Population

The population of the study area in 1990 was about 7.78 million, an increase of about 14 percent between 1970 and 1990 (U.S. Bureau of the Census 1990 decennial census files). The study area is characterized by a population density that ranges from sparsely populated mountainous areas (less than 5 persons per mi^2) in parts of the headwater regions of northern New Hampshire and north-central Maine to the densely populated Boston, Mass. metropolitan area (more than 13,000 persons per mi^2). The study area contains six major metropolitan areas (table 6, fig. 16a). The Kennebec River Basin has about 0.21 million people (or less than 3 percent of the total in the study area), the Androscoggin River Basin about 0.20 million (also less than 3 percent), the Saco and northern coastal River Basins about 0.65 million (about 8 percent), the Merrimack River Basin about 1.76 million (about 23 percent), and the Southern coastal Basins about 4.96 million (about 64 percent).

Table 6. Population of the major metropolitan areas in the New England Coastal Basins study area in Maine, Massachusetts, New Hampshire, and Rhode Island

[Location of the metropolitan areas are shown in figure 16a]

Major metropolitan area	Population in 1992
Lewiston-Auburn, Maine	103,844
Portland, Maine	244,378
Boston, Mass.-N.H.	5,669,802
Providence-Fall River-Warwick, R.I.-Mass.	914,627
Barnstable-Yarmouth, Mass.	189,006
New London-Norwich, CT.-R.I.	248,246

Change in population density from 1970 to 1990 ranged from a loss of 114 persons per square mile in the Nashua River Subbasin to a gain of 250 persons per square mile in the Blackstone River Subbasin (fig. 16b). Plymouth County, Mass., Hillsborough County, N.H., and Rockingham County, N.H. were the fastest growing counties in the study area from 1970 to 1990 (fig. 1, U.S. Bureau of the Census, 1991). Suffolk County, which contains the city of Boston, decreased in population by nearly 8 percent from 1970 to 1990 (fig. 1). The expansion of the interstate highway system has allowed people to move further away from the old, densely populated metropolitan areas like Boston, Mass. and Providence, R.I. into the expanding suburban areas of east-central Massachusetts, southern New Hampshire, south-coastal Maine, and southern Rhode Island.

Land Use and Land Cover

Historically, rivers have played a major role in the development of the region's economy and land-use patterns. When European settlers first arrived in New England during the early seventeenth century, they found as much as 95 percent of the land covered with forests (Beattie and others, 1983). By 1870, more than half of the land in central and southern New England was cleared for crops, hay, pasture, and livestock. The agrarian base of the region's early economy resulted in small farms and small, closely spaced town centers. During the same period, the northern forests were extensively harvested for lumber. The Androscoggin and Kennebec Rivers (fig. 7) and their tributaries served as major transportation routes for harvested timber. These rivers also supplied hydropower and water for the many saw, pulp, and paper mills built to process wood products.

Regeneration of the forests in central and southern New England started with the westward expansion of the railroad and the beginning of the industrial revolution in the mid-1800's. As railroads began to provide transportation of food and other goods to the west, textile, leather, shoe, and other industries that required water power became established along the major rivers of New England. Many New England families abandoned their farms to work in these factories and mills or moved west in search of better opportunities. As a result, much farm land reverted back to forests and woodland. It was not until 1960 that the amount of agricultural land reverting to forest land leveled off (Frieswyk and Malley, 1985). Currently (1998), many of the large cities that are adjacent to rivers in the region, such as Manchester and Nashua, N.H., and Lawrence, Lowell, Haverhill, Methuen, Fall River, and New Bedford, Mass., began as factory or mill towns.

Land-use and land-cover information for the study area is derived from data compiled for the entire United States from topographic maps and high altitude aerial photographs at a scale of 1:250,000 and computerized at that scale (fig. 17) (Anderson and others, 1976). These data layers are a compilation of land use and land cover dating from about 1973 to 1981, and are available as Geographic Information and Retrieval System (GIRAS) files (U.S. Geological Survey, 1990). The urban part of this land-use data was updated with the U.S. Bureau of the Census 1990 population density data to reflect more accurately the current extent of residential and urban areas (Hitt, 1994). The land-use and land-cover information is classified as a

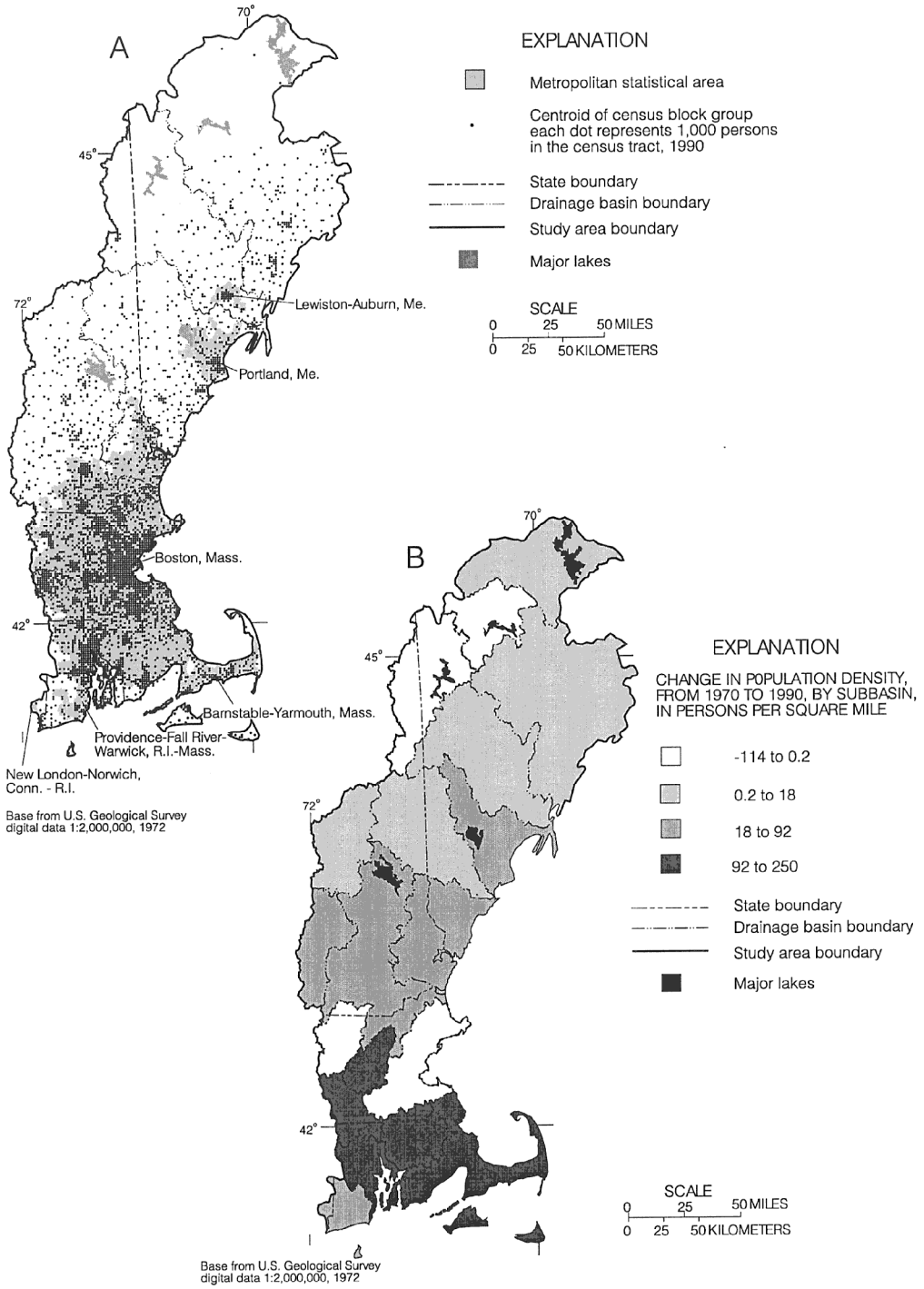

Figure 16. (A) Population distributions and metropolitan statistical areas in the New England Coastal Basins area in Maine, Massachusetts, New Hampshire, and Rhode Island (data from U.S. Census decennial files). (B) Changes in population density from 1970 to 1990, by subbasin.

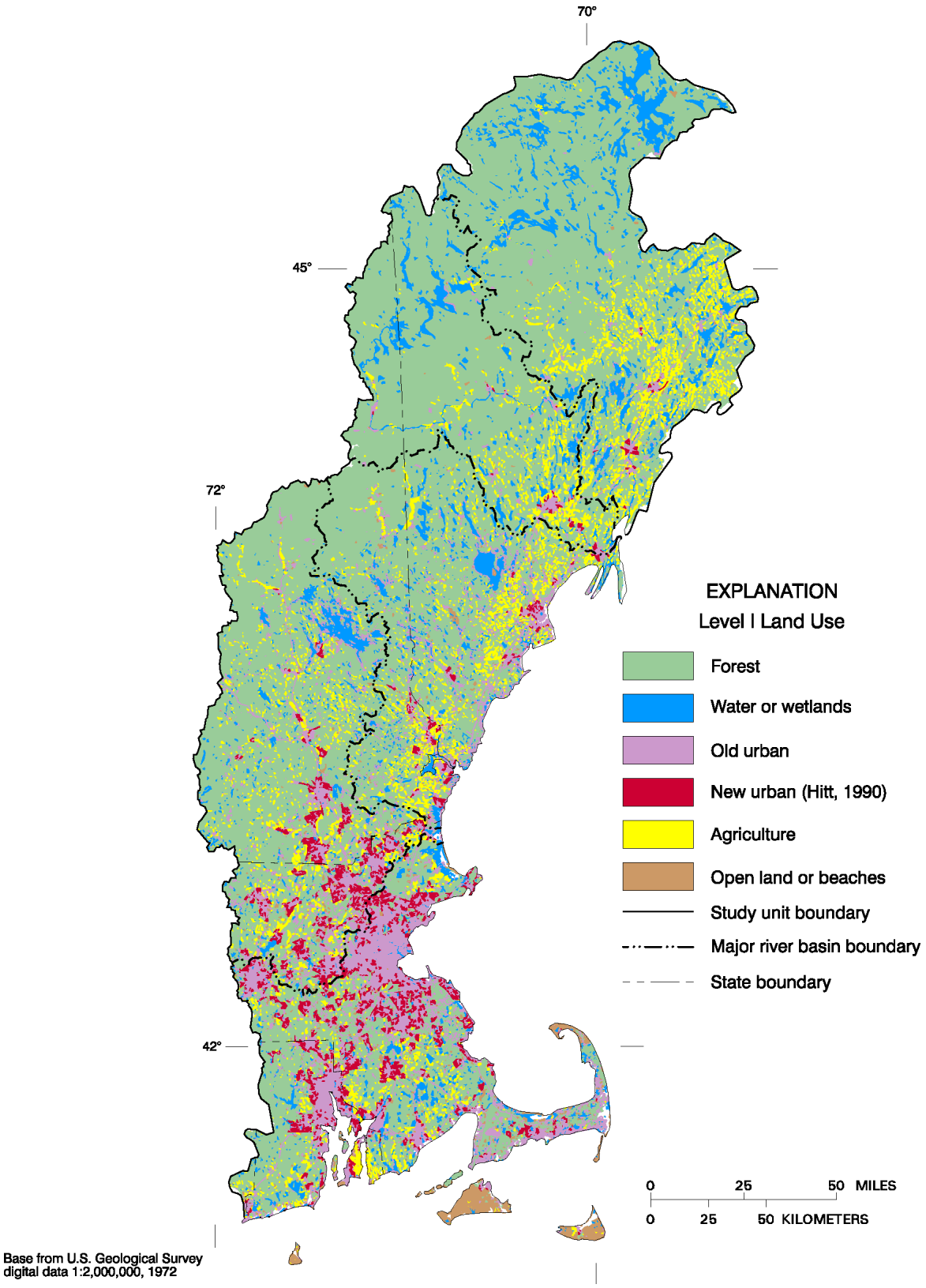

Figure 17. Generalized land use and land cover of the New England Coastal Basins, in Maine, Massachusetts, New Hampshire, and Rhode Island.

Table 7. Land use and land cover, by major river basin, in 1990, in the New England Coastal Basins study area, in Maine, Massachusetts, New Hampshire, and Rhode Island

[Surface water includes areas coded as surface water (lakes, ponds, reservoirs, rivers) and wetlands; Other includes areas coded as rangeland, barren, and beaches; Data from the U.S. Geological Survey's Geographic and Retrieval System]

Major river basin	Land use category, in square miles (percent of basin)					
	Forest	Urban	Surface water	Agriculture	Other	Total
Kennebec	4,841 (81.7)	96 (1.6)	601 (10.2)	371 (6.3)	13 (0.2)	5,922 (100)
Androscoggin	3,043 (86.6)	72 (2.0)	230 (6.6)	161 (4.6)	8 (0.2)	3,514 (100)
Saco and northern coastal	3,162 (75.6)	381 (9.1)	309 (7.4)	295 (7.1)	33 (0.8)	4,180 (100)
Merrimack	3,785 (75.3)	668 (13.3)	263 (5.2)	276 (5.5)	33 (0.7)	5,025 (100)
Southeastern coastal	2,204 (52.6)	1,386 (33.0)	312 (7.3)	219 (5.1)	205 (2.1)	4,326 (100)
Totals	17,035 (74.2)	2,603 (11.3)	1,715 (7.5)	1,322 (5.7)	292 (1.3)	22,967 (100)

hierarchical system of general (level 1) to more specific (level 2) characterization. The level 1 classification of "Forest Land", for example, is further subdivided into a level 2 classification as either deciduous, evergreen, or mixed evergreen-deciduous forest land. Although these data layers are somewhat outdated, with the exception of the urban areas, they represent the most current study-wide information available.

The updated land-use cover shows that there are four primary categories: forest land (74 percent); urbanized areas (11 percent); surface-water bodies such as rivers, lakes, wetlands, and reservoirs (8 percent); and agriculture (6 percent) (table 7). The areal pattern of land use is predominantly forest cover in the northern sections of Maine and New Hampshire; older, densely populated urban areas around the metropolitan cities of Boston and Providence; expanding suburban areas around these two cities; and small agricultural areas scattered throughout the lowland and coastal areas (fig. 17).

Forests

Forests cover 86.6 percent of the Androscoggin River Basin, 81.7 percent of the Kennebec River Basin, 76 percent of the Saco and northern coastal Basins, 75 percent of the Merrimack River Basin, and 53 percent of the Southern coastal Basins (table 7). These forests are primarily evergreen or mixed evergreen-deciduous. Recreation and timber harvesting for lumber and paper products are the primary economic activities in the forested lands in Maine and New Hampshire. The large expanse of forest cover includes most of the White Mountain National Forest (WMNF) (fig. 1). The WMNF covers 892 mi^2 (570,900 acres) in the study area and includes the headwaters of the Merrimack, Androscoggin, and Saco Rivers. Also included in the WMNF is the Hubbard Brook Experimental Forest in West Thorton, N.H., which covers 11.6 mi^2 and, since 1955, is world-renowned for its studies by the U.S. Forest Service and academia on the ecology and biogeochemistry of a northern hardwood ecosystem (Bormann and Likens, 1979).

Paper and timber companies own large tracts of commercial-grade timberland in northern New England. The U.S. Forest Service and the Governors' Task Force on Northern Forest Lands (1990) reported that as much as 95 percent of the northern forests in Maine are privately owned; forest statistics show that 86 percent of commercial forest lands in New Hampshire are privately owned (Cullen and Leak, 1988). Individuals own 90 percent of the commercial forest lands as small tracts in Massachusetts; and 88 percent in Rhode Island (Dickson and McAfee, 1988a, 1988b). Much of the wood harvested in northern New England is used for pulp and paper production industries. These industries are concentrated along the upstream reaches of the Kennebec and Androscoggin Rivers.

Since 1954, over 10 million acres in northern Maine have been treated with chemical and biological insecticides to reduce spruce-budworm (a defoliator) populations in the spruce-fir forest lands (Tom Doak, Maine Department of Conservation, Forest Service, written commun., 1994). From 1954-67, dichlorodiphenyltrichloroethane (DDT) was used to treat 21,000 to 479,000 acres of affected forest lands in

northern Maine. From 1970 through 1979, chemical insecticides such as fenitrothion, mexacarbate, carbaryl, and the bacteria *bacillus thuringiensis* (Bt) were used on areas ranging from 40,000 to 3.5 million acres in northern Maine (New England River Basins Commission, 1980a).

In commercial-grade timberlands, herbicides are applied to control emergent vegetation on recently harvested areas. In 1991, chemical herbicides were aerially sprayed over 12,000 acres of recently harvested forest lands in the Maine part of the study area to control the growth of emerging hardwoods and shrubs. By 1993, over 20,000 acres (31.3 mi^2 or 68 percent more than in 1991) of recently harvested forest lands (primarily in Somerset County, Maine) were sprayed with chemical herbicides (Tom Doak, Maine Department of Conservation, Forest Service, written commun., 1994). In total, these chemically treated acres represent only 0.3 percent of the land area in the Maine part of the study area. The two most commonly used chemical herbicides to control emergent vegetation in recently harvested forest areas are triclopyr (trade name 'Garlon') and glyphosate (trade name 'Rodeo').

Agriculture

The soils and climate of the study area are generally more suitable for growing trees than for growing crops. The 6 percent of the study area classified as crop land is primarily along major rivers underlain by fine-grained stratified drift in the valley lowlands and coastal plains. From 1985 to 1994, the number of farms declined 9 percent, but the average size of the farms (140 acres per farm) has not significantly changed (U.S. Department of Agriculture, National Agricultural Statistics Service, written commun., 1995).

The primary crops produced in the five major river basins are hay, corn, potatoes, fruits and vegetables (table 8), and lesser amounts of ornamental shrubs and Christmas trees. Cranberry farming is an important agricultural activity in Barnstable County, Mass., where 40 percent of the Nation's cranberry crop is produced.

About 107,000 head of beef and dairy are raised on farms throughout the study area (U.S. Department of Agriculture, Natural Resource Conservation Service, written commun., 1994). Dairy farming, still a principal agricultural activity, is declining as a result of rising land values, regulated milk prices, and competition with mid-western states. Poultry farming is a prominent agricultural activity in several counties, most notably Kennebec County, Maine.

Table 8. Estimated agricultural production, by major river basin, in 1994, in the New England Coastal Basins study area in Maine, Massachusetts, New Hampshire and Rhode Island, in 1994

[--, no data; data from District Conservationists, U.S. Department of Agriculture Natural Resource Conservation Service, written commun., 1994]

Significant agricultural activity	Estimated acres	Estimated production, in 1994
KENNEBEC RIVER BASIN		
Livestock	147,000	67,400 head
Poultry	730	975,000 birds
Horses	5,400	2,700 head
Vegetables	5,000	--
Fruit orchards	1,000	--
Corn (and potatoes)	9,250	18 to 20 tons per acre
Hay	12,600	3 tons per acre
ANDROSCOGGIN RIVER BASIN		
Livestock	11,000	14,500 head
Fruit orchards	3,100	14,800 tons
Horses	800	400 head
Hay	17,400	37,600 dry tons
Silage corn	5,500	75,350 green tons
Poultry	20	25,000 birds
Vegetables	730	--
SACO AND NORTHERN COASTAL RIVERS BASIN		
Hay	104,900	3 tons per acre
Vegetables	8,100	--
Fruit orchards	9,900	350 bushels per acre
Livestock	25,500	16,000 head
Corn	5,500	15 tons per acre
MERRIMACK RIVER BASIN		
Hay	34,500	2.5 dry tons per acre
Livestock	33,000	10,500 head
Fruit orchards	6,700	2.5 tons per acre
Vegetables	6,600	90 to 350 bushels per acre
Silage corn	4,800	18 tons per acre
SOUTHERN COASTAL RIVERS BASIN		
Hay	26,500	2 dry tons per acre
Livestock	--	30,300 head
Cranberries	15,000	--
Corn	9,200	116,400 green tons + 35,000 bushels
Fruit orchards	8,200	--

Estimates of nitrogen and phosphorus fertilizer use, not including manure application, for farm and non-farm applications were made for each county in the United States from 1945-91 (Richard Alexander, U.S. Geological Survey, written commun., 1995). These estimates are based on state-level fertilizer

application rates compiled by the U.S. Department of Agriculture (Alexander and Smith, 1990). State data were disaggregated to the county by use of data from the U.S. Department of Agriculture Census of Agriculture survey for the number of fertilized acres in each county. The county-level data were then multiplied by the fertilizer-use rate in each state to obtain estimated fertilizer use in each county.

In 1991, nitrogen fertilizer use ranged from near zero pounds per acre in Suffolk County, Mass. (which contains the metropolitan city of Boston), to 13.5 lbs/ac in Plymouth County, Mass. (fig. 18). In 1991, phosphorus (as phosphate) fertilizer use ranged from near zero lbs/ac in Suffolk County to 6.1 lbs/ac in Newport County, R.I. (fig. 18). In general, nitrogen and phosphorus fertilizer use were lowest in the headwater regions (or mountainous areas) and heavily urbanized areas and highest in the lower regions (or coastal areas) where most of the farming occurs.

A recent study by Pait and others (1992) summarized pesticide use in cultivated agricultural lands in the Nation's estuarine drainage basins for the year 1987. The study combined the nation's major estuarine drainage basins into five major areas. The North Atlantic estuarine drainage area (NAEDA) covers all coastal basins in eastern New England from Maine to eastern Massachusetts. Most of the New England Coastal Basins study area is in the NAEDA. According to this study, herbicides are applied to harvested croplands in the NAEDA primarily in April and May, insecticides primarily in May, and fungicides primarily from June through August. Atrazine was the dominant herbicide applied in the NAEDA with almost 53,000 lbs, or 21 percent of the total agricultural pesticides used. Other major herbicides used included 2,4-D (more than 21,000 lbs) and alachlor (more than 18,000 lbs). Carbofuran was the most heavily applied insecticide in the NAEDA (almost 8,000 lbs), followed by carbaryl (more than 7,000 lbs). These two insecticides are applied primarily to crops like corn, potatoes, and apples. Metiram was the dominant inventoried fungicide applied in the NAEDA, accounting for 25 percent (65,000 lbs) of the total agricultural pesticides used. Metiram was applied primarily to apples.

Urban and Industrial Activities

About 11 percent of the study area is classified as urban (fig. 17), of which 74 percent is residential, 10 percent is commercial, 5 percent is transportation, 2 percent is industrial, and 9 percent is other urban use. The percentage of urban land use ranges from 1.6 percent in the Kennebec River Basin to 33 percent in the Southern coastal Basins (table 7). The amount of newly urban lands classified from Hitt (1994), covers 492 mi^2; this represents an increase in urban lands of almost 19 percent since the 1970s and early 1980s (fig. 17). Also, about 230 mi^2 of these newly urban lands (or nearly 47 percent) overlie stratified-drift deposits.

Textile, leather, and shoe industries were the prominent industries in the major cities in the 19th and first half of the 20th century. The cities of Fall River, Lowell, Lawrence, Haverhill, Fitchburg, and New Bedford, Mass., and Manchester and Nashua, N.H., were nationally renowned for their textile mills and apparel industries (New England River Basins Commission, 1978). By the late 1950's, these industries began to decline throughout the New England States in response to competition with other markets in the United States and abroad. For example, employment in the textile industry in Rhode Island declined from 76,000 employees in 1941 to only 8,000 employees in 1995 (Vincent K. Harrington, Rhode Island Economic Development Corporation, written commun., 1996). Currently (1998), these older industries are being replaced or augmented by a more diverse economic base that locally includes rubber, paper, and plastic products; electrical machinery; food processing; wholesale and retail trade; construction; transportation and public utilities; finance; insurance; and real estate; health services; jewelry and toy manufacturing (in Rhode Island); and high technology industries such as computers and telecommunications. Pulp and paper manufacturing continue to be important industries in the upper parts of the Kennebec, Androscoggin, and Presumpscot River Basins.

In the densely populated urban areas, water is generally supplied by public and private utilities and sanitary-sewer collection systems transport wastewater to treatment facilities that discharge into major rivers or coastal (saline or brackish) areas. In 1990, 19 municipal wastewater-treatment facilities returned an average of 28.9 Mgal/d of treated wastewater back to rivers, streams, and coastal waters in the Kennebec River Basin, 14 facilities returned 19.8 Mgal/d in the Androscoggin River Basin, 42 facilities returned 68.4 Mgal/d in the Saco and northern coastal Basins, 48 facilities returned 129.8 Mgal/d in the Merrimack River Basin, and 67

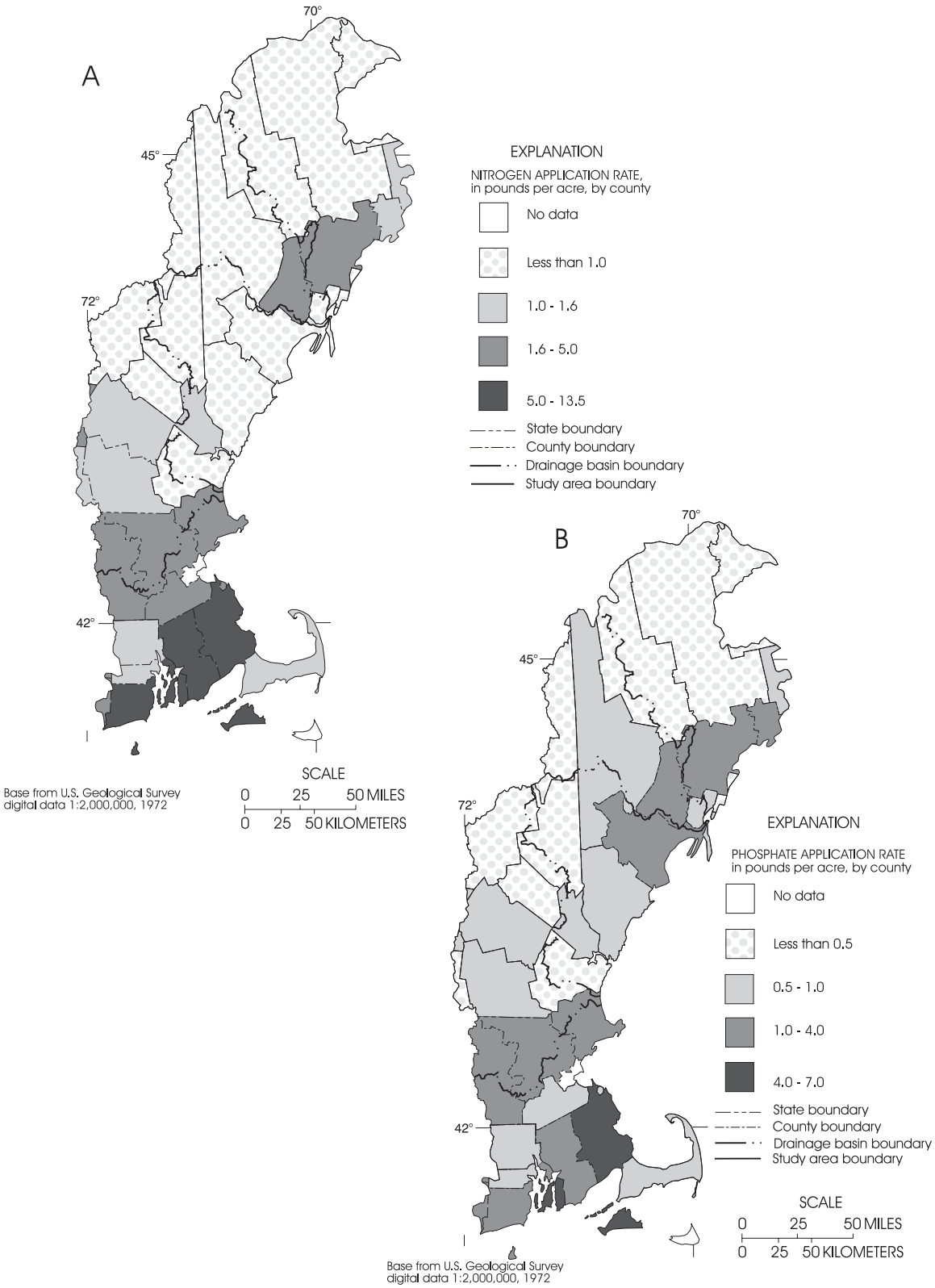

Figure 18. Nitrogen (A) and phosphate (B) fertilizer use in 1991, by county, in the New England Coastal Basins study area. [Data from Richard Alexander, U.S. Geological Survey, written commun., 1995.]

facilities returned 808.4 Mgal/d in the Southern coastal Basins (Medalie, 1996) (fig. 19). There are approximately 810 industrial waste-water dischargers in the study area (fig. 19; National Oceanic and Atmospheric Administration, written commun., 1997). The top nine industrial facilities are steam electric (non-cooling), metal finishing, water-supply treatment plant, machinery, pulp and paper, organic chemical production, electrical, electronic computer, and miscellaneous commercial-industrial.

There is also a net loss of water to a basin when a part of the total return flow from the affected basin is discharged into coastal waters. The volume of municipal waste-water return flow going directly into saline waters was 551 Mgal/d from the Southern coastal Basins and 42 Mgal/d from the Saco River Basin; this equals 56 percent of all total return flows in the study area (Medalie, 1996).

An inventory of more than 300 toxic chemicals that are released directly to the environment through the air, water, or land is maintained in the USEPA's Toxic Release Inventory (TRI) (U.S. Environmental Protection Agency, 1994). According to the TRI, about 12.3 million pounds of toxic chemicals were released to the environment in Maine, Massachusetts, New Hampshire, and Rhode Island in 1992. About 11.4 million pounds or 93 percent of the total were released to the air; the remaining 7 percent to land or water. In 1992, there were 21 industrial and chemical facilities from the TRI in the Kennebec River Basin, 23 in the Androscoggin, 54 in the Saco and northern coastal Basins, 211 in the Merrimack, and 481 in the Southern coastal Basins (fig. 20). The top 12 toxic chemicals released by industrial and commercial facilities in the four states in 1992 were toluene, 1,1,1-trichloroethane, methyl ethyl keytone, freon 113, trichloroethylene, sulfuric acid, hydrochloric acid, chlorine, chloroform, methanol, acetone, and xylene. Facilities releasing these chemicals to the air, water, and land include paper companies in Maine and northern New Hampshire and manufacturing companies in Massachusetts, southern New Hampshire, and Rhode Island (U.S. Environmental Protection Agency, 1994).

In 1997, there were 14,179 hazardous-waste sites in the study area (Amy Hoyt, U.S. Environmental Protection Agency, written commun., 1996). About 13,451 sites are managed under the USEPA's Resource Conservation and Recovery Act (RCRA) program, 638 sites are managed under the USEPA's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) program, and 90 military sites are managed under the Federal Facilities program (fig. 21).

Use of Water

Surface waters and ground waters are withdrawn primarily for domestic (or household), thermoelectric, commercial, and industrial uses. This water could be withdrawn by a public supplier or withdrawn by the user directly from an aquifer or from a lake or river. In-stream use for hydropower generation far exceeds total withdrawals and therefore is not included in the overall water-withdrawal compilations in this report. Water-withdrawal data were compiled from the USGS National Water-Use Information Program for the year 1995. Total withdrawals (from ground and surface waters) were about 1,430 Mgal/d with 31 percent derived from ground-water sources and 69 percent from surface-water sources (table 9).

Total surface-water withdrawals (for domestic, thermoelectric, commercial, industrial, mining, livestock, and irrigation use) exceeded ground-water withdrawals in all basins because surface waters tend to be used more by municipalities and industries, thermoelectric power plants, and gravel-pit operators. However, about 155.5 Mgal/d of surface water is withdrawn from the Quabbin Reservoir in the Connecticut River Basin (outside of the study area) in central Massachusetts and transferred to the Southern coastal Basins (primarily for domestic use to the city of Boston and about 45 surrounding cities and towns and managed by the Massachusetts Water Resources Authority) (Joseph Whitley, U.S. Geological Survey, oral commun., 1997). If this interbasin transfer was not counted, then total ground-water withdrawals in the southern coastal Basins would have exceeded surface-water withdrawals by a 54 to 46 ratio (table 9). In addition, about 90.6 Mgal/d of surface water is withdrawn from the Wachusett Reservoir in the Nashua River Subbasin and used in the southern coastal Basins (also primarily for domestic use). These surface waters, withdrawn from the Connecticut and Merrimack River Basins and used in the southern coastal Basins, are the largest interbasin transfer of waters in New England (Medalie, 1996).

More than 99 percent of thermoelectric water use (230 Mgal/d) is at one fossil-fuel burning power

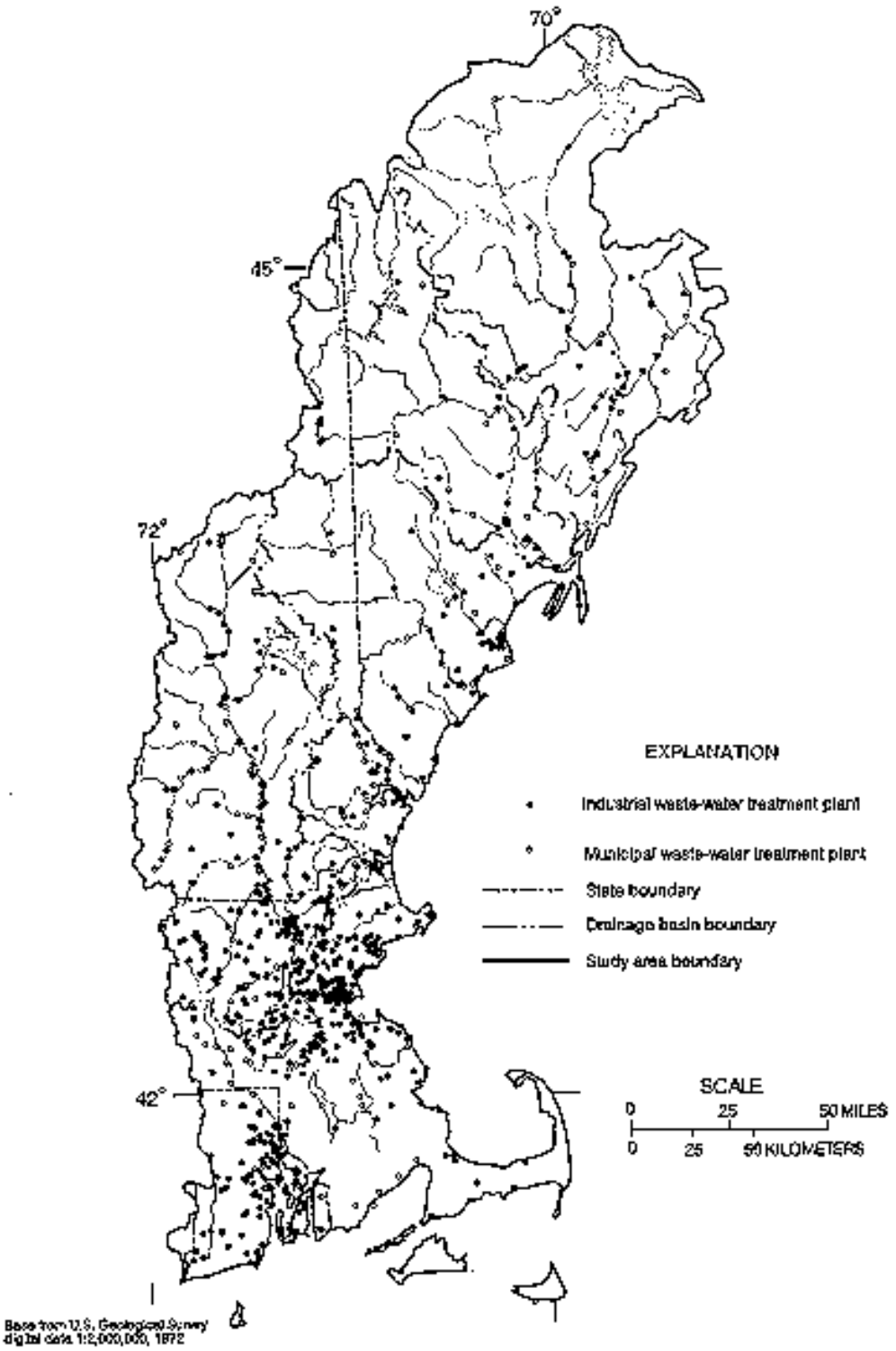

Figure 19. Location of selected industrial and municipal waste-water treatment plants in the New England Coastal Basins study area. [Data from National Oceanic and Atmospheric Administration, written commun., 1997, and Medalie, 1996.]

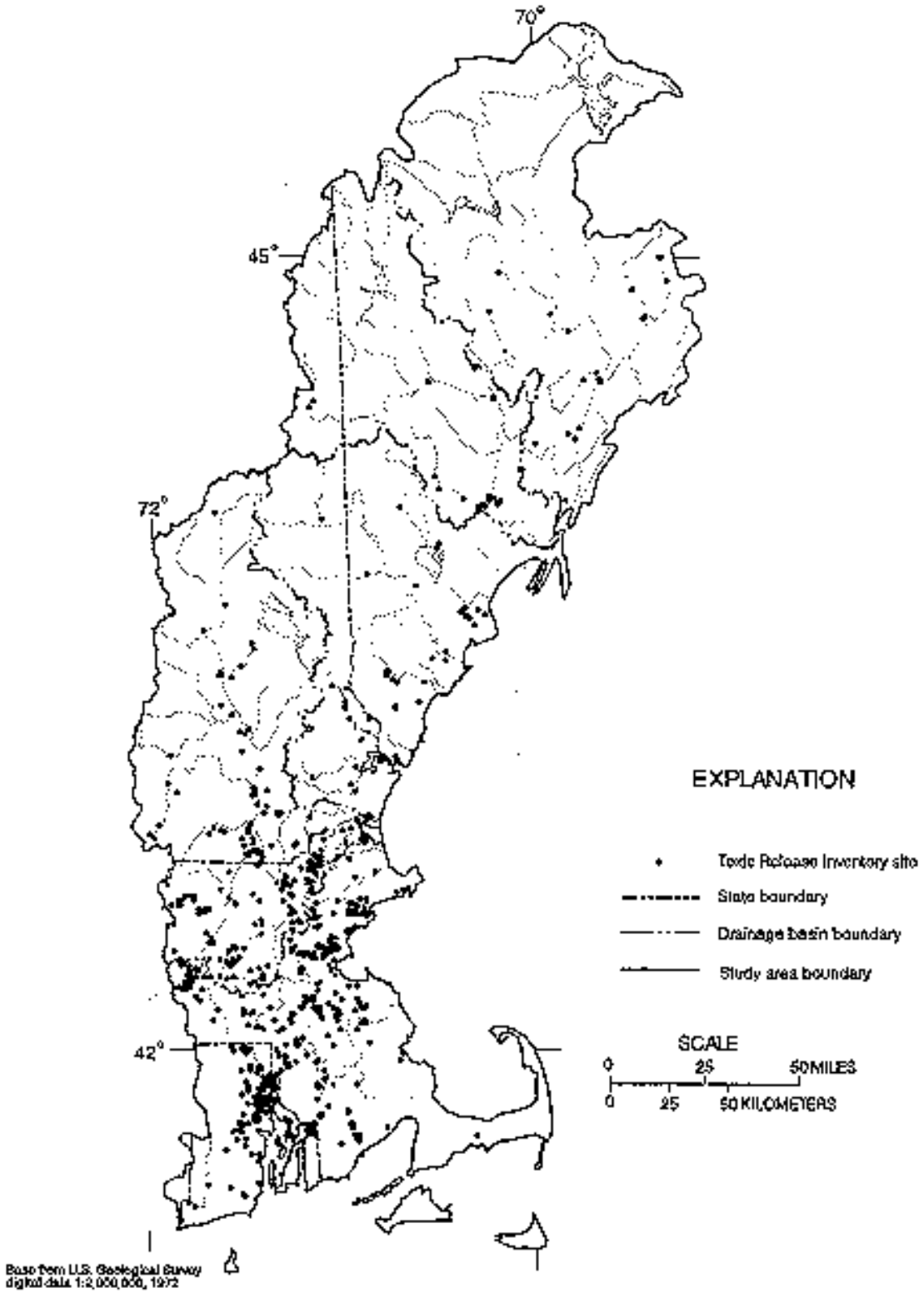

Figure 20. Location of toxic-release-inventory (TRI) sites in the New England Coastal Basins study area. [Data from the U.S. Environmental Protection Agency, 1994.]

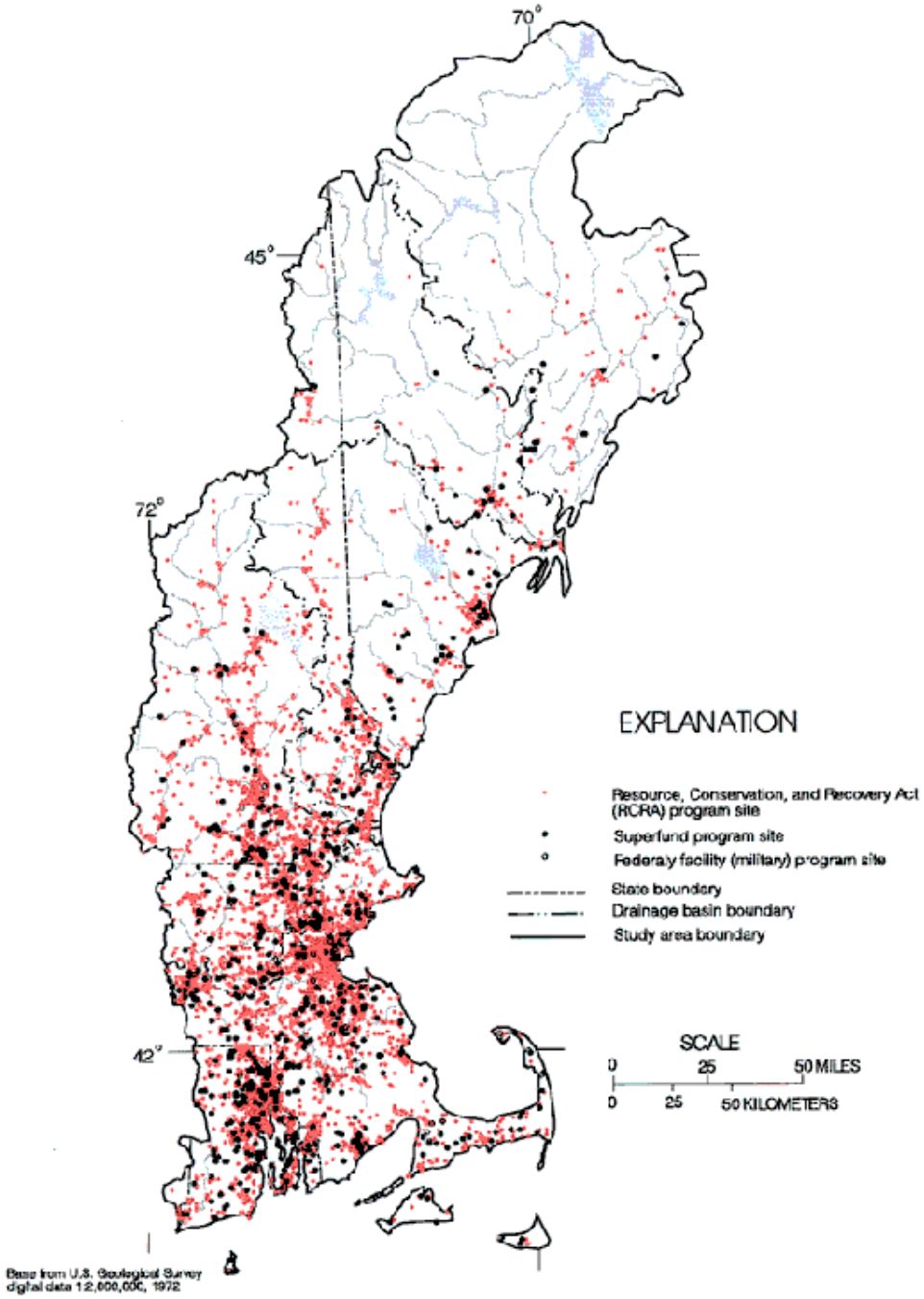

Figure 21. Location of hazardous-waste sites in the New England Coastal Basins study area. [Data from the U.S. Environmental Protection Agency, 1997.]

facility in Merrimack County, N.H. in the Merrimack River Basin (Medalie, 1997, p. 9). This facility withdraws water from the Merrimack River to use in its cooling system, and then returns the (warmer) water directly back to the river.

Total ground-water withdrawals (for domestic, thermoelectric, commercial, industrial, mining, livestock, and irrigation use) in the southern coastal Basins exceeds withdrawals from the other major basins in the study area. The proportion of total ground water withdrawn from each basin is dependent on the extent of productive stratified-drift aquifers, cost of using ground water in relation to surface water, population density at or near the water source, and the predominant use. Water withdrawn from fractured-bedrock aquifers is used primarily for domestic use and is generally available in much smaller quantities than water withdrawn from stratified-drift aquifers. For example, stratified-drift deposits cover 6.3 percent of the Androscoggin River Basin. As a result, less than 16 percent of water withdrawals from this basin were derived from ground water. In contrast, large, productive, stratified-drift aquifers are common in the southern coastal Basins; ground-water withdrawals provided 42 percent of total water withdrawals in that basin (table 9).

Table 9. Summary of total fresh-water withdrawals in 1995, by major basin and source, in the New England Coastal Basins study area in Maine, Massachusetts, New Hampshire, and Rhode Island

[Mgal/d, million gallons per day; Total fresh-water withdrawals include public-supply, self-supply, thermoelectric, commercial, industrial, mining, livestock, and irrigation, but excludes hydroelectric (or other in-stream) use. Public-supply and self-supply withdrawals for domestic use are summarized in table 10]

Major river basin	Total ground-water withdrawals, in Mgal/d (percent of total for basin)	Total surface-water withdrawals, in Mgal/d (percent of total for basin)
Kennebec	16.72 (38)	27.33 (62)
Androscoggin	9.98 (16)	52.84 (84)
Saco and northern coastal	44.58 (40)	67.9 (60)
Merrimack	96.96 (18)	[1] 446.57 (82)
Southern coastal	276.09 (42)	[2] 389.54 (58)
Study area totals	444.33 (31)	984.18 (69)

[1] Approximately 90.6 Mgal/d is withdrawn from the Merrimack River Basin, but is used in the southern coastal Basins.

[2] Approximately 155.5 Mgal/d is withdrawn from the Quabbin Reservoir in the Connecticut River Basin (outside of the study area in central Massachusetts, but is used in the southern coastal Basins.

Withdrawals from ground-water and surface-water sources for domestic use (defined as that water which is used for drinking water and other uses by households) in 1995 are further defined in table 10. Ninety percent of total (for the study area) public-supplied withdrawals from ground water sources were from the more populated Merrimack and Southern coastal Basins, as were 63 percent of total self-supplied withdrawals from ground water and 89 percent of total public-supplied withdrawals from surface water (table 10). Self-supplied withdrawals from ground-water sources exceeded public-supplied ground-water withdrawals in the sparsely populated Kennebec and Androscoggin Rivers, and the Saco and northern coastal Rivers Basins. Since self-supplied ground water comes primarily from the bedrock aquifer and public-supplied ground water comes primarily from stratified-drift aquifers, people in the rural, northern part rely more on the bedrock aquifer as a source of drinking water than people in the urban, southern part.

Table 10. Summary of public-supply and self-supply withdrawals for domestic use in 1995, by major basin and source, in the New England Coastal Basins study area in Maine, Massachusetts, New Hampshire, and Rhode Island

[PSGW, public-supplied ground water; Mgal/d, million gallons per day; SSGW, self-supplied ground water; PSSW, public-supplied surface water; SSSW, self-supplied surface water]

Major river basin	Population served by PSGW, in thousands of persons	PSGW withdrawals, in Mgal/d	Population served by SSGW, in thousands of persons	SSGW withdrawals, in Mgal/d	Population served by PSSW, in thousands of persons	PSSW withdrawals, in Mgal/d	Population served by SSSW, in thousands of persons	SSSW withdrawals, in Mgal/d
Kennebec	35	2.27	103	6.77	70	4.54	0	0
Androscoggin	35	2.29	66	4.3	77	5.15	0	0
Saco and northern coastal	174	12.91	244	16.36	286	19.72	1.7	0.12
Merrimack	695	47.28	354	24.41	657	47.81	4.9	0.34
Southeastern coastal	1,628	108.21	343	22.46	3,085	[1]198.33	0	0
Study area totals	2,567	173	1,110	74.3	4,175	275.6	6.6	0.46

[1]Approximately 155 Mgal/d originates in the Quabbin Reservoir in the Connecticut River Basin (outside of the study area).