992	100	42.7	25.9	9.9	1.2	20.2	31.4
1993	100	38.8	26.3	12.5	1.2	21.2	34.9
1994	100	39.3	25.8	13.7	1.3	20.0	35.0
1995	100	39.3	25.2	14.7	1.2	19.6	35.5
1996	100	38.4	25.8	14.8	1.2	19.8	35.8

Source: Conservation Technology Information Center, *National Crop Residue Management Survey Annual Report* (CTIC, West Lafayette, IN, annual).

Notes: Conventional tillage is practiced with or without moldboard plow and leaves less than 15 percent residue after planting. Reduced tillage leaves 15-30 percent residue after planting. Conservation tillage leaves over 30 percent residue after planting. Conservation tillage includes no till (the soil is left undisturbed prior to planting, except for nutrient injection, and planting or drilling is accomplished in a narrow seedbed or slot created by coulters, row openers, disk openers, inrow chisels, or rototillers), ridge till (the soil is left undisturbed prior to planting, except for nutrient injection, and planting is completed in a seedbed prepared on ridges with sweeps, disk openers, coulters, or row cleaners; residue is left on the surface between ridges), and mulch till (the surface is disturbed before planting but 30 percent or more residue remains after planting).

Table 7.6 Erosion on U.S. Cropland, 1982-1992

Year	Sheet and rill erosion		Wind erosion	
	billion tons per year	*tons per acre per year*	*billion tons per year*	*tons per acre per year*
1982	1.7	4.1	1.4	3.3
1987	1.5	3.7	1.3	3.2
1992	1.2	3.1	0.9	2.5

Source: U.S. Department of Agriculture, National Resource Conservation Service, *Summary Report 1992 National Resources Inventory* (USDA, NRCS, Washington, DC, 1995)

Table 7.7 U.S. Agricultural Productivity Indexes, 1960-1994

Year	Farm input				Farm output			Total productivity
	Purchased input	Labor	Capital	Total	Crops	Livestock	Total	
	index (1987=100)							
1960	78	222	101	112	56	72	62	56
1961	74	215	99	109	57	75	64	58
1962	77	213	98	109	57	76	64	59
1963	80	207	98	110	59	78	66	60
1964	78	196	98	108	57	80	66	61
1965	76	190	99	107	61	78	67	63
1966	83	178	100	108	60	79	67	62
1967	83	169	102	107	63	81	70	65
1968	84	163	103	105	65	82	71	67
1969	88	160	103	106	67	82	72	68
1970	91	158	103	107	64	85	72	68
1971	88	155	105	106	71	86	76	72
1972	91	153	104	106	71	87	77	72
1973	91	154	107	109	76	88	80	74
1974	90	143	110	108	70	87	76	70
1975	86	143	111	106	79	82	80	76
1976	90	141	112	110	79	86	81	74
1977	86	136	114	108	86	88	86	80
1978	99	130	114	114	88	88	88	77
1979	106	126	115	117	97	89	93	80
1980	112	122	118	118	88	93	90	76
1981	106	124	118	115	101	95	98	85
1982	110	118	116	112	102	94	98	88
1983	112	116	109	109	80	96	86	79
1984	100	114	111	108	100	95	97	90
1985	102	107	110	105	105	97	102	96
1986	102	101	105	102	99	98	98	97
1987	100	100	100	100	100	100	100	100
1988	99	107	98	100	88	102	94	94
1989	94	102	97	98	101	103	102	103
1990	102	101	96	100	108	104	106	107
1991	102	104	96	101	107	107	107	106
1992	103	98	95	99	117	109	114	115
1993	104	94	93	100	104	110	107	107
1994	106	94	92	101	124	114	120	119

Source: U.S. Department of Agriculture, Economic Research Service, *Agricultural Outlook* (USDA, ERS, Washington, DC, monthly).

Notes: Purchased input includes chemicals, fuels, electricity, feed, seed, and livestock purchases; contract labor and custom machine services; machine and building maintenance and repair; irrigation from public sellers of water; and miscellaneous farm production items. Labor includes both hired and self-employed labor. Capital includes durable equipment and real estate. Livestock output includes meat animals, dairy products, poultry, eggs, wool, mohair, horses, mules, goats, sheep, rabbits, fur animals, aquaculture, honey, and beeswax. Crop outputs include food grains, feed grains, oil crops, sugar crops, cotton, cottonseed, vegetables, fruit trees, nut trees, tobacco, floriculture, ornamentals, Christmas trees, mushrooms, legume seeds, grass seeds, hops, mint, broomcorn, popcorn, hemp, and flax. Productivity = output/input.

Table 7.8 Farm Fuel Purchased for U.S. Farm Use, 1974-1995

Year	Gasoline	Diesel	Liquefied petroleum gas
		billion gallons	
1974	3.7	2.6	1.4
1975	4.5	2.4	1.0
1976	3.9	2.8	1.2
1977	3.8	2.9	1.1
1978	3.6	3.2	1.3
1979	3.4	3.2	1.1
1980	3.0	3.2	1.1
1981	2.7	3.1	1.0
1982	2.4	2.9	1.1
1983	2.3	3.0	0.9
1984	2.1	3.0	0.9
1985	1.9	2.9	0.9
1986	1.7	2.9	0.7
1987	1.5	3.0	0.6
1988	1.6	2.8	0.6
1989	1.3	2.5	0.7
1990	1.5	2.7	0.6
1991	1.4	2.8	0.6
1992	1.6	3.1	0.9
1993	1.4	3.3	0.7
1994	1.4	3.5	0.9
1995	1.4	3.6	0.8

Sources: U.S. Department of Agriculture (USDA), Economic Research Service (ERS), *AREI Updates: Farm Fuel and Ethanol*, No. 15, Table 1, p. 3 (USDA, ERS, Washington, DC, December 1996).

Notes: Excludes Alaska and Hawaii and fuel used for household and personal business. Data are based on USDA, National Agricultural Statistics Service, Farm Production Expenditures Survey data.

Table 7.9 U.S. Commercial Fertilizer Use, 1960-1996

Year	Total quantity	Active ingredients			
		Nitrogen	Phosphate	Potash	Total
	million tons	*million tons*			
1960	24.9	2.7	2.6	2.2	7.5
1961	25.6	3.0	2.6	2.2	7.8
1962	26.6	3.4	2.8	2.3	8.4
1963	28.8	3.9	3.1	2.5	9.5
1964	30.7	4.4	3.4	2.7	10.5
1965	31.8	4.6	3.5	2.8	10.9
1966	34.5	5.3	3.9	3.2	12.4
1967	37.1	6.0	4.3	3.6	14.0
1968	38.7	6.8	4.5	3.8	15.0
1969	38.9	7.0	4.7	3.9	15.5
1970	39.6	7.5	4.6	4.0	16.1
1971	41.1	8.1	4.8	4.2	17.2
1972	41.2	8.0	4.9	4.3	17.2
1973	43.3	8.3	5.1	4.6	18.0
1974	47.1	9.2	5.1	5.1	19.3
1975	42.5	8.6	4.5	4.5	17.6
1976	49.2	10.4	5.2	5.2	20.8
1977	51.6	10.6	5.6	5.8	22.1
1978	47.5	10.0	5.1	5.5	20.6
1979	51.5	10.7	5.6	6.2	22.6
1980	52.8	11.4	5.4	6.2	23.1
1981	54.0	11.9	5.4	6.3	23.7
1982	48.7	11.0	4.8	5.6	21.4
1983	41.8	9.1	4.1	4.8	18.1
1984	50.1	11.1	4.9	5.8	21.8
1985	49.1	11.5	4.7	5.6	21.7
1986	44.1	10.4	4.2	5.1	19.7
1987	43.0	10.2	4.0	4.8	19.1
1988	44.5	10.5	4.1	5.0	19.6
1989	44.8	10.6	4.1	4.8	19.5
1990	47.7	11.1	4.3	5.2	20.6
1991	47.3	11.3	4.2	5.0	20.5
1992	48.8	11.5	4.2	5.0	20.7
1993	49.2	11.4	4.4	5.1	20.9
1994	52.3	12.6	4.5	5.3	22.4
1995	50.7	11.7	4.4	5.1	21.3
1996	53.4	12.3	4.5	5.2	22.0

Sources: Tennessee Valley Authority, Environmental Research Center, *Commercial Fertilizers, 1994* (TVA, Oak Ridge, TN, 1995) and earlier issues.

The Association of American Plant Food Control Officials (AAPFCO), *Commercial Fertilizers, 1996* (AAPFCO, Lexington, KY, 1997) and earlier issues.

U.S. Department of Agriculture, Economic Research Service, *AREI UPDATES: Nutrient Use and Practices on Major Field Crops*, Table 1, p. 2 (USDA, ERS, Washington, DC, 1997).

Notes: Quantity refers to total fertilizer materials. Fertilizer use estimates for 1960-1984 are based on USDA data; those for 1985-1994 are TVA estimates, and 1995-1996 are from AAPFCO. Includes fertilizer use on farms, lawns, golf courses, home gardens, and other nonfarm lands. Includes Puerto Rico.

Table 7.10 U.S. Commercial Pesticide Use by Sector and Type, 1979-1995

	Agriculture						Industry, commercial, & government					
	Herbicides	Insecticides	Fungicides	Other conven.	Other chemicals	Total	Herbicides	Insecticides	Fungicides	Other conven.	Other chemicals	Total
	million pounds of active ingredients											
1979	492	188	57	106	246	1,089	85	35	50	46	27	243
1980	504	163	59	100	227	1,053	83	35	45	46	25	234
1981	513	152	62	104	215	1,046	82	37	43	46	24	232
1982	503	142	59	101	207	1,012	80	39	41	45	24	229
1983	455	135	59	100	196	945	80	40	40	45	24	229
1984	516	129	56	100	194	995	78	41	38	41	24	222
1985	501	126	59	94	194	974	70	43	37	41	23	214
1986	481	121	59	94	188	943	68	45	36	41	23	213
1987	425	90	52	91	180	838	65	42	34	39	22	202
1988	450	100	54	95	177	876	64	41	32	39	22	198
1989	460	95	54	113	161	883	63	40	31	38	22	194
1990	455	90	50	133	164	892	63	39	31	38	22	193
1991	440	85	47	144	140	856	60	38	30	37	21	186
1992	450	90	45	150	161	896	58	35	28	36	21	178
1993	425	80	47	154	166	872	56	32	25	36	20	169
1994	485	90	48	163	163	949	52	30	23	34	20	159
1995	461	91	49	170	168	939	48	29	20	31	22	150

	Home & garden						Total					
	Herbicides	Insecticides	Fungicides	Other conven.	Other chemicals	Total	Herbicides	Insecticides	Fungicides	Other conven.	Other chemicals	Total
	million pounds of active ingredients											
1979	33	32	17	3	70	155	610	255	124	155	343	1,487
1980	35	30	18	3	69	155	622	228	122	149	321	1,442
1981	36	29	17	3	68	153	631	218	122	152	307	1,430
1982	37	29	17	3	67	153	620	210	117	149	298	1,394
1983	38	29	16	3	67	153	573	204	115	148	287	1,327
1984	40	27	15	3	67	152	634	197	109	145	284	1,369
1985	40	24	14	3	67	148	611	193	110	138	284	1,336
1986	41	22	14	3	67	147	590	188	109	138	278	1,303
1987	42	20	14	3	67	146	532	152	100	133	269	1,186
1988	43	20	13	3	67	146	557	161	99	137	266	1,220
1989	44	19	13	2	68	146	567	154	98	154	251	1,224
1990	46	19	10	2	66	143	564	148	91	173	252	1,228
1991	46	18	9	2	65	140	546	141	86	182	226	1,181
1992	46	18	8	2	64	138	554	143	81	189	246	1,213
1993	46	18	8	2	62	136	527	130	80	192	248	1,177
1994	46	18	8	2	61	135	583	138	79	199	244	1,243
1995	47	17	8	2	59	133	556	137	77	203	249	1,222

Source: Aspelin, A.L., *Pesticide Industry Sales and Usage: 1994 and 1995 Market Estimates*, (U.S. Environmental Protection Agency, Washington, DC, 1997).

Notes: Other conven. = other conventional pesticides. Other chemicals = chemicals produced mainly for other purposes but also used as pesticides (e.g., chlorine, sulfur).

Table 7.11 Irrigated U.S. Farmland, Agricultural Census Years, 1890-1987, and Annually, 1988-1996

Year	Seventeen Western states	Other states	Total
	million acres		
1890	3.5	0.1	3.5
1900	7.5	0.3	7.8
1910	11.3	0.4	11.7
1920	13.9	0.5	14.5
1930	14.1	0.6	14.7
1940	17.2	0.7	18.0
1950	24.3	1.5	25.8
1959	30.7	2.4	33.2
1964	33.2	3.9	37.1
1969	34.8	4.3	39.1
1974	36.6	4.6	41.2
1978	43.2	7.2	50.3
1982	41.3	7.7	49.0
1987	37.5	8.9	46.4
1988	38.9	9.7	48.6
1989	40.0	9.5	49.5
1990	39.4	9.8	49.2
1991	39.9	10.1	50.0
1992	39.1	10.3	49.4
1993	39.6	10.2	49.8
1994	40.8	11.0	51.8
1995	41.2	10.8	52.0
1996	42.2	11.1	53.3

Sources: U.S. Department of Agriculture, Economic Research Service, *Agricultural Resources and Environmental Indicators, 1996-97,* AH-712 (USDA, ERS, Washington, DC, 1997) and earlier ERS reports.

U.S. Department of Commerce, Bureau of the Census. *Census of Agriculture for 1992*, *Vol. I: Geographic Area Series, Part 51 United States Summary and State Data*, Table 9, p. 18, AC92-A-51 (GPO, Washington, DC, 1994) and earlier census reports.

Notes: The seventeen Western states include Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming. Data for 1890-1982, 1987, and 1992 are from the Census of Agriculture. Data for other years are estimates constructed from data provided by the USDA, National Agricultural Statistics Service (NASS). Estimate for 1996 is a forecast based on normal weather conditions.

Table 7.12 Condition of U.S. Nonfederal Rangeland, Selected Years, 1963-1992, and Bureau of Land Management Rangeland, Selected Years, 1936-1996

Rangeland condition	Nonfederal					Bureau of Land Management				
	1963	1977	1982	1987	1992	1936	1966	1975	1986	1996
	% rangeland acreage									
Excellent	5	12	4	3	6	2	2	2	4	5
Good	15	28	30	30	34	14	17	15	30	33
Fair	40	42	45	47	44	48	52	50	41	39
Poor	40	18	16	14	15	36	30	33	18	14
Unclassified	na	na	5	6	1	na	na	na	na	9

Sources: U.S. Department of Agriculture, Natural Resources Conservation Service, *National Resources Inventory* (USDA, NRCS, Washington, DC, 1977, 1982, 1987, and 1992).

U.S. Department of the Interior, Bureau of Land Management, *Public Land Statistics* (DOI, BLM, Washington, DC, annual).

Notes: na = not available. Rangeland condition refers to the present state of the vegetation at a rangeland site in relation to the climax (natural potential) plant community for that site. It is expressed as the degree of similarity of present vegetation to the climax plant community: Excellent (equivalent to Potential Natural Community) = 76-100% similarity; Good (Late Seral) = 51-75% similarity; Fair (Mid Seral) = 26-50% similarity; and Poor (Early Seral) = 0-25% similarity. Unclassified includes rangeland for which data and estimates are not available, dry lakebeds, rock outcrops, and other areas for which data cannot be gathered. NRI is conducted every five years; BLM data are updated annually to reflect new information and changes in rangeland condition classes. NRI and BLM data are not strictly comparable because of different survey methodologies.

Table 7.13 Timberland in the United States by Ownership, 1952-1992

Year	Farmer and other private	Forest industry	National forests	Other public	Total
			million acres		
1952	304.5	59.0	94.7	50.7	508.9
1962	307.5	61.4	96.8	49.3	515.1
1977	285.3	68.9	88.7	49.5	491.1
1987	283.6	70.3	85.2	45.8	484.9
1992	287.6	70.5	84.7	46.8	489.6

Source: Powell, D.S., J.L. Faulkner, D.R. Darr, Z. Zhu and D.W. MacCleery, *Forest Statistics of the United States, 1992*, General Technical Report RM-234 (U.S. Department of Agriculture, Forest Service, Washington, DC, 1993).

Table 7.14 Annual Net Growth and Removals of U.S. Growing Stock, 1952-1991, and Volume of U.S. Growing Stock, 1952-1992

Net growth and removals of growing stock

	Farmer and other private		Forest industry		National forests		Other public		Total	
Year	Net Growth	Re-movals	Net Growth	Re-movals	Net Growth	Re-movals	Net Growth	Re-movals	Net Growth	Re-movals
					billion cubic feet					
1952	8.1	6.9	2.6	3.3	2.1	1.1	1.2	0.6	13.9	11.9
1962	9.5	6.4	3.2	3.0	2.5	1.9	1.6	0.7	16.7	12.0
1976	12.6	6.8	4.2	4.2	3.1	2.1	2.0	1.1	21.9	14.2
1986	12.1	8.2	4.3	5.4	3.4	2.3	2.3	1.2	22.1	16.0
1991	12.1	8.0	4.3	5.3	3.3	2.0	1.9	1.0	21.6	16.3

Volume of growing stock

	Farmer and other private		Forest industry		National forests		Other public		Total	
Year	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood	Soft-wood	Hard-wood
					billion cubic feet					
1952	94.8	133.7	77.4	20.3	204.4	13.6	55.2	16.5	431.8	184.1
1962	104.3	152.5	76.1	25.4	213.7	17.2	55.7	20.7	449.8	215.8
1977	125.3	185.8	74.5	32.3	208.1	21.6	59.0	26.5	467.0	266.1
1986	136.6	220.8	72.8	35.3	186.3	25.1	57.3	31.4	452.9	312.6
1992	143.4	242.3	71.0	34.8	185.6	25.6	50.0	33.0	449.9	335.7

Source: Powell, D.S., J.L. Faulkner, D.R. Darr, Z. Zhu and D.W. MacCleery, *Forest Statistics of the United States, 1992*, General Technical Report RM-234 (U.S. Department of Agriculture, Forest Service, Washington, DC, 1993).

Table 7.15 U.S. Production of Timber Products by Major Product, Five-Year Intervals, 1950-1965, and Annually, 1966-1994

Year	Lumber	Plywood & veneer	Pulp products	Fuel	Miscellaneous	Total
	million cubic feet, roundwood equivalent					
1950	5,905	345	1,500	2,270	770	10,800
1955	5,785	575	2,200	1,745	630	10,970
1960	5,080	705	2,575	1,300	510	10,220
1965	5,665	1,030	3,095	915	567	11,477
1966	5,630	1,035	3,190	845	582	11,522
1967	5,325	1,025	3,195	780	562	11,227
1968	5,545	1,120	3,385	700	101	11,776
1969	5,415	1,050	3,585	620	601	11,681
1970	5,215	1,020	3,840	535	575	11,655
1971	5,390	1,170	3,560	500	538	11,548
1972	5,535	1,300	3,520	475	562	11,932
1973	5,670	1,320	3,755	505	621	12,446
1974	5,095	1,150	4,220	535	635	12,090
1975	4,890	1,170	3,485	570	583	11,153
1976	5,585	1,355	3,810	600	625	12,530
1977	5,950	1,425	3,650	1,000	646	13,196
1978	6,155	1,460	3,745	1,525	619	14,089
1979	6,115	1,370	4,105	2,205	690	15,150
1980	5,305	1,175	4,390	3,105	693	15,228
1981	4,775	1,180	4,125	3,180	646	14,336
1982	5,048	1,119	3,819	3,355	603	14,457
1983	6,044	1,426	4,285	3,235	591	16,141
1984	6,396	1,391	4,681	3,620	590	17,237
1985	6,210	1,426	4,561	3,450	599	16,861
1986	7,077	1,538	4,857	3,096	616	17,768
1987	7,588	1,587	5,137	3,076	633	18,678
1988	7,642	1,538	5,221	3,066	713	18,948
1989	7,440	1,406	5,429	3,041	781	19,121
1990	7,213	1,368	5,353	3,019	805	18,720
1991	6,677	1,226	5,434	3,028	842	18,139
1992	6,864	1,265	5,463	3,044	877	18,389
1993	6,660	1,257	5,391	3,084	864	18,042
1994	6,880	1,268	5,417	3,134	910	18,392

Source: Howard, J.L., *U.S. Timber Production, Trade, Consumption, and Price Statistics, 1965-1994*, Table 4a, p. 12, General Technical Report FPL-GTR-98 (U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, Madison, WI, 1997) and earlier reports in this series.

Note: Miscellaneous includes cooperage logs, poles and pilings, fence posts, hewn ties, round mine timbers, box bolts, excelsior bolts, chemical wood, shingle bolts, log and pulp chip exports, and other products not specified.

Table 7.16 Logging Residues from U.S. Growing Stock and Timber Product Output from U.S. Nongrowing Stock, 1952-1991

Year	Logging residues		Output from nongrowing stock	
	Soft-wood	Hard-wood	Soft-wood	Hard-wood
	% of timber product removals from growing stock		*% of timber supplies*	
1952	9.8	22.2	10.4	20.9
1962	9.6	20.7	10.0	18.5
1970	10.0	19.7	7.0	13.9
1976	8.4	17.1	6.9	14.0
1986	9.0	13.2	11.5	38.5
1991	7.5	12.0	11.9	37.5

Source: Haynes, R.W., D.M. Adams and J.R. Mills, *The 1993 RPA Timber Assessment Update*, Table 7, p. 16, and Table 8, p. 17 (U.S. Department of Agriculture, Forest Service, Washington, DC, 1995).

Notes: Logging residues are lower quality material, such as small stem, chunks, and low-quality stems. Declining amounts of residues reflect increased stumpage prices, improved logging technology, and increased demand for wood products. Timber supplies from nongrowing stock include salvable dead trees, rough and rotten trees, tops and limbs, defective sections of growing stock trees in urban areas, along fence rows, and on forested lands other than timberlands. Output from these sources has been greatly influenced by markets for pulpwood and fuelwood since the late 1970s.

Table 7.17 U.S. Forest Fire Damage and Tree Planting, Ten-Year Intervals, 1930-1950, and Annually, 1951-1996

Year	Forest fire damage	Tree planting	Year	Forest fire damage	Tree planting
	million acres			*million acres*	
1930	52.3	0.14	1973	1.9	1.75
1940	25.9	0.52	1974	2.9	1.60
1950	15.5	0.50	1975	1.8	1.93
1951	10.8	0.45	1976	5.1	1.89
1952	14.2	0.52	1977	3.2	1.98
1953	10.0	0.71	1978	3.9	2.09
1954	8.8	0.81	1979	3.0	2.06
1955	8.1	0.78	1980	5.3	2.27
1956	6.6	0.89	1981	4.8	2.35
1957	3.4	1.14	1982	2.4	2.37
1958	3.3	1.53	1983	5.1	2.45
1959	4.2	2.12	1984	3.0	2.55
1960	4.5	2.14	1985	5.2	2.70
1961	3.0	1.76	1986	3.2	2.75
1962	4.1	1.37	1987	5.0	3.03
1963	7.1	1.33	1988	5.7	3.39
1964	4.2	1.31	1989	3.5	3.02
1965	2.7	1.29	1990	4.6	2.86
1966	4.6	1.28	1991	na	2.56
1967	4.7	1.37	1992	na	2.55
1968	4.2	1.44	1993	na	2.42
1969	6.7	1.43	1994	na	2.78
1970	3.3	1.60	1995	na	2.42
1971	4.3	1.69	1996	na	2.41
1972	2.6	1.68			

Sources: U.S. Department of Agriculture, Forest Service, Wildfire Statistics, unpublished, Washington, DC, annual.

--, *U.S. Forest Planting Report* (USDA, FS, Washington, DC, annual).

Notes: Tree planting refers to acres planted in seedlings and direct seeded. Year refers to fiscal year. na = not available prior to statistical validation. Annual forest fire damage for the years 1991-1996 is estimated to be between 2 and 7 million acres.

Table 7.18 U.S. Forestland Damaged by Insects, 1968-1996

Year	Spruce budworm	Western spruce budworm	Gypsy moth	Mountain pine beetle	Southern pine beetle
			million acres		
1968	1.3	5.3	0.1	na	na
1969	1.2	4.6	0.3	na	na
1970	2.0	4.0	1.0	na	na
1971	1.6	4.8	1.9	na	na
1972	2.8	5.5	1.4	na	na
1973	4.2	4.4	1.8	na	na
1974	10.8	5.5	0.8	na	na
1975	9.2	5.3	0.5	na	na
1976	9.1	5.8	0.9	na	na
1977	10.3	6.5	1.6	na	na
1978	7.7	5.2	1.3	4.0	na
1979	6.6	5.0	0.6	4.4	15.0
1980	6.6	4.0	5.0	4.7	12.1
1981	4.5	5.5	12.9	4.7	0.9
1982	4.2	8.7	8.2	4.2	7.3
1983	6.5	11.0	2.4	3.6	11.4
1984	6.1	10.6	1.0	3.3	na
1985	5.2	12.8	1.7	3.3	15.5
1986	1.0	13.2	2.4	3.5	26.4
1987	0.8	8.0	1.3	2.4	13.8
1988	0.3	6.1	0.7	2.2	7.9
1989	0.2	3.1	3.0	1.6	5.3
1990	0.2	4.6	7.3	0.9	4.2
1991	0.1	7.2	4.2	0.6	10.7
1992	0.1	4.6	3.1	15.8	14.3
1993	0.1	0.5	1.8	0.8	10.4
1994	1.0	0.5	0.9	0.4	5.3
1995	0.8	0.5	1.4	0.6	21.7
1996	0.5	0.3	0.2	0.3	7.3

Sources: U.S. Department of Agriculture, Forest Service, *Forest Insect and Disease Conditions in the United States, 1979-1983* (USDA, FS, Washington, DC, 1985).

--, *Forest Insect and Disease Conditions in the United States* (USDA, FS, Washington, DC, annual from 1986).

Notes: na = not available. Acreage for spruce budworm from 1991 forward includes spruce budworm in Alaska since it is the same species of budworm as in the eastern United States (i.e., it is not the western spruce budworm). Mountain pine beetle data for 1992 includes 15.2 million acres in California not previously reported.

Table 7.19 Conservation Reserve Program Activity, 1986-1996

Event	Number of acres	Average rental payment	Average erosion reduction
	millions	*$/acre/year*	*tons/acre/year*
Signup #1, March 1986[1]	0.75	42.06	26
Signup #2, May 1986	2.77	44.05	27
Signup #3, August 1986[2]	4.70	46.96	25
Signup #4, February 1987[3]	9.48	51.19	19
Signup #5, July 1987	4.44	48.03	17
Signup #6, February 1988[4]	3.38	47.90	18
Signup #7, July 1988	2.60	49.71	17
Signup #8, February 1989[5]	2.46	51.04	14
Signup #9, July-August 1989	3.33	50.99	14
Signup #10, March 1991[6]	0.48	53.66	17
Signup #11, July 1991	1.00	59.37	15
Signup #12, June 1992	1.03	62.98	16
Early-out #1, May 1995	-0.70	58.51	20
Signup #13, September 1995[7]	0.62	53.93	10
Contract Expirations, 1995	-0.13	46.36	26
Early-out #2, 1996	-0.77	57.41	17
Contract Expirations, 1996	-0.96	60.51	22
Net enrollment 1996[8]	32.96	49.20	19

Source: U.S. Department of Agriculture, Economic Research Service, based on CRP contract data.

Notes: [1]Eligible acres includes cropland in land capability classes II-V eroding at least three times greater than the tolerance rate, or any cropland in land capability classes VI-VIII. [2]Eligible acres expanded to include cropland in land capability classes II-V eroding at least two times the tolerance rate and having gully erosion. [3]Eligible acres expanded to include cropland eroding above the tolerance rate with an erodibility index of 8 or greater. [4]Eligible acres expanded to include cropland in land capability classes II-V eroding at least two times the tolerance rate if planted in trees. Eligibility also extended to cropland areas 66-99 feet wide adjacent to permanent waterbodies for placement of filter strip. [5]Eligible acres expanded to include cropped wetlands and cropland areas subject to scour erosion. [6]Eligible acres expanded to include cropland devoted to easement practices, cropland in state water quality areas, cropland in conservation priority areas, and cropland within established wellhead protection areas. Farmed wetlands, even if otherwise eligible, were ineligible for enrollment. [7]Eligible acres included fields with an average erodibility index greater than or equal to 8, cropland areas with evidence of scour erosion caused by out-of-bank water flows and flooding occurring in at least one out of 10 years, wellhead protection areas identified by EPA, any cropland determined suitable for riparian buffer/filter by NRCS, small farmed wetlands contained in and part of a field that was otherwise eligible, or any cropland located in the Chesapeake Bay region watershed, the Great Lakes region watershed, the Long Island Sound watershed, other areas designated as conservation priority areas in CRP signup #12, and newly approved state priority areas. [8]Net after subtracting 1.5 million acres terminated by producers prior to 1995 early-out.

Pollution Prevention

Table 8.1 U.S. Municipal Solid Waste Trends, 1960-1996

Year	Gross discards	Recovery for recycling	Recovery for composting	Net discards	Com-bustion	Discards to landfills	Per capita waste generation
			million tons				*lbs/day*
1960	88.12	5.61	**	82.51	27.00	55.51	2.68
1970	121.06	8.02	**	113.04	25.10	87.94	3.25
1980	151.64	14.52	**	137.12	13.70	123.42	3.66
1990	205.21	29.38	4.20	171.63	31.90	139.73	4.51
1996	209.66	46.01	11.32	152.33	36.09	116.24	4.33

Source: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. *Characterization of Municipal Solid Waste in the United States: 1997 Update,* Table 34, p. 119 and Table B-2, p. 162 (EPA, Washington, DC, 1998).

Note: **Negligible (less than 500,000 tons).

Table 8.2 U.S. Municipal Solid Waste Trends by Waste Type, 1960-1996

	Paper		Glass		Metals*		Aluminum		Plastics		Rubber and leather	
Year	Gen era-tion	Re-cov-ery	Gen era-tion	Re-cov-ery	Gen era-tion	Re-cov-ery	Gen era-tion	Re-cov-ery	Gen era-tion	Re-cov-ery	Gen era-tion	Re-cov-ery
						million tons						
1960	29.99	5.08	6.72	0.10	10.48	0.05	0.34	**	0.39	**	1.84	0.33
1970	44.31	6.77	12.74	0.16	13.03	0.48	0.80	0.01	2.90	**	2.97	0.25
1980	55.16	11.74	15.13	0.75	13.78	0.91	1.73	0.31	6.83	0.02	4.20	0.13
1990	72.73	20.23	13.10	2.62	13.74	3.31	2.81	1.01	17.13	0.37	5.79	0.37
1996	79.93	32.61	12.35	3.17	13.09	5.34	2.98	1.02	19.76	1.06	6.20	0.59

	Textiles		Wood		Other		Food		Yard		Miscel-laneousr	
Year	Gen era-tion	Re-cov-ery	Gen era-tion	Re-cov-ery	Gen era-tion	Re-cov-ery	Gen era-tion	Re-cov-ery	Gen era-tion	Re-cov-ery	Gen era-tion	Re-cov-ery
						million tons						
1960	1.76	0.05	3.03	**	0.07	**	12.20	**	20.00	**	1.30	**
1970	2.04	0.06	3.72	**	0.77	0.30	12.80	**	23.20	**	1.78	**
1980	2.53	0.16	7.01	**	2.52	0.50	20.00	**	27.50	**	2.25	**
1990	5.81	0.67	12.21	0.13	3.19	0.68	13.20	**	35.00	4.20	2.90	**
1996	7.76	0.95	10.84	0.49	3.69	0.78	21.90	0.52	29.75	10.80	3.20	**

Source: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. *Characterization of Municipal Solid Waste in the United States: 1997 Update,* Table 1, p. 27 and Table 2, p. 28 (EPA, Washington, DC, 1998).

Notes: *Ferrous and other nonferrous metals except aluminum. **Negligible (less than 5,000 tons). Other includes electrolytes in batteries and disposable paper diapers.

Table 8.3 U.S. Inventory of Low-level Nuclear Waste, 1965-1996, High-level Nuclear Waste, 1980-1996, and Spent Nuclear Fuel, 1980-1996

	Commercial low-level nuclear waste shipped for disposal				
Year	Volume	Radioactivity	Year	Volume	Radioactivity
	million cubic meters	*million curies*		*million cubic meters*	*million curies*
1965	0.034	0.273	1981	0.852	4.483
1966	0.049	0.355	1982	0.929	4.568
1967	0.071	0.428	1983	1.007	4.732
1968	0.091	0.529	1984	1.083	4.954
1969	0.112	0.687	1985	1.160	5.282
1970	0.138	0.855	1986	1.213	5.059
1971	0.169	2.000	1987	1.265	4.924
1972	0.208	2.287	1988	1.306	4.793
1973	0.255	2.732	1989	1.352	5.284
1974	0.309	2.754	1990	1.384	4.979
1975	0.367	3.040	1991	1.423	5.272
1976	0.442	3.268	1992	1.472	5.708
1977	0.514	3.765	1993	1.495	5.709
1978	0.593	4.383	1994	1.519	5.841
1979	0.676	4.539	1995	1.538	5.376
1980	0.768	4.547	1996	1.558	5.020

	High-level nuclear waste at DOE/defense and commercial sites			Spent nuclear fuel at commercial sites	
Year	Volume	Radioactivity	Year	Volume	Radioactivity
	thousand cubic meters	*million curies*		*metric tons initial heavy metal*	*million curies*
1980	329.7	1,362.6	1980	6,558	10,137
1981	339.3	1,628.5	1981	7,692	10,552
1982	342.0	1,369.4	1982	8,690	10,400
1983	352.7	1,299.7	1983	9,952	12,088
1984	363.5	1,355.2	1984	11,291	13,222
1985	357.1	1,459.5	1985	12,684	14,228
1986	365.9	1,419.0	1986	14,139	15,308
1987	381.4	1,303.1	1987	15,844	17,292
1988	384.9	1,206.7	1988	17,497	18,207
1989	381.1	1,113.9	1989	19,410	20,209
1990	398.5	1,050.8	1990	21,547	22,910
1991	396.5	1,007.4	1991	23,406	22,825
1992	398.3	1,081.2	1992	25,697	26,136
1993	403.5	1,045.3	1993	27,929	27,516
1994	378.4	958.8	1994	29,811	26,661
1995	373.4	915.4	1995	32,022	na
1996	371.9	864.8	1996	34,300	na

Source: U.S. Department of Energy, Office of Environmental Management, *Integrated Data Base Report - 1995: U.S. Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics* (DOE, EM, Washington, DC, December 1996).

Notes: na = not available. Volumes and radioactivity are cumulative. Radioactivity added each year is decayed. Data for 1996 are projections.

Table 8.4 U.S. Superfund Inventory and NPL Sites, 1980-1996

Year	Superfund	NPL
	number of sites, cumulative	
1980	8,689	0
1981	13,893	0
1982	14,697	160
1983	16,023	551
1984	18,378	547
1985	22,238	864
1986	24,940	906
1987	27,274	967
1988	29,809	1,195
1989	31,650	1,254
1990	33,371	1,236
1991	35,108	1,245
1992	36,869	1,275
1993	38,169	1,321
1994	39,099	1,360
1995	15,622	1,374
1996	12,781	1,210

Source: U.S. Environmental Protection Agency, unpublished, Washington, DC, 1997.

Notes: NPL = National Priorities List. The 1995 data reflect the removal of over 24,000 sites from the Superfund inventory as part of EPA's Brownfields initiative.

Table 8.5 U.S. Production of Selected Ozone-depleting Chemicals, 1958-1994

Year	CFC-11	CFC-12	HCFC-22	CFC-113	CH_3CCl_3
		thousand metric tons of CFC-11 equivalent			
1958	22.9	59.6	0.76	0.0	0.0
1959	27.4	71.3	0.83	0.0	0.0
1960	32.8	75.5	0.91	1.6	0.0
1961	41.2	78.7	1.03	2.4	0.0
1962	56.6	94.3	1.12	3.2	0.0
1963	63.6	98.6	1.23	3.6	0.0
1964	67.4	103.4	1.34	4.3	0.0
1965	77.3	123.1	1.46	5.1	0.0
1966	77.3	129.9	1.59	5.8	0.0
1967	82.7	140.5	1.78	7.6	13.7
1968	92.7	147.7	1.96	9.1	14.6
1969	108.2	166.8	2.14	10.9	15.6
1970	110.9	170.3	2.28	13.1	16.6
1971	117.0	176.7	2.55	15.6	17.4
1972	135.9	199.2	2.80	18.2	18.2
1973	151.4	221.7	3.09	21.4	19.0
1974	154.7	221.1	3.21	23.2	19.9
1975	122.3	178.3	2.99	24.8	20.8
1976	116.2	178.3	3.85	29.7	24.8
1977	96.4	162.3	4.07	36.2	28.8
1978	87.9	148.4	4.67	41.0	29.2
1979	75.8	133.3	4.78	47.0	32.5
1980	71.7	133.8	5.16	36.7	31.4
1981	73.8	147.6	5.71	38.6	27.9
1982	63.7	117.0	3.95	40.0	27.0
1983	73.1	134.3	5.35	42.2	26.6
1984	83.9	152.7	5.76	60.2	30.6
1985	79.7	136.9	5.34	65.8	39.4
1986	91.6	146.2	6.15	69.2	29.6
1987	89.7	151.9	6.23	72.3	31.5
1988	113.0	187.7	7.54	79.2	32.8
1989	83.3	141.2	7.24	80.4	35.5
1990	61.0	94.6	6.94	55.9	36.4
1991	44.9	71.3	7.13	47.2	29.2
1992	45.5	73.9	7.48	28.5	31.4
1993	32.8	83.7	6.61	11.4	20.5
1994	na	57.5	6.93	na	na

Source: U.S. International Trade Commission, *Synthetic Organic Chemicals, United States Production and Sales* (GPO, Washington, DC, annual).

Notes: CFC-11 = Trichlorofluoromethane. CFC-12 = Dichlorodifluoromethane. HCFC-22 = Chlorodifluoromethane. CFC-113 = Trichlorotrifluoroethane. CH_3CCL_3 = Trichloroethane or methyl chloroform. This series ended after the publication of the 1994 data.

Table 8.6 U.S. Toxics Release Inventory Releases and Transfers, 1988 and 1993-1995

	1988	1993	1994	1995	1988-1995 change
	billion pounds				*percent*
Releases					
Air Emissions	2.177	1.317	1.264	1.173	-46.1
Fugitive air	0.680	0.376	0.350	0.302	-55.6
Point source air	1.497	0.941	0.914	0.870	-41.9
Surface water	0.164	0.195	0.040	0.036	-78.2
Underground injection	0.162	0.113	0.114	0.137	-15.6
On-site land releases	0.459	0.268	0.283	0.265	-42.2
Total releases	2.962	1.894	1.701	1.610	-45.6
Transfers					
To recycling	na	1.937	2.164	2.141	na
To energy-recovery	na	0.445	0.455	0.486	na
To treatment	0.396	0.208	0.217	0.235	-36.3
To POTWs	0.255	0.163	0.158	0.155	-39.3
To disposal	0.386	0.251	0.259	0.255	-34.0
To other	0.043	0.002	0.003	0.002	na
Total transfers	1.053	3.006	3.263	3.274	na
Total releases and transfers	4.015	4.900	4.964	4.884	na

Source: U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics, *1995 Toxics Release Inventory: Public Data Release* (EPA, Washington, DC, 1997).

Notes: Data do not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid. Transfers for recycling or energy recovery were not required to be reported in 1988. For 1993, 1994, and 1995, other includes transfers reported with no waste management codes or invalid codes. For 1988, other includes transfers reported with no waste management codes, invalid codes, or codes not required to be reported in 1988. na = not available.

Table 8.7 U.S. Toxics Release Inventory Releases and Transfers by Industry, 1988 and 1993-1995

Industry	1988	1993	1994	1995	1988-1995 change
		million pounds			*percent*
Food	7.289	7.528	6.160	5.281	-27.5
Tobacco	0.342	0.137	0.135	0.095	-72.2
Textile	34.154	17.450	15.773	14.990	-56.1
Apparel	0.922	1.003	1.311	1.232	33.6
Lumber	31.050	29.264	32.345	29.497	-5.0
Furniture	61.363	54.276	51.525	40.712	-33.7
Paper	201.459	146.849	180.646	176.176	-12.6
Printing	60.694	36.148	34.313	31.375	-48.3
Chemical	979.850	679.468	495.871	492.005	-49.8
Petroleum	67.649	49.334	42.535	40.190	-40.6
Plastics	146.535	119.295	112.865	100.928	-31.1
Leather	11.928	4.473	3.620	2.649	-77.8
Stone/clay/glass	23.923	12.161	10.836	12.648	-47.1
Primary metals	471.664	281.310	273.635	291.697	-38.2
Fabr. metals	130.537	88.873	86.551	78.245	-40.1
Machinery	59.463	26.566	23.576	19.293	-67.6
Electrical equip.	115.408	32.723	28.850	23.445	-79.7
Transportation	188.630	121.900	118.900	104.852	-44.4
Measure/photo.	47.210	20.255	13.540	12.202	-74.2
Miscellaneous	28.471	15.279	13.828	11.188	-60.7
Multiple codes	283.311	131.240	137.651	114.132	-59.7
No codes	10.499	18.029	16.394	7.617	-27.5
Total	2,962.349	1,893.560	1,700.861	1,610.448	-45.6

Source: U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics, *1995 Toxics Release Inventory: Public Data Release* (EPA, Washington, DC, 1997).

Table 8.8 U.S. Toxics Release Inventory Releases and Transfers by State, 1988 and 1993-1995

State	1988	1993	1994	1995	1988-1995 change
		million pounds			*percent*
Alabama	103.599	90.151	84.093	88.803	-14.3
Alaska	3.713	2.104	1.095	2.158	-41.9
Arizona	65.699	11.813	30.504	33.525	-49.0
Arkansas	35.988	23.853	27.568	22.863	-36.5
California	90.479	41.417	33.852	26.460	-70.8
Colorado	13.222	3.958	3.726	3.190	-75.9
Connecticut	32.536	12.393	10.062	7.201	-77.9
Delaware	6.925	3.914	3.642	2.822	-59.2
District of Columbia	<0.001	0.000	0.029	0.030	5,843.0
Florida	59.369	45.794	70.223	50.666	-14.7

See next page for continuation of table.

Table 8.8 U.S. Toxics Release Inventory Releases and Transfers by State, 1988 and 1993-1995 (continued)

State	1988	1993	1994	1995	1988-1995 change
		million pounds			*percent*
Georgia	67.892	36.394	41.140	36.503	-46.2
Hawaii	0.834	0.499	0.514	0.398	-52.3
Idaho	7.283	1.870	2.393	2.625	-64.0
Illinois	107.659	69.935	71.707	67.396	-37.4
Indiana	160.767	78.980	65.019	62.657	-61.0
Iowa	38.598	22.572	21.081	19.184	-50.3
Kansas	28.564	16.636	15.843	14.582	-49.0
Kentucky	49.698	30.870	29.578	28.013	-43.6
Louisiana	241.889	263.611	113.098	119.733	-50.5
Maine	14.673	8.076	6.055	5.821	-60.3
Maryland	17.996	10.333	10.611	10.106	-43.8
Massachusetts	26.065	10.045	8.581	6.937	-73.4
Michigan	94.915	71.910	75.924	54.148	-43.0
Minnesota	54.343	22.078	19.589	16.771	-69.1
Mississippi	54.595	42.546	41.332	38.178	-30.1
Missouri	85.229	47.557	44.176	39.813	-53.3
Montana	35.587	44.485	46.348	42.615	19.7
Nebraska	13.509	9.498	7.989	7.303	-45.9
Nevada	2.288	2.946	3.002	3.175	38.8
New Hampshire	12.279	3.185	2.235	1.840	-85.0
New Jersey	36.331	14.070	12.541	10.882	-70.0
New Mexico	30.246	22.938	17.132	17.869	-40.9
New York	87.704	33.468	29.394	25.618	-70.8
North Carolina	121.477	76.501	77.888	69.164	-43.1
North Dakota	1.130	0.918	0.977	1.183	4.7
Ohio	157.020	95.508	90.806	94.078	-40.1
Oklahoma	28.263	14.964	12.719	12.862	-54.5
Oregon	17.836	13.985	15.833	17.746	-0.5
Pennsylvania	97.147	43.982	44.628	40.237	-58.6
Puerto Rico	12.669	10.453	9.073	8.370	-33.9
Rhode Island	6.321	3.382	3.026	2.556	-59.6
South Carolina	60.584	44.670	42.442	44.180	-27.1
South Dakota	2.312	1.891	1.998	1.757	-24.0
Tennessee	115.218	95.015	87.016	88.368	-23.3
Texas	302.813	197.101	187.319	188.296	-37.8
Utah	123.311	84.202	65.671	68.622	-44.4
Vermont	1.594	0.616	0.607	0.511	-68.0
Virgin Islands	1.848	1.579	0.961	1.186	-35.8
Virginia	109.750	43.669	42.088	39.248	-64.2
Washington	25.877	16.707	19.863	20.959	-19.0
West Virginia	31.331	18.493	17.898	15.861	-49.4
Wisconsin	48.633	29.233	29.095	24.266	-50.1
Wyoming	16.739	0.794	0.875	1.110	-93.4
Total	2,962.349	1,893.560	1,700.861	1,610.448	-45.6

Source: U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics, *1995 Toxics Release Inventory: Public Data Release* (EPA, Washington, DC, 1997).

Table 8.9 Contaminant Levels in Herring Gull Eggs from Great Lakes Colonies, 1974-1996

Year	Lake Superior				
	DDE	Dieldrin	Mirex	HCB	PCBs
	parts per million in whole egg samples, wet weight				
1974	16.59	0.51	1.04	0.26	62.08
1975	23.10	0.38	0.96	0.18	76.24
1976	na	na	na	na	na
1977	11.92	0.38	0.33	0.24	55.22
1978	9.64	0.39	0.28	0.12	41.57
1979	6.83	0.60	0.26	0.14	58.74
1980	3.67	0.34	0.13	0.08	25.58
1981	5.74	0.44	0.14	0.12	33.84
1982	6.29	0.39	0.37	0.08	34.74
1983	3.17	0.33	0.15	0.05	21.42
1984	2.94	0.36	0.12	0.05	16.91
1985	3.13	0.32	0.11	0.05	15.89
1986	3.22	0.34	0.11	0.05	14.10
1987	2.52	0.20	0.10	0.04	12.35
1988	2.94	0.34	0.06	0.05	13.43
1989	2.50	0.34	0.07	0.05	15.09
1990	2.64	0.30	0.06	0.03	11.62
1991	3.60	0.27	0.07	0.04	14.09
1992	3.69	0.40	0.07	0.05	13.95
1993	4.09	0.19	0.08	0.03	15.70
1994	2.39	0.15	0.10	0.03	12.30
1995	2.49	0.11	0.08	0.02	11.15
1996	2.88	0.15	0.08	0.04	12.60

See next page for continuation of table.

Table 8.9 Contaminant Levels in Herring Gull Eggs from Great Lakes Colonies, 1974-1996 (continued)

Year	Lake Michigan				
	DDE	Dieldrin	Mirex	HCB	PCBs
	parts per million in whole egg samples, wet weight				
1974	na	na	na	na	na
1975	na	na	na	na	na
1976	33.40	0.82	0.36	0.14	118.42
1977	29.25	0.68	0.14	0.24	107.80
1978	22.36	0.87	0.21	0.12	90.74
1979	na	na	na	na	na
1980	12.17	0.70	0.10	0.09	57.83
1981	na	na	na	na	na
1982	15.86	0.81	0.09	0.09	65.41
1983	6.46	0.61	0.05	0.05	30.27
1984	7.85	0.53	0.09	0.06	31.47
1985	6.98	0.47	0.12	0.05	31.94
1986	7.48	0.38	0.07	0.07	27.25
1987	3.95	0.33	0.06	0.04	16.58
1988	5.04	0.55	0.03	0.04	19.14
1989	4.74	0.54	0.04	0.04	21.00
1990	8.12	0.54	0.06	0.05	32.19
1991	10.52	0.34	0.12	0.05	31.27
1992	6.71	0.41	0.04	0.04	20.25
1993	na	na	na	na	na
1994	10.10	0.34	0.08	0.05	32.85
1995	6.38	0.19	0.05	0.03	23.30
1996	6.10	0.21	0.08	0.04	22.70

See next page for continuation of table.

Table 8.9 Contaminant Levels in Herring Gull Eggs from Great Lakes Colonies, 1974-1996 (continued)

Year	Lake Huron				
	DDE	Dieldrin	Mirex	HCB	PCBs
	parts per million in whole egg samples, wet weight				
1974	17.40	0.50	1.34	0.38	71.01
1975	14.03	0.36	0.51	0.21	42.67
1976	na	na	na	na	na
1977	16.17	0.54	0.44	0.36	70.28
1978	6.53	0.22	0.21	0.11	32.38
1979	2.30	0.30	0.19	0.10	28.66
1980	2.71	0.24	0.11	0.07	20.41
1981	3.82	0.24	0.26	0.07	25.39
1982	4.43	0.28	0.48	0.08	34.29
1983	2.74	0.22	0.15	0.05	18.28
1984	2.56	0.22	0.34	0.07	19.95
1985	2.77	0.30	0.22	0.06	16.90
1986	2.05	0.21	0.12	0.05	12.00
1987	1.32	0.22	0.08	0.02	8.33
1988	1.40	0.22	0.07	0.04	8.83
1989	1.57	0.20	0.09	0.03	10.19
1990	1.86	0.14	0.11	0.03	11.34
1991	1.97	0.16	0.11	0.03	10.00
1992	2.36	0.16	0.05	0.05	10.20
1993	3.18	0.19	0.06	0.03	10.95
1994	2.19	0.13	0.10	0.03	11.25
1995	1.60	0.10	0.06	0.03	8.95
1996	2.01	0.13	0.14	0.08	10.05

See next page for continuation of table.

Table 8.9 Contaminant Levels in Herring Gull Eggs from Great Lakes Colonies, 1974-1996 (continued)

	Lake Erie				
Year	DDE	Dieldrin	Mirex	HCB	PCBs
	parts per million in whole egg samples, wet weight				
1974	7.13	0.35	0.64	0.29	72.46
1975	7.41	0.33	0.32	0.19	62.30
1976	na	na	na	na	na
1977	7.49	0.40	0.45	0.37	68.70
1978	4.29	0.24	0.20	0.09	44.43
1979	3.10	0.25	0.17	0.11	48.44
1980	2.98	0.21	0.18	0.09	46.38
1981	3.90	0.22	0.25	0.09	56.49
1982	3.07	0.25	0.13	0.08	58.89
1983	2.39	0.20	0.17	0.05	37.31
1984	3.23	0.33	0.22	0.06	46.20
1985	2.83	0.19	0.14	0.06	38.41
1986	2.77	0.23	0.14	0.06	33.35
1987	1.77	0.14	0.12	0.03	23.16
1988	2.07	0.17	0.10	0.05	27.50
1989	2.69	0.17	0.18	0.05	39.21
1990	2.01	0.10	0.11	0.03	30.09
1991	2.12	0.08	0.07	0.02	26.55
1992	1.68	0.13	0.05	0.04	24.45
1993	1.49	0.10	0.07	0.02	21.70
1994	1.55	0.08	0.08	0.03	22.90
1995	1.21	0.08	0.07	0.03	23.55
1996	1.25	0.06	0.09	0.03	15.50

See next page for continuation of table.

Table 8.9 Contaminant Levels in Herring Gull Eggs from Great Lakes Colonies, 1974-1996 (continued)

	Lake Ontario				
Year	DDE	Dieldrin	Mirex	HCB	PCBs
	parts per million in whole egg samples, wet weight				
1974	22.30	0.47	6.99	0.58	152.37
1975	22.80	0.29	4.70	0.33	143.11
1976	na	na	na	na	na
1977	14.88	0.39	2.48	0.80	102.50
1978	10.65	0.26	1.59	0.32	72.43
1979	8.94	0.21	1.89	0.21	69.60
1980	7.62	0.19	1.65	0.17	56.43
1981	11.00	0.28	2.67	0.24	78.90
1982	10.04	0.28	3.05	0.16	62.90
1983	4.78	0.18	1.43	0.08	42.59
1984	6.26	0.21	1.87	0.12	51.11
1985	6.02	0.15	1.47	0.07	35.58
1986	4.41	0.16	1.10	0.07	27.86
1987	2.60	0.13	0.68	0.04	16.48
1988	4.25	0.15	0.82	0.07	23.53
1989	5.28	0.22	1.15	0.07	32.45
1990	3.36	0.10	0.64	0.03	18.44
1991	3.53	0.14	0.58	0.03	17.05
1992	5.01	0.13	0.77	0.05	21.20
1993	5.27	0.13	0.82	0.04	21.05
1994	3.83	0.13	0.80	0.04	19.70
1995	2.23	0.05	0.57	0.02	13.60
1996	3.03	0.10	0.68	0.04	16.15

Source: Environment Canada, Canadian Wildlife Service, Canada Centre for Inland Waters, Organochlorine Contaminant Concentrations in Herring Gull Eggs from Great Lakes Colonies, unpublished, Burlington, ON, 1996.

Notes: DDE = Derivative of Dichloro-diphenyl-trichloro ethane (DDT). HCB = Hexachloro-benzene. PCBs = Polychlorinated biphenyls. na = not available. Data for Lake Michigan for 1996 are based on only one count per sampling site.

Table 8.10 Pesticide Residues in U.S. Domestic Surveillance Food Samples by Commodity Group, 1978-1996

Year	Commodity group						
	Grains & grain products	Milk, dairy products & eggs	Fish, shellfish & meats	Fruits	Vegetables	Other	Total
	percentage of samples without residues found						
1978	46	57	20	52	66	58	53
1979	46	53	19	42	65	53	51
1980	48	64	29	47	60	64	54
1981	57	68	23	44	63	66	56
1982	58	66	28	51	64	68	59
1983	58	68	39	48	59	69	57
1984	46	69	25	62	67	69	63
1985	48	78	35	64	66	78	65
1986	40	79	32	43	61	52	56
1987	43	76	27	50	63	63	58
1988	51	81	28	49	65	72	60
1989	56	87	35	56	68	80	65
1990	54	91	32	51	62	79	60
1991	58	78	58	49	68	81	64
1992	61	94	48	51	69	81	65
1993	66	94	53	70	39	83	64
1994	61	93	59	44	66	88	63
1995	33	100	80	48	48	80	54
1996	53	97	62	46	64	75	64

Source: Food and Drug Administration, *Pesticide Program Residues Monitoring 1996* (Washington, DC: FDA, January 1998), and earlier annual reports.

Notes: Domestic food samples are collected as close as possible to the point of production. Fresh produce is analyzed as the unwashed whole, raw commodity. Although a percentage of samples contain pesticide residues, the percent of samples with over-tolerance residues (as set by EPA) is low. Between 1973 and 1986; 3 percent of samples were classed as violative; between 1987 and 1996 less than 1 percent were violative.

Energy

Table 9.1 Proved Reserves of Liquid and Gaseous Hydrocarbons in the United States, 1977-1996

Year	Crude oil	Natural gas	Natural gas liquids
	billion barrels	*trillion cubic feet*	*billion barrels*
1977	31.8	207.4	na
1978	31.4	208.0	6.8
1979	29.8	201.0	6.6
1980	29.8	199.0	6.7
1981	29.4	201.7	7.1
1982	27.9	201.5	7.2
1983	27.7	200.5	7.9
1984	28.4	197.5	7.6
1985	28.4	193.4	7.9
1986	26.9	191.6	8.2
1987	27.3	187.2	8.1
1988	26.8	168.0	8.2
1989	26.5	167.1	7.8
1990	26.3	169.3	7.6
1991	24.7	167.1	7.5
1992	23.7	165.0	7.5
1993	23.0	162.4	7.2
1994	22.5	163.8	7.2
1995	22.4	165.1	7.4
1996	22.0	166.5	7.8

Source: U.S. Department of Energy, Energy Information Administration, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 1996 Annual Report*, Table 1, p. 3 and Appendix D, Historical Reserves Statistics, DOE/EIA-0216(96) (GPO, Washington, DC, 1997).

Table 9.2 U.S. Energy Production by Source, 1960-1996

Year	Coal	Crude oil & NGPL	Natural gas	Hydroelectric power	Nuclear	Geothermal & other renewables	Total
				quadrillion Btu			
1960	10.82	16.40	12.66	1.61	0.01	<0.01	41.49
1961	10.45	16.76	13.10	1.66	0.02	<0.01	41.99
1962	10.90	17.12	13.72	1.82	0.03	<0.01	43.58
1963	11.85	17.68	14.51	1.77	0.04	<0.01	45.85
1964	12.52	17.97	15.30	1.89	0.04	<0.01	47.72
1965	13.06	18.40	15.78	2.06	0.04	<0.01	49.34
1966	13.47	19.56	17.01	2.06	0.06	<0.01	52.17
1967	13.83	20.83	17.94	2.35	0.09	0.01	55.04
1968	13.61	21.63	19.07	2.35	0.14	0.01	56.81
1969	13.86	21.98	20.45	2.65	0.15	0.01	59.10
1970	14.61	22.91	21.67	2.63	0.24	0.01	62.07
1971	13.19	22.58	22.28	2.82	0.41	0.01	61.29
1972	14.09	22.64	22.21	2.86	0.58	0.03	62.42
1973	13.99	22.06	22.19	2.86	0.91	0.04	62.06
1974	14.07	21.05	21.21	3.18	1.27	0.05	60.84
1975	14.99	20.10	19.64	3.15	1.90	0.07	59.86
1976	15.65	19.59	19.48	2.98	2.11	0.08	59.89
1977	15.76	19.78	19.57	2.33	2.70	0.09	60.22
1978	14.91	20.68	19.49	2.94	3.02	0.06	61.10
1979	17.54	20.39	20.08	2.93	2.78	0.09	63.80
1980	18.60	20.50	19.91	2.90	2.74	0.11	64.76
1981	18.38	20.45	19.70	2.76	3.01	0.12	64.42
1982	18.64	20.50	18.32	3.27	3.13	0.11	63.96
1983	17.25	20.58	16.59	3.53	3.20	0.13	61.28
1984	19.72	21.12	18.01	3.39	3.55	0.17	65.96
1985	19.33	21.23	16.98	2.97	4.15	0.21	64.87
1986	19.51	20.53	16.54	3.07	4.47	0.23	64.35
1987	20.14	19.89	17.14	2.63	4.91	0.25	64.95
1988	20.74	19.54	17.60	2.33	5.66	0.24	66.10
1989	21.35	18.28	17.85	2.77	5.68	0.22	66.13
1990	22.46	17.75	18.36	2.98	6.16	3.06	70.76
1991	21.59	18.01	18.23	2.94	6.58	3.08	70.42
1992	21.59	17.59	18.38	2.57	6.61	3.24	69.96
1993	20.22	16.90	18.58	2.84	6.52	3.25	68.32
1994	22.07	16.49	19.35	2.64	6.84	3.30	70.69
1995	21.98	16.33	19.10	3.18	7.18	3.36	71.12
1996	22.65	16.27	19.53	3.56	7.17	3.47	72.61

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 1.2, p. 7, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: NGPL = Natural gas plant liquids. Hydroelectric power includes hydroelectric pumped storage which represents total pumped storage facility production minus energy used for pumping. Other renewables include electricity produced from wood, waste, wind, photovoltaic, and solar thermal sources. There is a discontinuity in this time series between 1989 and 1990 due to expanded coverage of nonelectric utility use of renewable energy beginning in 1990. Previous-year data may have been revised. Current-year data are preliminary and may be revised in future publications.

Table 9.3 U.S. Coal Production by Rank, Mining Method, and Location, 1960-1996

	Rank				Mining method		Location		
Year	Bitum-inous	Subbi-tuminous	Lignite	Anthra-cite	Under-ground	Surface	West	East	Total
	million tons								
1960	415.5	i	i	18.8	292.6	141.7	21.3	413.0	434.3
1961	403.0	i	i	17.4	279.6	140.9	21.8	398.6	420.4
1962	422.1	i	i	16.9	287.9	151.1	21.4	417.6	439.0
1963	458.9	i	i	18.3	309.0	168.2	23.7	453.5	477.2
1964	487.0	i	i	17.2	327.7	176.5	25.7	478.5	504.2
1965	512.1	i	i	14.9	338.0	189.0	27.4	499.5	527.0
1966	533.9	i	i	12.9	342.6	204.2	28.0	518.8	546.8
1967	552.6	i	i	12.3	352.4	212.5	28.9	536.0	564.9
1968	545.2	i	i	11.5	346.6	210.1	29.7	527.0	556.7
1969	547.2	8.3	5.0	10.5	349.2	221.7	33.3	537.7	571.0
1970	578.5	16.4	8.0	9.7	340.5	272.1	44.9	567.8	612.7
1971	521.3	22.2	8.7	8.7	277.2	283.7	51.0	509.9	560.9
1972	556.8	27.5	11.0	7.1	305.0	297.4	64.3	538.2	602.5
1973	543.5	33.9	14.3	6.8	300.1	298.5	76.4	522.1	598.6
1974	545.7	42.2	15.5	6.6	278.0	332.1	91.9	518.1	610.0
1975	577.5	51.1	19.8	6.2	293.5	361.2	110.9	543.7	654.6
1976	588.4	64.8	25.5	6.2	295.5	389.4	136.1	548.8	684.9
1977	581.0	82.1	28.2	5.9	266.6	430.6	163.9	533.3	697.2
1978	534.0	96.8	34.4	5.0	242.8	427.4	183.0	487.2	670.2
1979	612.3	121.5	42.5	4.8	320.9	460.2	221.4	559.7	781.1
1980	628.8	147.7	47.2	6.1	337.5	492.2	251.0	578.7	829.7
1981	608.0	159.7	50.7	5.4	316.5	507.3	269.9	553.9	823.8
1982	620.2	160.9	52.4	4.6	339.2	499.0	273.9	564.3	838.1
1983	568.6	151.0	58.3	4.1	300.4	481.7	274.7	507.4	782.1
1984	649.5	179.2	63.1	4.2	352.1	543.9	308.3	587.6	895.9
1985	613.9	192.7	72.4	4.7	350.8	532.8	324.9	558.7	883.6
1986	620.1	189.6	76.4	4.3	360.4	529.9	325.9	564.4	890.3
1987	636.6	200.2	78.4	3.6	372.9	545.9	336.8	581.9	918.8
1988	638.1	223.5	85.1	3.6	382.2	568.1	370.7	579.6	950.3
1989	659.8	231.2	86.4	3.3	393.8	586.9	381.7	599.0	980.7
1990	693.2	244.3	88.1	3.5	424.5	604.5	398.9	630.2	1,029.1
1991	650.7	255.3	86.5	3.4	407.2	588.8	404.7	591.3	996.0
1992	651.9	252.1	90.1	3.5	407.2	590.3	409.0	588.6	997.5
1993	576.7	274.9	89.5	4.3	351.1	594.4	429.2	516.2	945.4
1994	640.3	300.5	88.1	4.6	399.1	634.4	467.2	566.3	1,033.5
1995	613.8	328.0	86.5	4.7	396.2	636.7	488.7	544.2	1,033.0
1996	644.9	322.2	91.6	4.2	407.7	655.2	505.1	557.8	1,062.9

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 7.2, p. 209, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: i = included in bituminous coal. Location refers to east and west of the Mississippi River. Totals may not agree with sum of components due to independent rounding. Previous-year data may have been revised. Current-year data are estimates and may be revised in future publications.

Table 9.4 U.S. Petroleum Production and Imports, 1942-1996

Year	Production			Total imports	Year	Production			Total imports
	Crude oil	NGPL	Total			Crude oil	NGPL	Total	
	million barrels per day					*million barrels per day*			
1942	3.80	0.23	4.03	0.03	1970	9.64	1.66	11.30	3.42
1943	4.12	0.24	4.37	0.38	1971	9.46	1.69	11.16	3.93
1944	4.60	0.27	4.97	0.12	1972	9.44	1.74	11.18	4.74
1945	4.69	0.31	5.00	0.20	1973	9.21	1.74	10.95	6.26
1946	4.75	0.32	5.07	0.24	1974	8.77	1.69	10.46	6.11
1947	5.09	0.36	5.45	0.27	1975	8.37	1.63	10.01	6.06
1948	5.53	0.40	5.94	0.35	1976	8.13	1.60	9.74	7.31
1949	5.05	0.43	5.48	0.65	1977	8.24	1.62	9.86	8.81
1950	5.41	0.50	5.91	0.85	1978	8.71	1.57	10.27	8.36
1951	6.16	0.56	6.72	0.84	1979	8.55	1.58	10.14	8.46
1952	6.27	0.61	6.87	0.95	1980	8.60	1.57	10.17	6.91
1953	6.46	0.65	7.11	1.03	1981	8.57	1.61	10.18	6.00
1954	6.34	0.69	7.03	1.05	1982	8.65	1.55	10.20	5.11
1955	6.81	0.77	7.58	1.25	1983	8.69	1.56	10.25	5.05
1956	7.15	0.80	7.95	1.44	1984	8.88	1.63	10.51	5.44
1957	7.17	0.81	7.98	1.57	1985	8.97	1.61	10.58	5.07
1958	6.71	0.81	7.52	1.70	1986	8.68	1.55	10.23	6.22
1959	7.05	0.88	7.93	1.78	1987	8.35	1.60	9.94	6.68
1960	7.04	0.93	7.96	1.81	1988	8.14	1.62	9.76	7.40
1961	7.18	0.99	8.17	1.92	1989	7.61	1.55	9.16	8.06
1962	7.33	1.02	8.35	2.08	1990	7.36	1.56	8.91	8.02
1963	7.54	1.10	8.64	2.12	1991	7.42	1.66	9.08	7.63
1964	7.61	1.16	8.77	2.26	1992	7.17	1.70	8.87	7.89
1965	7.80	1.21	9.01	2.47	1993	6.85	1.74	8.58	8.62
1966	8.30	1.28	9.58	2.57	1994	6.66	1.73	8.39	9.00
1967	8.81	1.41	10.22	2.54	1995	6.56	1.76	8.32	8.83
1968	9.10	1.51	10.60	2.84	1996	6.47	1.83	8.30	9.40
1969	9.24	1.59	10.83	3.17					

Sources: U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970*, Series M 143, 138 (GPO, Washington, DC, 1975).

U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 5.1, p. 137, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: Crude oil includes lease condensate. NGPL = Natural gas plant liquids. Imports for years 1941-1949 include crude petroleum products only. Previous-year data may have been revised. Current-year data are preliminary and may be revised in future publications.

Table 9.5 U.S. Natural Gas Production, 1960-1996

Year	Well withdrawals	Repressuring	Nonhydrocarbon gas removal	Vented and flared	Marketed production	Extraction loss	Total production
	trillion cubic feet						
1960	15.09	1.75	na	0.56	12.77	0.54	12.23
1961	15.46	1.68	na	0.52	13.25	0.59	12.66
1962	16.04	1.74	na	0.43	13.88	0.62	13.25
1963	16.97	1.84	na	0.38	14.75	0.67	14.08
1964	17.54	1.65	na	0.34	15.55	0.72	14.82
1965	17.96	1.60	na	0.32	16.04	0.75	15.29
1966	19.03	1.45	na	0.38	17.21	0.74	16.47
1967	20.25	1.59	na	0.49	18.17	0.78	17.39
1968	21.33	1.49	na	0.52	19.32	0.83	18.49
1969	22.68	1.46	na	0.53	20.70	0.87	19.83
1970	23.79	1.38	na	0.49	21.92	0.91	21.01
1971	24.09	1.31	na	0.28	22.49	0.88	21.61
1972	24.02	1.24	na	0.25	22.53	0.91	21.62
1973	24.07	1.17	na	0.25	22.65	0.92	21.73
1974	22.85	1.08	na	0.17	21.60	0.89	20.71
1975	21.10	0.86	na	0.13	20.11	0.87	19.24
1976	20.94	0.86	na	0.13	19.95	0.85	19.10
1977	21.10	0.93	na	0.14	20.03	0.86	19.16
1978	21.31	1.18	na	0.15	19.97	0.85	19.12
1979	21.88	1.25	na	0.17	20.47	0.81	19.66
1980	21.87	1.37	0.20	0.13	20.18	0.78	19.40
1981	21.59	1.31	0.22	0.10	19.96	0.77	19.18
1982	20.27	1.39	0.21	0.09	18.58	0.76	17.82
1983	18.66	1.46	0.22	0.09	16.88	0.79	16.09
1984	20.27	1.63	0.22	0.11	18.30	0.84	17.47
1985	19.61	1.92	0.33	0.09	17.27	0.82	16.45
1986	19.13	1.84	0.34	0.10	16.86	0.80	16.06
1987	20.14	2.21	0.38	0.12	17.43	0.81	16.62
1988	21.00	2.48	0.46	0.14	17.92	0.82	17.10
1989	21.07	2.48	0.36	0.14	18.10	0.78	17.31
1990	21.52	2.49	0.29	0.15	18.59	0.78	17.81
1991	21.75	2.77	0.28	0.17	18.53	0.83	17.70
1992	22.13	2.97	0.28	0.17	18.71	0.87	17.84
1993	22.73	3.10	0.41	0.23	18.98	0.89	18.10
1994	23.58	3.23	0.41	0.23	19.71	0.89	18.82
1995	23.74	3.57	0.39	0.28	19.51	0.91	18.60
1996	24.28	3.71	0.36	0.26	19.95	0.93	19.02

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 6.2, p. 187, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: Extraction loss refers to volume reduction resulting from the removal of natural gas plant liquids. Total production refers to dry natural gas. Beginning in 1965, all volumes are shown on a pressure base of 14.73 p.s.i.a. at 60 degrees F. Totals may not agree with sum of components due to independent rounding. Previous-year data may have been revised. Current-year data are preliminary and may be revised in future publications.

Table 9.6 U.S. Production of Electricity by Prime Mover, 1960-1996

Year	Fossil-fired steam: Coal	Fossil-fired steam: Natural gas	Fossil-fired steam: Petroleum	Internal combustion & gas turbine	Nuclear power	Hydroelectric	Geothermal & other	Total
	billion kilowatt-hours							
1960	403	na	na	4	1	146	<1	756
1961	422	na	na	5	2	152	<1	794
1962	450	na	na	5	2	169	<1	855
1963	494	na	na	5	3	166	<1	917
1964	526	na	na	6	3	177	<1	984
1965	571	na	na	6	4	194	<1	1,055
1966	613	na	na	5	6	195	1	1,144
1967	630	na	na	5	8	222	1	1,214
1968	685	na	na	9	13	222	1	1,329
1969	706	na	na	14	14	250	1	1,442
1970	704	361	174	22	22	248	1	1,532
1971	713	360	206	28	38	266	1	1,613
1972	771	361	253	36	54	273	2	1,750
1973	848	323	296	36	83	272	2	1,861
1974	828	304	279	38	114	301	3	1,867
1975	853	288	273	28	173	300	3	1,918
1976	944	284	302	29	191	284	4	2,038
1977	985	292	338	34	251	220	4	2,124
1978	976	290	345	36	276	280	3	2,206
1979	1,075	311	290	32	255	280	4	2,247
1980	1,162	326	238	28	251	276	6	2,286
1981	1,203	325	202	25	273	261	6	2,295
1982	1,192	291	144	16	283	309	5	2,241
1983	1,259	261	141	17	294	332	6	2,310
1984	1,342	284	117	17	328	321	9	2,416
1985	1,402	279	97	16	384	281	11	2,470
1986	1,386	236	133	16	414	291	12	2,487
1987	1,464	258	115	18	455	250	12	2,572
1988	1,541	236	144	22	527	223	12	2,704
1989	1,554	245	151	29	529	265	11	2,784
1990	1,560	246	113	22	577	279	11	2,808
1991	1,551	246	108	14	613	275	10	2.825
1992	1,576	246	86	21	619	240	10	2,797
1993	1,639	237	96	25	610	265	10	2,883
1994	1,635	260	86	36	640	244	9	2,911
1995	1,653	268	56	44	673	293	6	2,995
1996	1,736	238	50	44	675	329	7	3,078

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 8.4, p. 233, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: Production refers to electric utility net generation of electricity for distribution. Hydroelectric power includes hydroelectric pumped storage. Other includes wood, waste, photovoltaic, and solar thermal energy. Totals may not agree with sum of components due to independent rounding. Previous-year data may have been revised. Current-year data are preliminary and may be revised in future publications.

Table 9.7 U.S. Nuclear Power Plant Operations, 1958-1996

Year	Operable nuclear generating units *number of units*	Net generation of electricity *billion kilowatt-hours*	Year	Operable nuclear generating units *number of units*	Net generation of electricity *billion kilowatt-hours*
1958	1	0.2	1978	70	276.4
1959	1	0.2	1979	68	255.2
1960	3	0.5	1980	70	251.1
1961	3	1.7	1981	74	272.7
1962	5	2.3	1982	77	282.8
1963	6	3.2	1983	80	293.7
1964	6	3.3	1984	86	327.6
1965	6	3.7	1985	95	383.7
1966	8	5.5	1986	100	414.0
1967	10	7.7	1987	107	455.3
1968	11	12.5	1988	108	527.0
1969	14	13.9	1989	110	529.4
1970	18	21.8	1990	111	576.9
1971	21	38.1	1991	111	612.6
1972	29	54.1	1992	109	618.8
1973	39	83.5	1993	109	610.3
1974	48	114.0	1994	109	640.4
1975	54	172.5	1995	109	673.4
1976	61	191.1	1996	110	674.8
1977	65	250.9			

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 9.2, p. 257, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: Previous-year data may have been revised. Current-year data are preliminary and may be revised in future publications.

Table 9.8 U.S. Net Energy Imports by Source, 1960-1996

Year	Coal	Natural gas (dry)	Petroleum	Other	Total
			quadrillion Btu		
1960	-1.02	0.15	3.57	0.04	2.74
1965	-1.37	0.44	5.01	- 0.02	4.06
1966	-1.35	0.47	5.21	- 0.01	4.32
1967	-1.35	0.50	4.91	- 0.02	4.04
1968	-1.37	0.58	5.73	- 0.02	4.90
1969	-1.53	0.70	6.42	- 0.02	5.56
1970	-1.93	0.77	6.92	- 0.04	5.72
1971	-1.54	0.88	8.07	<0.005	7.41
1972	-1.53	0.97	9.83	0.05	9.32
1973	-1.42	0.98	12.98	0.14	12.68
1974	-1.57	0.91	12.66	0.19	12.19
1975	-1.74	0.90	12.51	0.08	11.75
1976	-1.57	0.92	15.20	0.09	14.65
1977	-1.40	0.98	18.24	0.20	18.02
1978	-1.00	0.94	17.06	0.33	17.32
1979	-1.70	1.24	16.93	0.27	16.75
1980	-2.39	0.96	13.50	0.18	12.25
1981	-2.92	0.86	11.38	0.33	9.65
1982	-2.77	0.90	9.05	0.28	7.46
1983	-2.01	0.89	9.08	0.36	8.31
1984	-2.12	0.79	9.89	0.40	8.96
1985	-2.39	0.90	8.95	0.41	7.87
1986	-2.19	0.69	11.53	0.36	10.38
1987	-2.05	0.94	12.53	0.49	11.91
1988	-2.45	1.22	14.01	0.37	13.15
1989	-2.57	1.28	15.33	0.14	14.18
1990	-2.70	1.46	15.29	0.03	14.08
1991	-2.77	1.67	14.22	0.25	13.36
1992	-2.59	1.94	14.96	0.33	14.64
1993	-1.78	2.25	16.40	0.32	17.19
1994	-1.69	2.52	17.26	0.49	18.58
1995	-2.14	2.74	16.87	0.42	17.90
1996	-2.19	2.75	18.04	0.40	19.00

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 1.4, p. 11, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: Net imports = imports minus exports. Other includes coal coke and small amounts of electricity transmitted across U.S. borders with Canada and Mexico. Other for 1996 does not include coal coke. Totals may not agree with sum of components due to independent rounding. Previous-year data may have been revised. Current-year data are preliminary and may be revised in future publications.

Table 9.9 U.S. Energy Consumption by Sector, 1960-1996

Year	Residential & commercial	Industrial	Transportation	Total
	quadrillion Btu			
1960	13.04	20.16	10.60	43.80
1961	13.44	20.25	10.77	44.46
1962	14.27	21.04	11.23	46.53
1963	14.71	21.95	11.66	48.32
1964	15.23	23.27	12.00	50.50
1965	16.03	24.22	12.43	52.68
1966	17.06	25.50	13.10	55.66
1967	18.10	25.72	13.75	57.57
1968	19.23	26.90	14.86	61.00
1969	20.59	28.10	15.50	64.19
1970	21.71	28.63	16.09	66.43
1971	22.59	28.57	16.72	67.89
1972	23.69	29.86	17.71	71.26
1973	24.14	31.53	18.60	74.28
1974	23.72	30.70	18.12	72.54
1975	23.90	28.40	18.25	70.55
1976	25.02	30.24	19.10	74.36
1977	25.39	31.08	19.82	76.29
1978	26.09	31.39	20.61	78.09
1979	25.81	32.61	20.47	78.90
1980	26.65	30.61	19.69	75.96
1981	25.24	29.24	19.51	73.99
1982	25.63	26.14	19.07	70.85
1983	25.63	25.75	19.13	70.52
1984	26.48	27.86	19.80	74.14
1985	26.70	27.22	20.07	73.98
1986	26.85	26.63	20.81	74.30
1987	27.62	27.83	21.45	76.89
1988	28.92	28.99	22.30	80.22
1989	29.40	29.35	22.56	81.32
1990	29.48	32.14	22.54	84.09
1991	30.09	31.76	22.12	83.99
1993	30.00	33.01	22.46	85.52
1993	31.13	33.30	23.88	87.34
1994	31.29	34.19	23.57	89.21
1995	32.26	34.60	23.96	90.94
1996	33.88	35.43	24.43	93.81

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 2.1, p. 41, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: Beginning in 1990, data include renewable energy. Totals may not agree with sum of components due to independent rounding. Previous-year data may have been revised. Current-year data are preliminary and may be revised in future publications.

Table 9.10 U.S. Energy Consumption per Capita, 1950-1996

Year	Total energy consumption per capita	End-use (net) energy consumption per capita	Year	Total energy consumption per capita	End-use (net) energy consumption per capita
	million Btu			*million Btu*	
1950	219	194	1974	340	273
1951	230	205	1975	327	261
1952	226	199	1976	342	272
1953	228	201	1977	347	274
1954	218	191	1978	352	276
1955	235	206	1979	351	275
1956	240	210	1980	335	259
1957	236	206	1981	322	246
1958	232	202	1982	305	231
1959	238	206	1983	301	226
1960	244	212	1984	314	236
1961	243	210	1985	310	232
1962	250	216	1986	308	231
1963	256	220	1987	316	237
1964	264	226	1988	326	246
1965	272	232	1989	328	246
1966	285	241	1990	338	256
1967	292	246	1991	333	252
1968	306	257	1992	335	255
1969	319	266	1993	339	258
1970	327	270	1994	343	261
1971	328	270	1995	346	263
1972	340	278	1996	354	269
1973	351	285			

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 1.5, p. 13, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: End-use (net) energy consumption is total energy consumption less losses incurred in the generation, transmission, and distribution of electricity, less power plant electricity use, and less unaccounted for electrical system energy losses. Per capita data are based upon the resident population of the 50 states and the District of Columbia, estimated for July 1 of each year, except for decennial census years when April 1 data are used. Previous-year data may have been revised. Current-year data are preliminary and may be revised in future publications.

Table 9.11 U.S. Energy Consumption per Dollar of Gross Domestic Product, 1959-1996

Year	Petroleum & natural gas	Other energy	Total	Year	Petroleum & natural gas	Other energy	Total
	thousand Btu per chained (1992) $				*thousand Btu per chained (1992) $*		
1959	14.03	5.02	19.05	1978	12.90	4.48	17.38
1960	14.28	5.08	19.37	1979	12.50	4.56	17.06
1961	14.35	4.90	19.25	1980	11.84	4.63	16.47
1962	14.20	4.80	19.00	1981	10.98	4.68	15.66
1963	14.14	4.78	18.92	1982	10.54	4.78	15.32
1964	13.91	4.78	18.68	1983	9.86	4.81	14.66
1965	13.57	4.76	18.33	1984	9.65	4.78	14.43
1966	13.53	4.66	18.19	1985	9.15	4.73	13.88
1967	13.77	4.57	18.33	1986	8.91	4.63	13.53
1968	14.05	4.50	18.55	1987	8.96	4.65	13.61
1969	14.47	4.48	18.95	1988	9.00	4.68	13.68
1970	15.15	4.46	19.61	1989	8.84	4.57	13.42
1971	15.15	4.24	19.40	1990	8.61	5.09	13.70
1972	15.08	4.23	19.31	1991	8.63	5.19	13.82
1973	14.70	4.34	19.04	1992	8.59	5.10	13.70
1974	14.19	4.46	18.66	1993	8.56	5.12	13.68
1975	13.63	4.62	18.25	1994	8.48	5.02	13.50
1976	13.60	4.62	18.22	1995	8.43	5.06	13.49
1977	13.33	4.50	17.83	1996	8.44	5.14	13.58

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 1.6, p. 15, DOE/EIA-0035(96) (GPO, Washington, DC, 1997).

Notes: See Table 2.1 for chained (1992) dollars of gross domestic product. Current-year data are preliminary and may be revised in future publications.

Table 9.12 U.S. Consumption of Renewable Energy Resources, 1990-1996

Year	Conventional hydroelectric power	Geo-thermal power	Biofuels	Solar energy	Wind energy	Total
	quadrillion Btu					
1990	3.104	0.345	2.632	0.067	0.023	6.171
1991	3.182	0.354	2.642	0.068	0.027	6.273
1992	2.852	0.367	2.788	0.068	0.030	6.106
1993	3.138	0.381	2.784	0.069	0.031	6.403
1994	2.958	0.381	2.838	0.069	0.036	6.282
1995	3.471	0.325	2.946	0.072	0.033	6.847
1996	3.911	0.354	3.017	0.075	0.036	7.393

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1996*, Table 10.1, p. 263, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: Hydroelectricity generated by pumped storage is not included in renewable energy estimates. Conventional hydroelectric power includes electricity net imports from Canada that are derived from hydroelectric energy. Geothermal power includes electricity imports from Mexico that are derived from geothermal energy. Geothermal includes only grid-connected electricity; excludes shaft power and remote electrical power. Biofuels are wood, wood waste, peat, wood sludge, municipal solid waste, agricultural waste, straw, tires, landfill gases, fish oil, and/or other waste, and ethanol blended into motor gasoline. Solar energy includes photovoltaic energy. Wind energy includes only grid-connected electricity; excludes direct heat applications.

Table 9.13 Estimates of U.S. Energy Intensity by Sector, Selected Years, 1977-1995

Year	Residential	Commercial	Manufacturing	Transportation	
				Passenger automobiles	Freight trucks
	million Btu per household	*thousand Btu per sq. ft.*	*thous. Btu per 1987 $ value of shipments*	*thous. Btu per vehicle-mile*	*thous. Btu per vehicle-mile*
1977	na	na	6.0	9.11	14.16
1978	138	na	5.8	8.96	14.06
1979	126	115.0	5.7	8.73	13.98
1980	114	na	5.5	8.13	13.46
1981	114	na	5.4	7.89	13.39
1982	103	na	4.9	7.56	13.10
1983	na	98.2	4.7	7.31	13.14
1984	105	na	4.5	7.03	13.07
1985	na	na	4.4	6.88	13.12
1986	na	86.6	4.2	6.85	13.08
1987	101	na	4.2	6.52	13.01
1988	na	na	4.3	6.30	12.79
1989	na	91.6	4.3	6.16	12.49
1990	98	na	4.3	5.95	12.17
1991	na	na	4.4	5.77	11.84
1992	na	80.9	na	5.77	11.94
1993	104	na	na	5.95	11.05
1994	na	na	na	5.63	11.12
1995	na	na	na	5.55	11.04

Sources: Davis, T.C., *Transportation Energy Databook: Edition 17*, Table 2.15, p. 2-18, and Table 2.16, p. 2-19, ORNL-6919 (U.S. Department of Energy, Oak Ridge National Laboratory, Oak Ridge, TN, 1997).

U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 1995*, Table 2.4, p. 45, DOE/EIA-0384(95) (GPO, Washington, DC, 1996).

--, *Annual Energy Review 1996*, Table 2.8, p. 53 and Table 2.18, p. 75, DOE/EIA-0384(96) (GPO, Washington, DC, 1997).

Notes: na = not available. Residential energy intensity data are derived from the Residential Energy Consumption Survey which was first conducted in 1978 and then triennially since 1984. Commercial energy intensity data are from the Commercial Buildings Energy Consumption Survey, first conducted in 1979 and then triennially since 1983. Manufacturing energy intensity data are derived from the triennial Manufacturing Energy Consumption Survey (MECS). The next MECS will be conducted for the reporting year 1998, with subsequent MECS's being conducted every 4 years thereafter. Transportation energy intensity data are reported annually.

Transportation

Table 10.1 U.S. Passenger-Miles of Travel, Five-Year Intervals, 1960-1990, and Annually, 1991-1996

Year	Highway	Transit	Rail	Air	Total
			billion passenger-miles		
1960	1,418.00	4.20	17.10	33.40	1,473.00
1965	1,678.00	4.10	13.30	57.60	1,753.00
1970	2,092.00	4.60	6.20	117.50	2,220.00
1975	2,362.00	4.50	3.90	147.40	2,518.00
1980	2,562.00	39.90	4.50	219.00	2,803.00
1985	2,845.90	39.60	4.80	290.10	3,158.00
1990	3,305.00	41.10	6.00	358.90	3,689.00
1991	3,631.00	40.70	6.30	350.30	4,007.00
1992	3,746.00	40.30	6.10	365.50	4,137.00
1993	3,825.00	39.40	6.20	372.30	4,223.00
1994	3,918.00	39.60	5.90	398.80	4,343.00
1995	3,868.00	39.80	5.50	414.40	4,308.00
1996	3,962.00	41.30	5.10	445.20	4,412.00

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics 1998*, Table 1-10 (DOT, BTS, Washington, DC, 1998).

Notes: BTS has rounded the categories on this table as follows: to the nearest billion passenger-miles; Passenger-Miles, total; Highway; to the nearest 100 million passenger-miles: Air; Transit; and Rail. Highway includes passenger car and taxi, motorcycle, other 2-axle 4-tire vehicle, single unit 2-axle 6-tire or more truck, combination truck, intercity bus, and school bus. Highway passenger-miles are calculated by multiplying vehicle-miles of travel as cited by the U.S. Department of Transportation, Federal Highway Administration by the number of occupants for each vehicle type (as estimated by the U.S. Department of Transportation, Federal Highway Administration using the Nationwide Personal Transportation Survey). Transit includes motor bus, light rail, heavy rail, trolley bus, commuter rail, demand response, ferry boat, and other. Transit passenger-miles are are cumulative sum of the distance ridden by each passenger. Rail includes intercity/Amtrak, which began operations in 1971. Rail passenger-miles represent the movement of one passenger for one mile. Does not include contract commuter passengers. Air includes air carrier, certified domestic service and general aviation. Air carrier passenger-miles are computed by the summation of the products of the aircraft miles flown on each inter-airport hop multiplied by the number of passengers carried on that hop.

Table 10.2 U.S. Ton-Miles of Freight, Five-Year Intervals, 1960-1990, and Annually, 1991-1996

Year	Intercity truck	Class I rail	Domestic air carrier	Domestic water	Oil pipeline
			billion ton-miles		
1960	285.00	572.31	0.55	413.33	229.00
1965	359.00	697.88	1.35	489.80	306.40
1970	412.00	764.81	2.19	596.20	431.00
1975	454.00	754.25	3.47	565.98	507.00
1980	555.00	918.96	4.53	921.84	588.20
1985	610.00	876.98	5.16	892.97	564.30
1990	735.00	1,033.97	9.06	833.54	584.10
1991	758.00	1,038.88	8.86	848.40	578.50
1992	815.00	1,066.78	9.82	856.69	588.80
1993	861.00	1,109.31	10.68	789.66	592.90
1994	908.00	1,200.70	11.80	814.92	591.40
1995	921.00	1,305.69	12.52	807.73	601.10
1996	986.00	1,355.98	12.86	764.69	619.20

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, *National Transportation Statistics 1998*, Table 1-11 (DOT, BTS, Washington, DC, 1998).

Notes: Air includes revenue ton-miles of freight, U.S. and foreign mail, and express. Rail includes revenue ton-miles. Domestic water excludes intraterritorial traffic, for which ton-miles were not compiled. Domestic water data for 1980 reflect start up between 1975 and 1980 of Alaska pipeline and subsequent water transport of crude petroleum from Alaskan ports to mainland U.S. for refining.

Table 10.3 Average Annual U.S. Vehicle-Miles of Travel and Fuel Consumption per Vehicle, 1960-1996

Year	Passenger cars[1]		Buses[2]		Other 2-axle, 4-tire vehicles[3]		Single-unit trucks[4]		Trailer combination trucks	
	1,000 vmt	*vmt/ gallon*	*1,000 vmt*	*vmt/ gallon*	*1,000 vvmt*	*vmt/ gallon*	*1,000 vmt*	*vmt/ gallon*	*1,000 vmt*	*vmt/ gallon*
1960	9.52	14.3	15.97	5.3	na	na	na	na	na	na
1961	9.52	14.4	15.71	5.3	na	na	na	na	na	na
1962	9.49	14.3	15.67	5.3	na	na	na	na	na	na
1963	9.59	14.6	15.06	5.4	na	na	8.60	8.8	42.63	4.9
1964	9.67	14.6	15.12	5.3	na	na	8.68	8.7	41.48	4.9
1965	9.60	14.5	14.90	5.3	na	na	9.20	9.3	40.26	4.8
1966	9.73	14.1	14.06	5.4	8.08	9.7	6.55	6.2	39.00	5.2
1967	9.85	14.1	13.69	5.4	7.88	9.8	6.63	6.3	40.25	5.2
1968	9.92	13.9	14.00	5.4	8.38	9.9	6.56	6.5	39.64	5.0
1969	9.92	13.6	13.23	5.4	8.36	9.8	7.34	6.7	38.70	4.8
1970	9.99	13.5	12.04	5.5	8.68	10.0	7.36	6.8	38.82	4.8
1971	10.10	13.6	12.09	5.7	9.08	10.2	7.69	6.9	40.49	4.9
1972	10.17	13.5	13.14	5.8	9.53	10.3	8.02	6.5	42.34	5.0
1973	9.88	13.4	13.63	5.9	9.78	10.5	8.15	6.4	44.37	5.1
1974	9.22	13.6	12.72	5.9	9.45	11.0	7.94	6.4	42.37	5.1
1975	9.31	14.0	13.10	5.8	9.83	10.5	8.18	6.4	41.32	5.1
1976	9.42	13.8	13.08	6.0	10.13	10.8	8.37	6.4	40.56	5.1
1977	9.52	14.1	11.87	6.0	10.61	11.2	8.84	6.3	44.92	5.1
1978	9.50	14.3	11.65	5.9	10.97	11.6	9.46	6.1	46.95	5.2
1979	9.06	14.6	11.29	6.0	10.80	11.9	9.33	6.0	48.32	5.2
1980	8.81	16.0	11.46	6.0	10.44	12.2	9.10	5.8	48.47	5.3
1981	8.87	16.5	11.48	5.9	10.24	12.5	8.88	5.8	54.82	5.1
1982	9.05	16.9	10.41	5.9	10.28	13.5	9.40	6.0	55.93	5.2
1983	9.12	17.1	8.92	5.9	10.50	13.7	10.12	6.1	56.43	5.3
1984	9.25	17.4	7.95	5.7	11.15	14.0	10.94	6.1	57.74	5.5
1985	9.42	17.5	7.55	5.4	10.51	14.3	9.89	6.1	55.63	5.6
1986	9.46	17.4	7.94	5.3	10.76	14.6	10.58	6.2	57.56	5.6
1987	9.72	18.0	8.85	5.8	11.11	14.9	11.47	6.4	55.89	5.7
1988	9.97	18.8	8.89	5.8	11.47	15.4	11.06	6.4	53.11	5.8
1989	10.16	19.0	9.07	6.0	11.68	16.1	11.26	6.5	53.82	5.8
1990	10.28	20.3	9.13	6.4	11.90	16.1	11.57	6.2	55.21	5.8
1991	10.32	21.2	9.11	6.7	12.25	17.0	11.81	6.5	57.14	5.7
1992	10.57	21.0	8.96	6.6	12.38	17.3	12.33	6.5	59.40	5.8
1993	10.55	20.6	9.36	6.6	12.43	17.4	12.88	6.7	61.37	5.8
1994	10.76	20.8	9.56	6.6	12.16	17.3	12.49	6.8	64.78	5.8
1995	11.20	21.1	9.37	6.6	12.02	17.3	12.48	6.8	68.08	5.8
1996	11.31	21.3	9.38	6.6	11.83	17.3	12.15	6.8	68.20	5.9

Sources: U.S. Department of Transportation, Federal Highway Administration, Office of Highway Information Management, *Highway Statistics Summary to 1995*, Table VM-1 (GPO, Washington, DC, 1997).

--, *Highway Statistics 1996*, Table VM-1 (GPO, Washington, DC, 1997).

Notes: [1]Includes motorcycles. [2]Includes commercial, school, and non-revenue buses. [3]Includes vans, pickup trucks, and sport/utility vehicles which are considered passenger vehicles. Prior to 1966, these vehicles were included in the single-unit truck category. [4]Includes 2-axle, 6-tire or more trucks on a single frame.

Table 10.4 U.S. Personal Travel per Household, Driver, and Mode, 1969, 1977, 1983, 1990, and 1995

Characteristics of personal travel	Unit	Year 1969	1977	1983	1990	1995
Persons per household	*no.*	3.16	2.83	2.69	2.56	2.44
Licensed drivers per household	*no.*	1.65	1.69	1.72	1.75	1.79
Vehicles per household	*no.*	1.16	1.59	1.68	1.77	1.78
Daily vehicle trips per household	*no.*	3.83	3.95	4.07	4.66	6.35
Daily vehicle miles per household	*mi.*	34.01	32.97	32.16	41.37	57.25
Average vehicle occupancy rate	*per./veh.*	na	1.90	1.70	1.60	1.59
Home to work	*per./veh.*	na	1.30	1.30	1.10	1.14
Family & personal business	*per./veh.*	na	2.00	1.80	1.80	1.82
Shopping	*per./veh.*	na	2.10	1.80	1.70	1.79
Social & recreation	*per./veh.*	na	2.40	2.10	2.10	2.17
Average vehicle trip length	*mi.*	8.90	8.40	7.90	9.00	9.10
Home to work	*mi.*	9.40	9.10	8.50	10.60	11.60
Family & personal business	*mi.*	6.50	6.80	6.70	7.40	na
Shopping	*mi.*	4.40	5.00	5.30	5.10	na
Social & recreation	*mi.*	13.10	10.30	10.50	11.80	na
Vacation	*mi.*	160.00	77.90	113.90	114.90	na
Average distance to work	*mi.*	9.40	9.20	8.50	10.60	11.60
by automobile	*mi.*	9.40	9.10	9.90	10.40	na
by truck	*mi.*	14.20	10.60	11.40	13.00	na
by bus	*mi.*	8.70	7.20	8.60	9.30	na
Average annual travel per driver	*1,000 mi.*	8.69	9.92	10.29	13.13	na
by male drivers	*1,000 mi.*	11.35	13.40	13.96	16.64	na
by female drivers	*1,000 mi.*	5.41	5.94	6.38	9.53	na
Average annual personal travel*	*1,000 mi.*	7.66	9.47	9.14	10.42	na
by private vehicle	*1,000 mi.*	na	8.15	7.52	9.18	na
by public vehicle	*1,000 mi.*	na	0.25	0.24	0.24	na
by other mode	*1,000 mi.*	na	1.06	1.37	0.97	na

Sources: U.S. Department of Transportation, Federal Highway Administration, *1990 NPTS Databook: Nationwide Personal Transportation Study*, Vol. I (DOT, FHWA, Washington, DC, 1993).

--, *1990 NPTS Databook: Nationwide Personal Transportation Study*, Vol. II (DOT, FHWA, Washington, DC, 1995).

--, *Our Nation's Travel: 1995 NPTS Early Results Report, Technical Appendix* (DOT, FHWA, Washington, DC, 1997).

Notes: *per person. Household vehicles include automobiles, station wagons, and vanbuses/mini-buses, and, except for 1969, light pickups and other light trucks. Household vehicles are those that are owned, leased, rented, or company owned and left at home to be regularly used by household members. They also include vehicles used solely for business purposes or business-owned vehicles if left at home and used for the home-to-work trip (e.g., taxicabs and police cars). Average vehicle trip length for 1969 is for automobiles only. Family and personal business includes vehicle trips to shop, pickup or deposit passengers, shoe repair, haircuts, etc. Social/recreation includes vehicle trips to visit relatives and friends, go to a movie or play, attend or participate in a sporting event, etc. Private vehicle modes of travel include automobile, van, pick-up truck, and motorcycle. Public transportation includes bus, commuter rail, subway, elevated rail, streetcar, and trolley. Other includes airplane, Amtrak, taxi, school bus, moped, bicycle, and, except for 1969, walking.

Table 10.5 Journey-To-Work Mode for U.S. Working Population, 1960-1990

Mode of transportation	Year			
	1960	1970	1980	1990
	U.S. working population, in millions			
Private vehicle	42.99	61.96	83.02	101.29
Public transit	7.81	6.51	6.01	5.89
Walked to work	6.42	5.69	5.41	4.49
Worked at home	4.66	2.69	2.18	3.41
Total	61.87	76.85	96.62	115.07
	percent of U.S. working population			
Private vehicle	69.48	80.63	85.92	88.02
Public transit	12.62	8.48	6.22	5.12
Walked to work	10.37	7.40	5.60	3.90
Worked at home	7.54	3.49	2.26	2.96

Source: U.S. Department of Commerce, Bureau of the Census, *Census of Population and Housing* for 1960, 1970, 1980, and 1990 (GPO, Washington, DC, decennial).

Table 10.6 Congestion on U.S. Urban Interstate Highways, Selected Years, 1975-1996

Year	Peak-hour travel time under congested conditions	Peak-hour miles traveled under congested conditions	Average daily vehicles per lane
	percent		*thousands*
1975	41	23	na
1978	48	29	na
1980	52	28	na
1982	53	28	na
1984	55	30	9.99
1986	63	37	10.79
1988	67	42	11.68
1990	69	45	12.26
1992	70	46	12.38
1994	68	45	12.81
1996	54	33	13.38

Source; U.S. Department of Transportation (DOT), Federal Highway Administration (FHWA), *Highway Statistics 1996,* Chart "Urban Interstate System Congestion Trends," p. V-70 (DOT, FHWA, Washington, DC, 1997).

Notes: Congestion refers to percent of mileage or peak hour travel with the volume-to-service ratio equal to or greater than 0.80. Congestion data for 1996 not strictly comparable to data for previous years because of changes in capacity (service flow) calculation procedures.

Global Atmosphere and Climate

Table 11.1 World Population, Energy Consumption, and Energy-Related Carbon Dioxide Emissions by Region, 1986-1995

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
North America										
Population	346	350	354	358	363	369	374	379	383	388
Energy consumption	89	92	96	98	98	98	99	101	103	106
CO_2 emissions	1,385	1,436	1,515	1,541	1,474	1,494	1,527	1,527	1,663	1,694
Cen. & So. America										
Population	327	333	339	346	352	358	364	370	376	383
Energy consumption	13	13	14	14	14	15	15	16	17	17
CO_2 emissions	163	175	178	179	177	186	194	204	224	234
Western Europe										
Population	446	448	451	454	457	460	463	466	468	471
Energy consumption	61	62	63	64	64	65	64	64	64	66
CO_2 emissions	909	912	883	912	920	900	885	872	859	890
Eastern Europe										
Population	379	382	383	385	390	392	392	392	392	393
Energy consumption	70	72	74	73	71	67	63	59	53	51
CO_2 emissions	1,298	1,347	1,368	1,335	1,223	1,173	1,060	1,009	880	934
Middle East										
Population	116	119	123	126	130	134	137	141	145	149
Energy consumption	9	10	10	11	11	11	12	13	13	14
CO_2 emissions	147	146	157	163	167	312	200	208	235	243
Africa										
Population	574	591	608	624	641	661	682	703	724	746
Energy consumption	10	10	10	10	10	11	11	11	12	12
CO_2 emissions	169	168	178	180	182	186	194	195	198	196
Far East & Oceania										
Population	2,740	2,785	2,836	2,887	2,934	2,982	3,030	3,078	3,145	3,195
Energy consumption	61	64	69	72	74	77	80	86	91	96
CO_2 emissions	1,199	1,256	1,356	1,383	1,449	1,534	1,611	1,659	1,785	1,875
WORLD										
Population	4,927	5,009	5,094	5,180	5,266	5,356	5,442	5,528	5,634	5,724
Energy consumption	313	323	335	341	343	343	345	351	354	362
CO_2 emissions	5,270	5,440	5,635	5,693	5,593	5,785	5,671	5,674	5,844	6,066

Sources: U.S. Department oif Energy, Energy Information Administration, *International Energy Annual 1995*, Appendix Table E1, pp. 169-170, and Appendix Table B1, pp.121-124, DOE/EIA-0219(95) (GPO, Washington, DC, 1996).

Marland, G. and T. Boden, Oak Ridge National Laboratory, "Global CO_2 Emissions From Fossil-Fuel Burning, Cement Production, and Gas Flaring," NDP-030/R7 (an Internet accessible numerical database) (Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge, TN, 1997).

Notes: Population is expressed in millions, energy consumption in quadrillion Btus, and CO_2 emissions in million metric tons of carbon and rounded to the nearest integer. Energy-related carbon dioxide emissions refers to emissions from fossil fuel burning and gas flaring; excludes emissions from cement production. Regional grouping of countries in sources have been reconciled as follows: North America includes Mexico; Western Europe includes Germany and Turkey; Eastern Europe includes the former USSR, and Far East and Oceania includes Centrally Planned Asia.

Table 11.2 Global Emissions of Carbon Dioxide From Fossil-Fuel Burning, Cement Production, and Gas Flaring, Five-Year Intervals, 1950-1960, and Annually, 1961-1995

Year	Fossil-fuel burning			Cement production	Gas flaring	Total	Per capita
	Solid	Liquid	Gas				
	million metric tons of carbon						*tons*
1950	1,070	423	97	18	20	1,627	0.6
1955	1,208	625	150	30	26	2,039	0.7
1960	1,411	850	235	43	24	2,563	0.8
1961	1,349	905	254	45	24	2,577	0.8
1962	1,351	981	277	49	23	2,681	0.9
1963	1,397	1,053	300	51	25	2,826	0.9
1964	1,435	1,138	328	57	31	2,989	0.9
1965	1,461	1,221	351	59	36	3,127	0.9
1966	1,478	1,325	380	63	39	3,285	1.0
1967	1,448	1,424	410	65	52	3,399	1.0
1968	1,448	1,552	445	70	56	3,571	1.0
1969	1,487	1,674	487	74	67	3,789	1.0
1970	1,556	1,838	516	78	76	4,064	1.1
1971	1,556	1,946	554	84	88	4,227	1.1
1972	1,572	2,055	583	89	94	4,395	1.1
1973	1,580	2,240	608	95	110	4,633	1.2
1974	1,577	2,244	618	96	107	4,641	1.2
1975	1,671	2,131	623	95	93	4,613	1.1
1976	1,708	2,313	647	103	109	4,880	1.2
1977	1,770	2,389	646	108	104	5,018	1.2
1978	1,786	2,383	674	116	107	5,066	1.2
1979	1,882	2,534	714	119	100	5,348	1.2
1980	1,938	2,407	726	120	89	5,279	1.2
1981	1,910	2,271	736	121	72	5,109	1.1
1982	1,973	2,176	731	121	69	5,069	1.1
1983	1,978	2,161	733	125	63	5,060	1.1
1984	2,070	2,185	791	128	58	5,231	1.1
1985	2,225	2,170	822	131	57	5,404	1.1
1986	2,286	2,279	840	137	54	5,596	1.1
1987	2,337	2,289	903	143	51	5,723	1.1
1988	2,401	2,392	949	152	53	5,947	1.2
1989	2,434	2,429	983	156	50	6,053	1.2
1990	2,374	2,498	1,020	157	60	6,109	1.2
1991	2,311	2,606	1,030	161	70	6,178	1.1
1992	2,337	2,497	1,019	169	62	6,084	1.1
1993	2,275	2,498	1,040	177	63	6,053	1.1
1994	2,435	2,541	1,064	188	64	6,292	1.1
1995	2,540	2,568	1,140	193	64	6,506	1.1

Source: Marland, G. and T. Boden, Oak Ridge National Laboratory, "Global CO_2 Emissions From Fossil-Fuel Burning, Cement Production, and Gas Flaring," NDP-030/R7 (an Internet accessible numerical database) (Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge, TN, 1997).

Table 11.3 Global Production and Atmospheric Release of Chlorofluorocarbons, 1960-1995

	CFC-11		CFC-11			CFC-12		CFC-12		
	Annual		Cumulative			Annual		Cumulative		
Year	Prod	Rel	Prod	Rel	Unrel	Prod	Rel	Prod	Rel	Unrel
	million kilograms									
1960	50	41	287	252	39	99	89	828	695	155
1961	61	52	347	305	48	109	100	937	794	166
1962	78	65	425	370	62	128	115	1,065	909	183
1963	93	80	519	450	77	146	134	1,211	1,043	199
1964	111	95	630	545	94	170	156	1,381	1,198	218
1965	123	108	753	653	111	190	175	1,571	1,374	237
1966	141	121	894	775	133	216	195	1,788	1,569	264
1967	160	138	1,053	912	157	243	220	2,030	1,788	293
1968	183	157	1,237	1,069	186	268	247	2,298	2,035	320
1969	217	182	1,454	1,251	225	297	274	2,595	2,309	351
1970	238	207	1,692	1,457	260	321	300	2,916	2,609	380
1971	263	227	1,955	1,684	300	342	322	3,258	2,931	408
1972	307	256	2,262	1,940	356	380	350	3,638	3,281	448
1973	349	292	2,611	2,233	418	423	387	4,061	3,668	495
1974	370	321	2,981	2,554	472	443	419	4,504	4,087	530
1975	314	311	3,295	2,865	479	381	404	4,885	4,491	516
1976	340	317	3,635	3,182	508	411	390	5,296	4,881	547
1977	321	304	3,955	3,486	529	383	371	5,678	5,252	568
1978	309	284	4,264	3,769	559	372	341	6,050	5,594	608
1979	290	264	4,554	4,033	589	357	338	6,408	5,931	637
1980	290	251	4,843	4,284	632	350	333	6,758	6,264	663
1981	287	248	5,130	4,532	675	351	341	7,109	6,604	683
1982	271	240	5,402	4,771	711	328	337	7,437	6,942	681
1983	292	253	5,693	5,024	755	355	343	7,793	7,285	702
1984	312	271	6,006	5,295	801	382	359	8,175	7,645	735
1985	327	281	6,332	5,576	851	376	368	8,551	8,013	752
1986	350	295	6,683	5,871	912	398	377	8,949	8,389	784
1987	382	311	7,065	6,182	989	425	387	9,374	8,776	833
1988	376	315	7,441	6,496	1,056	421	393	9,795	9,169	871
1989	303	265	7,743	6,761	1,098	380	365	10,175	9,533	896
1990	233	216	7,976	6,978	1,118	231	311	10,406	9,844	822
1991	214	188	8,190	7,166	1,147	225	272	10,631	10,116	781
1992	186	171	8,376	7,337	1,165	216	255	10,847	10,371	747
1993	147	158	8,523	7,495	1,156	215	328	11,062	10,609	729
1994	60	137	8,583	7,632	1,080	134	212	11,195	10,820	655
1995	33	124	8,616	7,756	989	83	189	11,278	11,009	551

Source: Alternative Fluorocarbons Environmental Acceptability Study, *Production, Sales and Atmospheric Release of Fluorocarbons Through 1995* (AFEAS, Washington, DC, 1997).

Notes: Prod = Produced. Rel = Released. Unrel = Unreleased. Data are rounded to the nearest million kilograms. Production data are voluntarily reported by the chemical industry through a survey conducted by an independent accountant, Grant Thornton LLP. The companies surveyed have production in the following countries: Argentina, Australia, Brazil, Canada, the European Union, Japan, Mexico, South Africa, United States, and Venezuela. Data collected by AFEAS for 1995 represent a diminished fraction of global CFC production, informally estimated to be less than 50%. Global coverage for previous years is estimated to be as follows: 1982, 87%; 1983, 86%; 1984, 85%; 1985, 83%; 1986, 82%; 1987, 80%; 1988, 79%; 1989, 78%; 1990, 70%; 1991, 70%; 1992, 75%; 1993, <75%; and 1994, <60%. For years prior to 1982, global coverage is assumed to be 100%. Atmospheric release of CFCs is calculated using data compiled by Grant Thornton LLP and assumptions about the rate of release from end-use applications.

Table 11.4 Global Atmospheric Concentrations of Greenhouse and Ozone-depleting Gases, 1970-1996

Year	Carbon dioxide (CO_2)	Carbon tetra-chloride (CCl_4)	Methyl chloro-form	CFC-11 (CCl_3F)	CFC-12	CFC-113	Total chlorine (gas)	Nitrous oxide (N_2O)	Meth-ane (CH_4)
	ppm	*ppt*	*ppt*	*ppt*	*ppt*	*ppt*	*ppt*	*ppb*	*ppb*
1970	325.5	na	na	na	na	na	na	na	na
1971	326.2	na	na	na	na	na	na	na	na
1972	327.3	na	na	na	na	na	na	na	na
1973	329.5	na	na	na	na	na	na	na	na
1974	330.1	na	na	na	na	na	na	na	na
1975	331.0	na	na	na	na	na	na	na	na
1976	332.0	na	na	na	na	na	na	na	na
1977	333.7	na	na	na	na	na	na	na	na
1978	335.3	88	58	139	257	na	1,457	298	na
1979	336.7	88	63	147	272	na	1,529	299	na
1980	338.5	90	71	158	289	na	1,622	299	na
1981	339.8	91	76	166	305	na	1,698	299	na
1982	341.0	93	82	175	325	26	1,871	301	na
1983	342.6	94	86	182	341	28	1,945	302	na
1984	344.3	95	89	190	355	31	2,024	303	na
1985	345.7	97	93	200	376	36	2,127	304	na
1986	347.0	98	97	209	394	40	2,222	305	1,600
1987	348.8	100	100	219	411	48	2,321	306	1,611
1988	351.3	101	104	231	433	53	2,432	306	1,619
1989	352.7	101	108	240	452	59	2,531	306	1,641
1990	354.0	102	111	249	469	66	2,626	307	1,645
1991	355.5	102	114	254	483	71	2,691	307	1,657
1992	356.3	101	118	260	496	77	2,762	308	1,673
1993	357.0	101	113	260	502	79	2,768	308	1,671
1994	358.8	92	106	262	512	81	2,774	309	1,673
1995	361.0	99	97	261	519	82	na	309	1,681
1996	362.6	99	87	261	522	82	na	310	1,669

Sources: Carbon dioxide: Keeling, C.D., Scripps Institution of Oceanography, "Atmospheric CO_2 Concentrations—Mauna Loa Observatory, Hawaii, 1958-1996," NDP-001/R7 (an Internet accessible numerical database) (Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge, TN, 1997).

Trace gases: Prinn, R.G., et al., "Continuous High Frequency Gas Chromatographic Measurements of CH_4, N_2O, CFC-11, CFC-12, CFC-113, methyl chloroform, and carbon tetrachloride" NDP-ale (1978-1985), NDP-gage (1981-1996), and NDP-agage (1994-1996) (Internet accessible numerical databases) (Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge, TN, 1997).

Notes: ppm = parts per million. ppb = parts per billion. ppt = parts per trillion. CFC = Chlorofluorocarbon. All estimates are by volume. 1996 trace gas concentrations are for the first quarter only.

Table 11.5 Annual Global Surface Temperature Anomalies, 1960-1996

	Global	North. Hemi-sphere	South. Hemi-sphere	Trop-ical	South Polar	South Tem-perate	South Sub-trop-ical	Equa-tor	North Sub-trop-ical	North Tem-perate	North Polar
	degrees Celsius										
1960	0.00	-0.11	0.11	0.05	-0.85	0.52	0.23	0.02	-0.09	-0.15	-0.19
1961	0.24	0.24	0.28	0.00	0.24	0.57	0.10	0.11	-0.22	0.55	0.67
1962	0.12	0.13	0.13	-0.05	-0.66	0.68	0.09	-0.11	-0.11	0.23	0.60
1963	0.09	0.16	0.01	0.04	-0.23	0.27	-0.10	-0.04	0.26	0.29	-0.09
1964	-0.24	-0.31	-0.18	-0.23	-0.52	-0.09	-0.08	-0.21	-0.40	-0.27	-0.30
1965	-0.17	-0.24	-0.10	-0.20	-0.43	0.20	-0.18	-0.22	-0.20	-0.40	0.02
1966	-0.05	-0.22	0.11	-0.06	0.60	0.20	-0.19	0.05	-0.03	0.09	-1.45
1967	0.04	0.06	0.01	-0.13	0.39	-0.11	0.03	-0.15	-0.26	0.38	0.30
1968	-0.10	-0.07	-0.13	-0.18	-0.28	0.11	-0.34	-0.04	-0.16	0.05	-0.15
1969	-0.14	-0.14	-0.14	0.23	0.12	-0.68	0.10	0.21	0.37	-0.83	-0.15
1970	-0.05	0.09	-0.19	0.05	0.06	-0.47	-0.11	0.01	0.26	-0.08	0.17
1971	-0.22	-0.16	-0.28	-0.21	0.10	-0.55	-0.20	-0.29	-0.15	-0.16	-0.05
1972	-0.19	-0.20	-0.19	-0.01	0.20	-0.62	-0.05	0.02	0.02	-0.45	-0.34
1973	0.19	0.25	0.13	0.40	0.53	-0.48	0.40	0.37	0.43	-0.13	0.50
1974	-0.03	-0.06	0.01	-0.03	1.01	-0.37	-0.13	0.03	0.01	-0.26	0.15
1975	0.07	0.16	-0.02	0.00	1.09	-0.52	-0.07	-0.01	0.08	0.40	0.01
1976	-0.24	-0.15	-0.33	-0.11	-0.27	-0.49	-0.34	-0.09	0.10	-0.41	-0.20
1977	0.16	0.12	0.20	0.31	0.70	-0.14	0.23	0.28	0.41	-0.09	-0.24
1978	0.10	0.16	0.06	0.24	-0.14	0.03	0.01	0.37	0.34	-0.14	0.15
1979	0.18	0.12	0.23	0.29	0.43	0.16	0.01	0.57	0.29	-0.01	-0.45
1980	0.38	0.31	0.46	0.53	0.97	0.12	0.61	0.32	0.67	0.02	0.15
1981	0.42	0.58	0.26	0.30	0.96	0.07	0.13	0.20	0.57	0.71	0.75
1982	0.20	0.16	0.25	0.43	-0.07	0.07	0.54	0.37	0.37	0.06	-0.29
1983	0.43	0.53	0.34	0.43	0.97	-0.36	0.65	0.46	0.18	1.11	0.12
1984	0.29	0.25	0.34	0.33	0.93	-0.21	0.69	0.11	0.19	0.28	0.44
1985	0.02	-0.21	0.25	0.18	0.53	0.16	0.21	0.24	0.10	-0.69	-0.31
1986	0.14	0.13	0.16	0.26	0.45	-0.17	0.26	0.31	0.21	-0.05	0.13
1987	0.46	0.30	0.61	0.92	0.42	0.10	0.96	1.12	0.68	-0.01	-0.63
1988	0.37	0.41	0.33	0.45	1.37	-0.46	0.44	0.65	0.26	0.45	0.40
1989	0.24	0.48	-0.01	0.15	-0.29	-0.14	0.11	0.28	0.07	0.73	1.02
1990	0.56	0.76	0.36	0.50	0.57	0.01	0.38	0.79	0.33	1.04	1.04
1991	0.48	0.46	0.51	0.55	1.25	-0.03	0.62	0.59	0.44	0.33	0.64
1992	0.14	0.08	0.20	0.40	0.76	-0.69	0.84	0.15	0.22	0.05	-0.23
1993	0.16	0.30	0.02	0.33	-0.09	-0.42	0.35	0.32	0.32	-0.14	1.10
1994	0.35	0.54	0.15	0.55	-0.42	-0.10	0.42	0.65	0.59	0.54	0.36
1995	0.64	0.98	0.28	0.76	0.17	-0.40	0.85	0.64	0.78	1.13	1.45
1996	0.46	0.49	0.42	0.67	1.54	-0.32	0.62	0.35	1.05	-0.16	0.84

Source: Angell, J.K. Air Resources Laboratory, National Oceanic and Atmospheric Administration, "Annual and Seasonal Global Temperature Anomalies in the Troposphere and Low Stratosphere, 1958-1996," NDP-008/R4 (an Internet accessible numerical database) (Carbon Dioxide Information Analysis Center, Oak Ridge, TN, 1997).

Notes: Zonal regions are defined as follows: Northern Hemisphere (equator - 90 N); Southern Hemisphere (equator - 90 S); Tropical (30 S - 30 N); South Polar (90 S - 60 S); South Temperate (60 S - 30 S); South Subtropical (30 S - 10 S); Equator (10 N - 10 S); North Subtropical (10 N - 30 N); North Temperate (30 N - 60 N); and North Polar (60 N - 90 N).