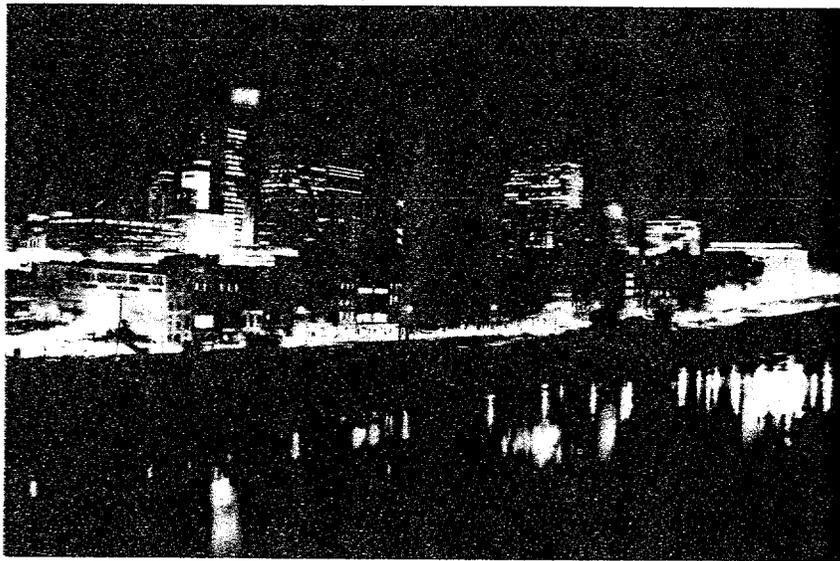
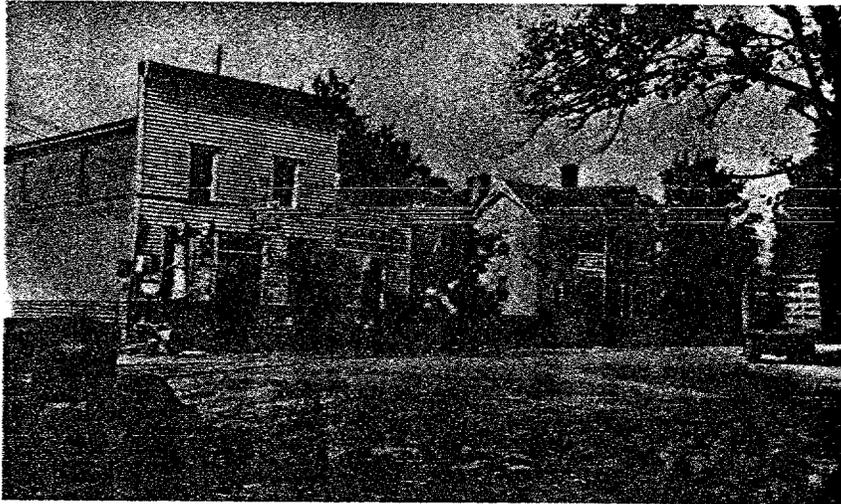


THE FIRST FIFTY YEARS: CHANGED LAND, CHANGED LIVES



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CONTENTS

In this, TVA's 50th year, it is appropriate that we look at what has happened to the environment and the natural resources it supports, to attempt to understand why environmental changes—for better or worse—have occurred, to define the present environmental conditions, and to identify the critical environmental problems facing the Tennessee Valley.

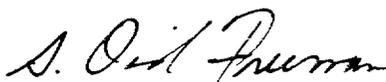
Because TVA is a resource development and conservation agency, we chose not only to characterize the environment in the usual way, that is, by providing data on air and water quality, for example, but also by relating these observations to the status of our natural resources—the forests and agricultural lands, the fish and wildlife, the streams and reservoirs—that so powerfully contribute to the economy and quality of life of present and future generations in the Valley. In attempting to do so, this report has identified both the strengths and weaknesses in our understanding, in available information, and in methods of problem solving.

TVA has a responsibility for environmental protection. It is TVA's continuing commitment, therefore, to strengthen our understanding of the environment and its natural resources so that we can move forward in our search for answers to the important environmental questions of today and tomorrow.

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Chairman



Director



Director

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FOREWORD

In this report on the Tennessee Valley environment, we have attempted to paint a broad-brush picture of present conditions that will serve as a benchmark or frame of reference for future assessments. The report examines the status of the land, water, and air and the effects of pollution or relative purity on people, vegetation, wildlife, birds, and fish. It discusses the practical uses and usefulness of our natural resources and the ways in which raw materials have been and are developed for agriculture, industry, and energy. It highlights current trends and patterns and the sometimes dramatic changes that have occurred during the past 50 years in resource use and development and in our perception of the value of those resources. It describes the people of the Valley—who they are and how, when offered the opportunity to choose, they balance factors to determine where and how to live.

All of us are part of our environment. Using accurate and current information, we can make full practical use of our natural resources and at the same time conserve them, maintaining a wholesome environment. Everything we do—every child we add to the population, every crop we plant, every home or factory we build, every waste we discard—affects our environment. Individually and collectively, our activities ultimately benefit or harm the earth, water, air, and all living things, including ourselves.

All natural resources are components of an integrated whole. Abuses of the land affect the air and water—often in direct and dramatically visible ways, but sometimes along indirect and imperceptible pathways. Ironically, some efforts to improve the quality of one natural resource may cause unforeseen and unintended degradation of other resources. In dealing with the "seamless web of the environment," no thread can be pulled without affecting the many others with which it is interwoven.

In preparing this report, we have collected a large amount of

information about the quality of our environment; nevertheless, the information is incomplete, failing to achieve the full promise of the report's goal. We present some sharp contrasts between the 1930s and the 1980s, but many of these contrasts are purely visual because no data from the 1930s are available on which to base scientific comparisons. Even if complete data were available, today's water resources could not be compared with those of the 1930s; the nature of the water resource has changed too dramatically. The resource of the land is equally difficult to compare. The abuses of the past may have been far easier to deal with than the current conflicts over land use.

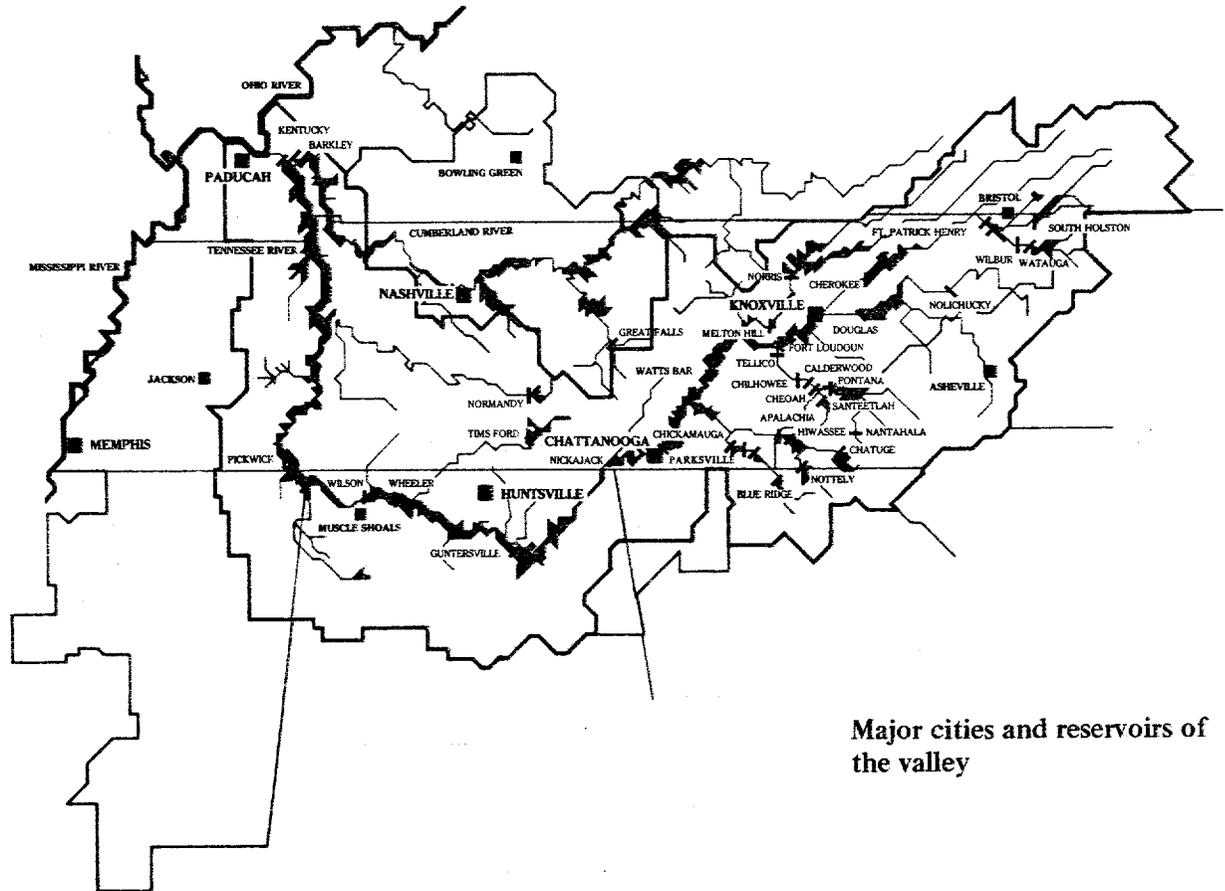
This report, then, is largely based on data compiled during the last two decades. Even during this time, we have been dealing with rapidly changing conditions and advances in scientific understanding and technological capabilities. Although we have responded to the questions of the past, new questions arise each day—and these questions cannot yet be answered. As we learn more, we ask more.

One problem in presenting statistics and data is that different people with different perspectives view the boundaries of the Tennessee Valley differently. The report deals with both a small geographically bounded Valley watershed and a larger encompassing region. Geographically, the Tennessee Valley includes only the drainage basin, or watershed, of the Tennessee River and its tributaries. Crescent-shaped, this 41,000-square-mile watershed includes all or parts of 125 counties that cover about half of Tennessee and smaller portions of Alabama, North Carolina, Virginia, Georgia, Kentucky, and Mississippi. These seven states are called the Tennessee Valley states, even though some contain little of the Tennessee River watershed. Another method of delineating the area follows neither geographic nor political boundaries, but instead defines the Tennessee Valley region as that area served

by the Tennessee Valley Authority's (TVA's) power grid in addition to the 125-county watershed (the Valley). The region includes the combined service areas of the 160 municipal and cooperative electric distribution systems that obtain power from TVA. The 91,000-square-mile region includes all or parts of 201 counties in the seven-state area. Statistics and data on some resources and environmental conditions are available only for the watershed, but others are recorded for the entire region. Therefore, statistics, when presented for the different areas, are not always comparable. Throughout the report, we have tried to specify whether data presented are for the 125-county Valley or the 201-county region.

A major contributor to this document, Wesley G. Smith, died on March 29. Wes, who provided the material on agriculture, was tireless in his concern for Valley agriculture, protection of prime farmland, and erosion control. He will be missed.

VALLEY GEOGRAPHY



Major cities and reservoirs of the valley

The Tennessee River basin begins in southwestern Virginia and extends along the mountain slopes of western North Carolina. These mountains are the source of two major tributaries, the Holston and French Broad, which join at Knoxville to form the Tennessee River. Journeying south, the river is fed by important tributaries such as the Little Tennessee, the Clinch, and the Hiwassee. Having already collected much of its silt and volume, the river then cuts through the Cumberland Plateau just west of Chattanooga and flows into northern Alabama. Meandering through northeastern Mississippi, the river veers northward through western Tennessee and the southwestern corner of Kentucky, where it feeds into the Ohio River only a short distance upstream from where the Ohio meets the Mississippi River. Near the end of the Tennessee's journey, the Elk and Duck rivers add their waters. The Tennessee River runs a 650-mile, U-shaped course that begins at Knoxville, Tennessee, sweeps

south of Huntsville, Alabama, and ends at Paducah, Kentucky.

The watershed of the Tennessee River, the fifth largest river in the United States in terms of flow, drains one of the wettest regions in the nation. Prevailing winds from the south and west carry moisture from the Gulf of Mexico and the Caribbean Sea into the watershed. This rain is not evenly distributed within the watershed, nor is it equally distributed in the year. Rainfall averages 52 inches a year in the Valley, but some of the eastern mountains receive an average of 90 inches a year. More than half the annual total falls from December to mid-April. September and October are usually the driest months. The mean annual runoff—rainfall that reaches streams, rivers, and lakes—is about 22 inches, but amounts have varied from 11 inches in an extremely dry year to 33 inches in the wettest year.

The Tennessee Valley is an area of contrasts. Rugged mountains and

green forests dominate the eastern third of the Valley; rolling hills, open fields, and woodlands lie to the west. From Mount Mitchell, towering 6000 feet above the eastern boundary of the watershed in North Carolina, the topography of the Valley ranges downward to Paducah, Kentucky, its western extremity, 300 feet above sea level. Of the basin's 26 million acres, about 60% are forested and 40% are open land and pasture. Nearly 900,000 acres of the Valley are covered by water.

Although largely a rural area, the Valley region is spotted with several large and medium-sized cities—Nashville, Knoxville, Memphis, and Chattanooga, Tennessee; Huntsville, Alabama; and Asheville, North Carolina. Much of the region's economic activity—agriculture, lumbering, mining, and recreation—is based on the Valley's natural resources, but the proportion of manufacturing and service jobs continues to increase.

THE EFFECTS OF CHANGE

The decades after the creation of TVA were years of rapid change as planned and unplanned forces combined to propel the Valley into the present. After World War II ended, the momentum of economic recovery was sustained by a population explosion, by international reconstruction of war-ravaged nations in Europe and Asia, by the political and economic competition that restructured the international community, by transportation developments that wiped out state, regional, and national boundaries as barriers to cultural, social, and economic interaction, by a scientific and technological explosion that ushered in the nuclear and space ages and revolutionized communications, and by cultural pressures that gave birth to the civil rights and women's rights movements. Every aspect of life in the Valley was altered during this era. As the 1970s drew to a close, this momentum was finally being dissipated, bringing about a restructuring of economic priorities.

Population

From 1930 to 1980, both the region and the nation became more urban. The percentage of the region's population living in urban areas doubled (from 25.2 to 50.6%), while the corresponding percentage living in rural areas dropped (from 74.8 to 49.4%). In the 1940s, population growth dropped from the high rate of the 1930s, and people moved away from the country. Only 93 of the counties in the region gained

population; 108 lost population. Most of the growth that did occur was in the middle and eastern parts of the region and was concentrated around four major cities: Asheville, North Carolina, and Nashville, Chattanooga, and Knoxville, Tennessee.

This trend continued from 1950 to 1960 as even more people moved out of rural areas and out of the region. Population decreased in two-thirds of the 201 counties, mainly in counties located in the northern and western parts of the region and along the North Carolina-Tennessee-Georgia border. The large cities again experienced growth, as did Paducah and Bowling Green, Kentucky; Jackson and Kingsport-Johnson City-Bristol, Tennessee; Muscle Shoals, Alabama; and Columbus and Tupelo, Mississippi.

Beginning in the 1960s, the region's settlement pattern began to change again. As population growth increased (rural population declining by a much smaller amount than before) and fewer people moved out of the region, 137 counties gained population and only 64 lost population. Major growth occurred around Asheville and within the corridor from Knoxville to Bristol. Finally, between 1970 and 1980, all but six counties gained population as the region's population increased more rapidly and people began to move into rural areas.

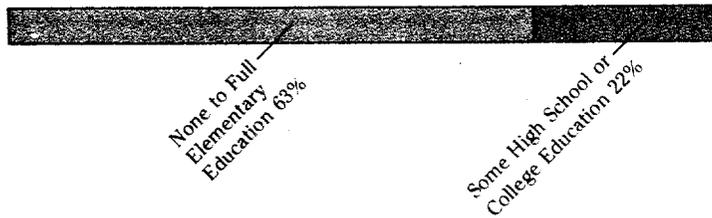
In total, from 1930 to 1970, about 1.6 million people left the region, primarily in search of improved economic conditions. One of the most important social developments in the Tennessee Valley region has been the reversal of this 40-year trend of population loss. In the early 1970s, nearly a quarter of a million people moved into the

A second convenience new to the Valley, automobiles and plentiful gasoline, allowed workers to travel longer distances from their homes to find work. Thanks to the automobile, children of the new generation would have a much broader vision of the world than their parents had.

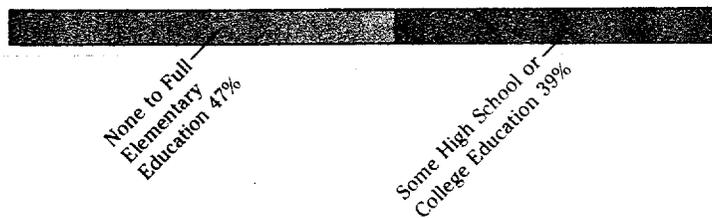


Comparison of National and Regional Educational Trends—Adults 25 Years Old and Over

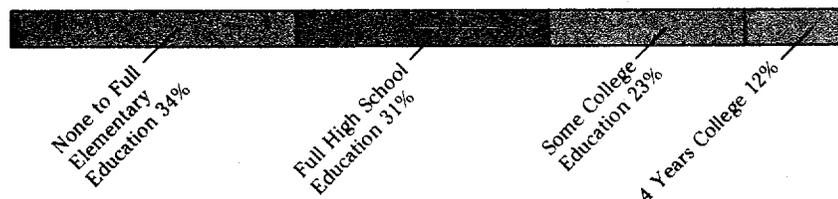
Regional—1950*



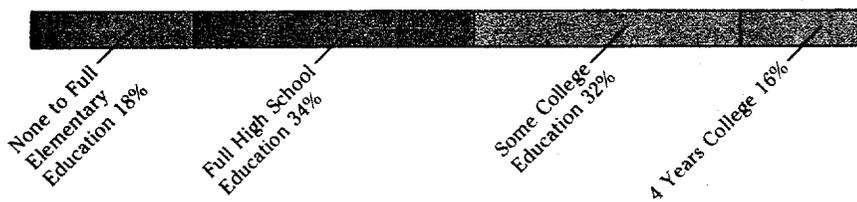
United States—1950*



Regional—1980



United States—1980



*Data are available for only about 85% of the population for 1950.

region. This turnaround pushed the region's population growth in the 1970s to 16.5%—the largest in 50 years.

Education

The Tennessee Valley has always lagged behind the nation in its level of educational attainment. The percentage of adults with no more than an elementary (eighth-grade) education is much higher in the region than throughout the nation, while the percentage with high school or college educations is much lower. Although the gaps have narrowed in the past 30 years, the region remains about a decade behind the rest of the nation: regional statistics for 1960 are similar to national statistics for 1950, and 1980 regional statistics are similar to 1970 national statistics.

In one important field for future jobs—engineering—the region is making major progress. The number of bachelor's degrees in engineering awarded in the region rose 45% from 1971 to 1980; the national increase was 38%. Attainment of master's degrees in the region rose by 14%, compared with a national decline of 1%.

Economy

Manufacturing. In the 1950s and early 1960s, several large, electric-intensive industries moved into the Valley to take advantage of low TVA industrial electric rates. Two such industries—chemical production and aluminum reduction—were well established by the 1960s.

These decades saw an influx of branch manufacturing facilities, especially into rural areas. Many routine manufacturing tasks had become standardized and large engineering staffs and several levels of management were no