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RIVER DEVELOPMENT IN TEXAS

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Water use, control, conservation, and development may be the most vital problem to the future of Texas. Regardless of the State's tremendous natural resources and the potentials for future industrial development, a firm water supply is one of the prerequisites for the continuance of its rapid industrialization. Moreover, the trend toward the concentration of population in urban areas will require an expanding supply of water to meet the diverse and ever-growing needs of a progressive population.

The water problem in Texas is a multifaceted one—a whole series of interrelated problems. One of these, particularly important to people living near a river, is flood control. Another problem, especially for urban areas and irrigated farming areas, is too little water or not enough water at the right time. The rapidly expanding industrial life, centered upon industries noted for their large consumption of water, creates more problems of water supply. Still other difficulties, such as soil erosion and stream pollution, are evident in the over-all Texas water problem. With changing conditions, one problem may be important today but relatively unimportant tomorrow. For example, the heavy rainfall of the past month tempered the urgency of the supply problem but re-emphasized the problem of flood control.

With the multiplicity of problems attached to water use, control, and development, it is not surprising that there is a lack of understanding and appreciation of the necessity for long-range planning in water management. The very size of the State and its breadth of changing environment are not conducive to a broad understanding of the numerous problems. Local interests may be well aware of their particular segment, but the interrelation of all segments requires a comprehensive knowledge of the various aspects of the water problems and their solution.

Primary reliance upon underground water reserves was a feature of water use in most sections of the State for many years, although in the past decade many cities have placed increasing reliance upon surface storage. As per capita consumption increased and irrigation became a more common

practice, underground reserves dwindled. In the older irrigation areas of the Texas High Plains, water levels have dropped 50 to 60 feet in the past 15 years, requiring deeper wells, higher installation costs, and more expensive operations. The declining water table has been caused primarily by the drilling of 15,000 irrigation wells to service 2,250,000 acres of land in the Texas High Plains during the past decade. Land under irrigation 10 years ago amounted to only 200,000 acres in this 20-county section. Some indication of the expanding urban needs may be gained from the experience of Dallas, where daily average water consumption increased from 28,271,000 gallons in 1940 to 62,626,000 gallons in 1953. Daily average per capita consumption was 55.1 gallons in 1920, 95.9 gallons in 1940, and 125.3 gallons in 1953.

Since water consumption by all types of users is increasing rapidly and underground reserves are dwindling, surface supplies are becoming more and more important, and the need for capturing a greater share of river runoff is more urgent. The specific problem of river improvement through dam and reservoir construction is the major consideration of this article. Obviously, river improvement is possible only where there are rivers with sufficient runoff and where the topography makes the construction of dams feasible. The central, southern, and eastern sections of the State stand to gain the greatest benefits from such a program, because most of the large Texas rivers are located in those areas.

Runoff of Texas Rivers

Certainly, there is an abundance of water in the rivers of Texas which, if impounded, could be used to great advantage. On the six interstate streams, an annual average of 24,900,000 acre-feet of water is discharged. On rivers wholly within Texas, an additional 28,300,000 acre-feet of average annual runoff occurs. Thus, from all streams in Texas, an average total of 53,200,000 acre-feet of water is available each year.

It should be noted that not all water in interstate streams is available to Texas. The International Boundary and Water

AVERAGE ANNUAL RUNOFF OF TEXAS STREAMS

(Acre-feet)

Stream	Average runoff
INTERSTATE	
Red River.....	8,875,000
Sabine River.....	6,952,000
Rio Grande River.....	4,783,000
Sulphur River.....	2,211,000
Cypress Creek.....	1,605,000
Canadian River.....	501,700
Total.....	24,927,700
INTRASTATE	
Neches River.....	6,254,000
Trinity River.....	5,922,000
Brazos River.....	5,723,000
Minor coastal streams.....	3,073,120
Colorado River.....	2,310,000
Guadalupe River.....	1,872,000
San Jacinto River.....	1,847,000
Nueces River.....	640,000
Navidad River.....	367,500
Lavaca River.....	328,100
Total.....	28,336,720
GRAND TOTAL.....	53,264,420

SOURCE: Texas Board of Water Engineers.

Commission allocates the water in the Rio Grande River between the United States and Mexico. Similarly, interstate compacts govern water allocation for such interstate streams as the Canadian, upper Rio Grande, and Pecos Rivers.

Besides the amount of rainfall, there are many other factors which affect the actual amount of runoff from a particular river. Because of a smaller drainage area, the average runoff near the headwaters of a river is much lower than that at the mouth of the river. The use of the land in the watershed — whether for pastures, crops, or woodland — and the development of soil conservation projects will affect materially the volume of water reaching the river. Similarly, a larger upstream withdrawal or appropriation for consumptive use, as well as evaporation from reservoirs, will lessen the runoff at the lower reaches of the river.

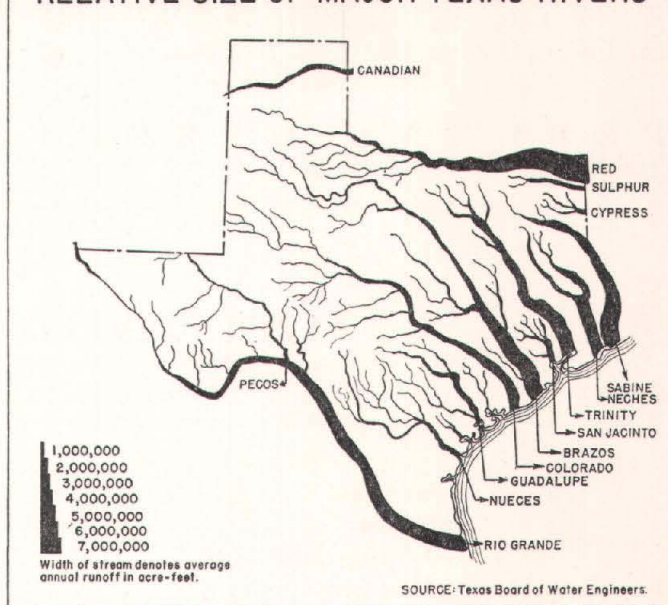
Nearly all Texas rivers have a wide variance in their yearly runoffs. For example, the annual runoff in the Trinity River near Riverside, Texas, has varied from 566,000 acre-feet to 10,530,000 acre-feet. The monthly runoff and daily runoff of this river show an even greater percentage variation. Such variations, stemming from fluctuations in rainfall and the moisture content of the soil at the time of rainfall, make it difficult to predict the amount of runoff. Under such conditions, a system of storage reservoirs is a virtual necessity to preserve water supplies and to decrease runoff damage.

Water Use

There are several consumptive and nonconsumptive uses for the water in Texas rivers. The consumptive-use category covers human needs, municipal uses, irrigation, manufacturing and industrial uses, and evaporation from reservoirs. Non-consumptive uses include navigation, hydroelectric power generation, abatement of stream pollution, and recreation.

There is a diversity of opinion among individuals and sections of the State as to which use should have priority or how the uses should be ranked. By legislative enactment, the order

RELATIVE SIZE OF MAJOR TEXAS RIVERS



of priority is as follows: Water for domestic and municipal uses, including water for sustaining human life and the life of domestic animals; industrial uses; irrigation; mining and the recovery of minerals; hydroelectric power; navigation; and recreation and pleasure. However, because Texas recognizes both riparian, or adjacent land use, rights and prior appropriation water rights, the legislative requirement on priority of uses cannot be said to be fully controlling. In fact, riparian rights or prior appropriation rights and the financial ability to pay for storage capacity are more likely to be the major considerations in determining the allocation of most surface water.

Agencies Concerned with River Development

In order to understand more clearly the present development and plans for future development of Texas rivers, it is necessary to consider those who are responsible for that development. In a sense, all the citizens of Texas are responsible for the solution to water problems, although certain local, state, and Federal agencies are directly concerned with the development of Texas rivers. The accompanying organizational outline indicates their respective positions relative to subdivisions of the State and Federal Governments.

I. State of Texas

A. Executive

1. Texas Board of Water Engineers
Administers water laws.
2. Governor's Water Committee
Created by the Governor to suggest needed water legislation.

3. Interstate Water Compacts

a. In operation

- (1) Canadian River — Texas, New Mexico, and Oklahoma
- (2) Pecos River — Texas and New Mexico
- (3) Upper Rio Grande River — Texas, New Mexico, and Colorado

b. In process of organization

- (1) Red River — Texas and Oklahoma
- (2) Sabine River — Texas and Louisiana

4. River Authorities and Water Districts

Only state entities empowered to issue bonds, finance projects, and plan and execute plans for river development. Plan and contract with Federal agencies for construction.

B. Legislative

1. House Legislative Water Committee, 1951-1953
No longer in operation
2. Senate State Water Resources Committee, 1953-1957.
Created by Senate to suggest needed water legislation.

C. Judicial

1. Courts
Adjudicate water right disputes.

II. United States Government

A. Executive

1. Construction Agencies
 - a. Bureau of Reclamation, Department of the Interior
 - b. Corps of Engineers, United States Army, Department of Defense
 - c. Soil Conservation Service, Department of Agriculture
2. Administrative, Service, and Regulatory Agencies
 - a. Federal Power Commission
 - b. Geological Survey, Department of the Interior
 - c. International Boundary and Water Commission, United States and Mexico, Department of State

The responsibilities of these agencies are not clearly defined, although the major spheres of interest of each can be delimited. Of the Federal agencies, Congress designated the Corps of Engineers as the main construction agent for flood-control and navigation projects. However, because of the design of such projects, many of them include hydroelectric generating capacity. The Bureau of Reclamation is the prime construction agent for conservation, irrigation, water supply, and hydroelectric power projects. The Soil Conservation Service is responsible for the development of upstream retention dams and the improvement of soils to limit water runoff. The United States Geological Survey measures water runoff and maintains records on the quality of water and the runoff of rivers. The International Boundary and Water Commission, composed of representatives of the United States and Mexico, controls the development of, and allocates the water in, the lower Rio Grande River. The Federal Power Commission is the consultant for the development of hydroelectric generating capacity in river projects.

Of the state authorities, the primary construction agencies are the river authorities and water districts, whose activities generally are correlated to and coordinated with those of one or more of the Federal agencies. For the most part, however, these agencies plan and develop local construction projects. The river authorities and water districts in Texas are created by legislative enactment and are empowered to issue bonds, levy taxes, plan and construct water retention projects, and allocate storage water to the various users. In general, the water districts must be approved or disapproved in special elections in their respective territories of jurisdiction. The river authorities and water districts are the only state agencies with the power to plan river projects and then execute those plans.

All other Texas water agencies are investigative, administrative, or regulatory in nature. The Board of Water Engineers supervises the development of water districts, approves or disapproves plans of the river authorities and water districts, regulates the appropriation of water, and administers all existing Texas water laws. Separate interstate compact commissions adjudge interstate water right disputes and allocate interstate water flows. These compacts require the consent of Congress, but they give no authority to finance or construct needed water projects. Other interested groups include various legislative committees, the Governor's Water Committee, and private groups or associations.

It will be noted that, as yet, no single Texas water agency is authorized to act for the entire State, either as to contracts with Federal authorities for the construction of river improvements or as to coordinated planning of such improvements. This fact may explain the absence of a central water plan or even a master plan for the development of any group of river basins in Texas.

Dams and Reservoirs

The only real method of storing river water is constructing a dam and impounding the runoff in a reservoir behind that

dam, but this involves some complex problems. One of the most troublesome is the financing of dam construction, the cost of which approximates \$15 to \$20 per acre-foot of storage capacity. For example, Whitney Dam and Reservoir, constructed from 1947 to 1951, averaged \$20 per acre-foot for a total cost of \$40,707,000.

In general, the cost of a dam and reservoir is apportioned as to the purposes for which they are constructed. If flood control and navigation are the major purposes of construction, the Federal Government pays most of the cost. If power generation is the major purpose, those costs directly attributable to it (such as the powerhouse), as well as a share of the general costs, must be repaid by power sales. Similarly, irrigation, municipal, and industrial water users must pay their share of the construction costs. If a multiple-purpose reservoir is constructed, with flood control and municipal supplies as the major purposes, the municipalities involved are required to pay only apportioned costs based on the alternative costs of constructing single-purpose reservoirs which would provide an equal amount of storage capacity.

In fact, the determination of who is to pay the construction costs may be the deciding factor as to the purpose for which the construction is intended. In the past, financing of a large share of reservoir capacity has been handled by the Federal Government because over 50 percent of reservoir capacity has been devoted to flood control. If local interests are content to accept the portion of reservoir capacity left after flood-control capacity is reserved, Federal financing will continue, and most river development in Texas will consist of a series of partially empty flood-control reservoirs. On the other hand, if local or state interests are willing to accept the share of financing necessary to obtain greater reservoir capacity for municipal and industrial supplies, the partially empty reservoirs will provide adequate storage for almost all purposes. The choice lies with the citizens of the State of Texas.

A second major difficulty in the construction of dams and reservoirs is the controversy over single-purpose construction versus multiple-purpose construction. Some informed people argue that if a flood-control dam is necessary, a separate dam and reservoir should be constructed, and the reservoir should be kept dry except for periods during which floodwaters are stored. On the other hand, others argue that a major saving in cost can be achieved by combining a number of purposes for dam construction into a plan for one large dam. This particular controversy has considerable meaning in the current Texas problem, because recent criticism of the construction of dams for flood-control purposes has raised the question of emphasis in future dam construction.

A third difficulty is the matter of timing. Planning, land acquisition, subsoil testing, and other preliminary jobs are necessary before any real construction is started, and the construction of a major dam and reservoir is, in itself, likely to require at least 2 years.

Present River Basin Development

At present, there are 523 lakes and reservoirs completed or under construction in Texas, each of which impounds at

least 100 acre-feet of water (1 acre-foot of water is equal to the amount of water necessary to cover 1 acre of land to the depth of 1 foot). Their storage capacity totals approximately 29,000,000 acre-feet, of which 19,000,000 acre-feet are reserved for hydroelectric power and flood control; 5,000,000 acre-feet, for municipal and domestic water supplies; 3,000,000 acre-feet, for irrigation purposes; and 500,000 acre-feet, for manufacturing and industrial water supplies; the remainder is held for recreation and dead storage. While these figures may seem large, it must be recognized that nearly 85 percent of all runoff of Texas rivers is allowed to pass unused into the Gulf of Mexico.

Of the 523 lakes and reservoirs, 34 have individual storage capacities in excess of 100,000 acre-feet, accounting for 24,218,000 acre-feet, or 84 percent, of total state capacity. Twelve of these 34 major reservoirs and lakes are operated or are under construction by the Corps of Engineers; five, by municipalities; one, by the International Boundary and Water Commission; and 16, by water districts, river authorities, and private interests.

Fourteen major projects, constructed with Federal funds at a cost of \$291,000,000, account for 64 percent of the total state water storage capacity. These 14 projects also account for over 75 percent of the State's entire flood-control storage capacity.

Of the dams and reservoirs in Texas, there are 10 which have hydroelectric facilities in excess of 5,000-kilowatts installed capacity, totaling 356,250 kilowatts. In the same projects, nearly 6,071,300 acre-feet of storage are reserved for flood-control purposes; 6,456,400 acre-feet, for conservation and power; and 2,713,500 acre-feet, for dead storage. Of these 10 projects, six are owned by the Lower Colorado River Authority and two, by the Corps of Engineers; one is owned by the International Boundary and Water Commission and one, by the Brazos River Authority. The accompanying map shows the location of the projects discussed in this article.

Although many municipal and river authority projects are not shown on the map, it is apparent that the bulk of the stor-

RESERVOIRS OF THE CORPS OF ENGINEERS IN TEXAS

June 1, 1954

Reservoir	Total estimated cost July 1, 1953	Controlled storage (Acre-feet)			Total
		Sediment and head	Con- servation	Flood control	
COMPLETED					
Addicks.....	\$ 4,879,000	—	—	188,000	188,000
Barker.....	4,130,000	—	—	129,300	129,300
Benton.....	14,300,000	84,900	125,700	887,000	1,097,600
Benbrook.....	10,945,700	15,750	72,500	170,350	258,600
Dam B.....	8,000,000	—	94,200	30,500	124,700
Denison.....	65,933,000	1,223,000	1,783,000	2,713,000	5,719,000
Grapevine.....	10,690,000	36,000	161,250	238,250	435,500
Hords Creek.....	2,279,746	2,860	5,780	16,670	25,310
Lavon.....	11,219,800	47,800	100,000	275,600	423,400
San Angelo.....	14,817,100	33,900	80,400	277,200	391,500
Whitney.....	40,707,500	255,300	131,700	1,630,500	2,017,500
Total.....	\$187,901,846	1,699,510	2,554,530	6,556,370	10,810,410
UNDER CONSTRUCTION					
Garza-Little Elm.....	\$ 24,732,066	53,500	436,000	526,700	1,016,200
Texarkana.....	33,000,000	—	145,300	2,509,000	2,654,300
Total.....	\$ 57,732,066	53,500	581,300	3,035,700	3,670,500
GRAND TOTAL..	\$245,633,912	1,753,010	3,135,830	9,592,070	14,480,910

SOURCE: Corps of Engineers, United States Army.

MAJOR DAM AND RESERVOIR CONSTRUCTION IN TEXAS



SOURCES: Data obtained from:
 Bureau of Reclamation,
 Corps of Engineers, U.S. Army.

age capacity in river reservoir construction projects is located in central and northcentral Texas. There are at least three good reasons for this concentration. First, there are a number of large rivers in this section whose flows and geographic environments are conducive to reservoir construction. Secondly, the central section of the State has the highest density of population and land values; hence, flood-control protection and adequate water supplies could be justified more easily in benefit-cost studies. Thirdly, there has been sufficient local financial backing to cover the local share of costs of construction.

Future construction projects also are concentrated in this central belt, although some large projects are planned in the east and southeast Texas areas.

Plans for Future Development

While there is no comprehensive plan for Texas river development, water management plans presently are conceived by several agencies. The Corps of Engineers, for example, has received Congressional approval for the construction of five major projects. It must be recognized, though, that mere authorization does not provide funds for construction. Together, the five projects would increase Texas water storage capacity by 9,300,000 acre-feet, which are almost equally apportioned to dead storage, conservation, and flood-control purposes.

Moreover, the Corps has recommended to Congress the construction of an additional seven projects totaling 3,300,000 acre-feet of storage, of which 2,600,000 acre-feet would be devoted to flood control; 421,000 acre-feet, to power or conservation storage; and 241,000 acre-feet, to dead storage. These projects have not yet received Congressional authorization or funds for construction, although recent action by the Brazos River Authority has brought a request for immediate authorization of six of these dams, estimated to cost \$145,000,000. Two of the proposed Corps of Engineers projects, White Oak and Lake Brownwood, are inactive; consequently, no definite plans are reported.

A recent proposal by the Bureau of Reclamation presents a comprehensive plan for an interbasin canal and storage project in southeastern Texas which would increase water storage capacity by 12,300,000 acre-feet. The tremendous cost of this project, estimated at \$1,100,000,000, as well as the lack of definite plans, probably will defer any action for many years. Another Bureau of Reclamation project, the Oakville water supply reservoir, also is considered inactive.

Another plan, initially proposed by the Bureau of Reclamation, provides for a major dam and reservoir on the Canadian River, impounding 1,905,000 acre-feet, of which 425,000 acre-feet would be held for flood control; 450,000 acre-feet, for sediment; and 1,030,000 acre-feet, for municipal and industrial water supplies. This \$85,000,000 project includes 320 miles of pipelines to serve 11 cities in the High Plains area. The Canadian River Municipal Water Authority, created by a recent legislative enactment, is making plans to issue bonds to pay for a major share of the construction cost.

AUTHORIZED AND RECOMMENDED PROJECTS OF THE CORPS OF ENGINEERS IN TEXAS

June 1, 1954

Project	Total estimated cost July 1, 1953	Controlled storage (Acre-feet)			Total
		Sediment and head	Con- servation	Flood control	
AUTHORIZED					
Brownwood ¹	—	—	—	—	—
Canyon.....	\$ 32,727,000	362,000	445,100	337,700	1,144,800
Dam A.....	3,210,500	—	—	—	—
Ferrells Bridge.....	20,900,000	—	283,700	558,300	842,000
McGee Bend.....	55,000,000	1,508,400	1,383,500	1,148,900	4,040,800
Mooringsport ¹	—	—	—	—	—
Rockland.....	46,237,000	1,141,700	1,125,500	1,020,100	3,287,300
Total.....	\$158,074,500	3,012,100	3,237,800	3,065,000	9,314,900
RECOMMENDED					
Cooper ²	n.a.	—	—	—	—
Ferguson.....	n.a.	40,600	62,200	516,400	619,200
Gonzales.....	n.a.	25,000	100,800	413,200	539,000
Lampasas.....	n.a.	34,900	56,200	389,900	481,000
Laneport.....	n.a.	16,600	28,400	236,100	281,100
Proctor.....	n.a.	32,700	31,400	256,600	320,700
Somerville.....	n.a.	25,900	38,800	326,000	390,700
Waco.....	n.a.	65,900	104,100	488,000	658,000
Total.....	n.a.	241,600	421,900	2,626,200	3,289,700
GRAND TOTAL..	n.a.	3,253,700	3,659,700	5,691,200	12,604,600

¹ Inactive project; definite plans are not available.

² Definite plans are not available.

n.a.—Not available.

SOURCE: Corps of Engineers, United States Army.

Several other projects are under consideration by the Federal agencies, but no definite plans have been released; nor have the projects been recommended to Congress. A large number of municipal projects also are being planned for future construction, although they do not total a very great amount of capacity. The present and proposed projects for which definite plans are available and excluding the Bureau of Reclamation's interbasin canal and storage project would give Texas a total water storage capacity of approximately 42,000,000 acre-feet.

Several facts are outstanding in this brief summary of future plans for river development in Texas. First, nearly all concrete plans for storage capacity in excess of 500,000 acre-feet are the result of efforts by one or more of the Federal agencies. There is a conspicuous absence of state plans for specific projects. Some local plans are in evidence, but many of these are tied to Federal projects.

Secondly, it is apparent that, unless other plans are formulated, river development in Texas will be dependent largely upon future appropriations from Congress. For those appropriations, Texas must compete with projects in all other states.

Finally, it should be noted that many of the plans for future construction projects which are predicated upon economic conditions prevailing a number of years ago will require extensive recalculation in the light of current conditions. This alone could cause a considerable delay in construction; therefore, it should not be assumed that construction could begin immediately even if Congress should authorize the recommended projects and appropriate the necessary funds.

Problems of Future Development

One of the major difficulties attending future development is the determination of the purposes for which dams should

be constructed or for which water should be allocated. There is a considerable difference between operating a dam and reservoir for flood control and operating them for nearly any other purpose. Flood-control operation requires that the flood storage capacity in a reservoir be kept empty except during periods when floodwaters actually are stored. All other purposes require either conservation of water or a steady stream flow.

Another major difference is noticeable in the operation of a reservoir for water supply as against any other purpose except recreation. For municipal and industrial supplies, the water must be conserved whenever available, so that these demands may be met even in periods of below-normal rainfall.

Still another difference in reservoir operation is apparent. Operating a reservoir for hydroelectric power assumes a release of storage water whenever the demand for power dictates the use of turbines, and this release may not coincide with demands for downstream use.

For all of these differences, there is also a harmony of operation evident between many of the purposes, and there could be an even greater coordination by some rather small adjustments. The fact that hydroelectric power generation, navigation, and recreation do not consume water except by evaporation and seepage but merely use it allows for other uses farther downstream. Therefore, constructing a reregulating reservoir and adjusting the release of storage water so as to allow for power generation and navigation — as well as for downstream withdrawals for irrigation, water supply, and other uses — should mean the maximum utilization of all stream flows.

For reservoir construction and operation, only two major problems cannot be solved by such coordination. First, the method of flood-control operation does not allow for coordinated use of the same storage capacity. Only if a greater number of dams or dams of larger size were to be constructed, would there be sufficient storage capacity to allow reservoir operation for all purposes consistent with flood control. Secondly, reservoir operation for hydroelectric power generation requires water releases when demands for electricity are at a peak and not necessarily when downstream users need the water.

In a period of drought, such as that which has been in evidence during the past 4 years in Texas, people sometimes lose the proper perspective on the relative purposes of river development. Municipal and industrial water supplies and water for irrigation become more important, while flood-control, navigation, recreation, and hydroelectric power storage capacities are deemed of lesser importance. Similarly, in periods of agricultural surpluses, many people question the advisability of constructing large reservoirs for irrigation purposes when irrigation will merely improve agricultural productivity and thus contribute to larger surpluses.

It must be remembered that each purpose of river development is important to those particularly affected by the problem it represents. One purpose becomes dominant in one set

of economic and geological conditions, whereas another becomes dominant as conditions change. What is really important is providing adequate storage for the utilization of the runoff of rivers and yet controlling those rivers so that future runoff will not endanger people or their property. Other than the allocation of scarce supplies among consumptive users, the only chance of possible conflict between purposes would arise when construction sites or funds are limited.

Nearly 64 percent of the storage capacity of reservoirs in Texas has been financed by the Federal Government, primarily because the Government has been willing to spend the funds necessary to construct flood-control reservoirs. Where water supply has been a secondary purpose of construction, local or state financing has aided in that construction. In those sections of the State where water supply is of paramount importance, the local or state authorities often have been unwilling to recognize the realities of cost. They have attempted to solve the problem by encouraging the construction of flood-control reservoirs, hoping that a large portion of the reservoirs eventually may be dedicated to water supply and that local interests will have to pay only a small share of the total cost.

It is unfortunate that, to some extent, Federal participation in dam construction has stultified the initiative of local interests who have been willing to attack their water supply problems. Local interests should be willing to take on a larger and larger share of the financing to insure the availability of storage capacity for their purposes. The only real difficulty with such local control is that local construction projects may not fit into the best over-all plan for water conservation and development.

Of course, one of the major problems in achieving such a plan is that of forecasting future water requirements. Some work on this has been done by the larger cities and some, by the Bureau of Business Research of the University of Texas in conjunction with the Bureau of Reclamation. However, more study of future requirements will be necessary in order to plan intelligently for needed storage space, and, certainly, a tremendous job of analysis is needed to forecast the growth of cities and industrial areas in the State. Such analysis work should precede long-range plans of river development, but construction for immediate needs and those in the near future should not be deferred until this study is complete.

A concomitant study of water availability should be made to catalogue sources of supply and give an accurate picture of the sites available for dam and reservoir construction. Such a study should include projections of underground and surface supplies in all phases of the water cycle.

By a comparative analysis of these two studies, a comprehensive water development and allocation plan could be prepared. This plan should indicate the purposes for which projects in each watershed would be attempted, as well as a detailed plan for financing the projects.

One of the first actions to accomplish this over-all plan would be the designation of an adequate authority or com-

mission for state water planning. Merely creating a legislative committee to study the problem is insufficient. Texas has had a number of these committees, and, yet, it is still without the services of a group which has the authority to plan and execute major projects for water use, control, conservation, and development. Such a commission should be authorized to make plans and enter into contracts with Federal agencies, after proper review and action by the Legislature of Texas and

Congress, for the planning and construction of projects which are deemed necessary in the light of future requirements. To establish this commission, it is necessary to enlist a larger and larger number of citizens of Texas in support of a definite program for water development. Complete coordination of and cooperation among state agencies, Federal agencies, and local interests in a unified plan of development should go a long way toward solving Texas water problems of the future.

NEW MEMBER BANKS

The MacGregor Park National Bank of Houston, Houston, Texas, a newly organized institution located in the territory served by the Houston Branch of the Federal Reserve Bank of Dallas, opened for business May 15, 1954, as a member of the Federal Reserve System. The new bank has capital of \$300,000, surplus of \$100,000, and undivided profits of \$100,000. The officers are Ben Taub, Chairman of the Board; N. H. Mitchell, Vice Chairman; C. B. Carter, Jr., President; John A. Beck, Vice President; Carl Galloway, Cashier; and Richard G. Honea, Assistant Cashier.

The Industrial National Bank of Dallas, Dallas, Texas, a newly organized institution located in the territory served by the Head Office of the Federal Reserve Bank of Dallas, opened for business May 28, 1954, as a member of the Federal Reserve System. The new bank has capital of \$300,000, surplus of \$150,000, and undivided profits of \$50,000. The officers are: Robert B. Holland, Chairman of the Board; George I. Fetzer, President; Alvin H. Lane, Chairman Executive Committee; C. H. Wise, Vice President and Cashier; John H. Tenison, Assistant Cashier; and Mildred Vontsteen, Assistant Cashier.

NEW PAR BANKS

The Lake Providence Bank, Lake Providence, Louisiana, an insured, nonmember bank located in the territory served by the Head Office of the Federal Reserve Bank of Dallas, was added to the Par List on May 1, 1954. The officers are George S. Lensing, President; G. T. Hider, Vice President; Leo A. Lensing, Vice President; Eloise M. Harbin, Cashier; Mary K. Pearl, Assistant Cashier; and Burta R. Pinkston, Assistant Cashier.

The Oak Forest State Bank, Houston, Texas, a newly organized, insured, nonmember bank located in the territory served by the Houston Branch of the Federal Reserve Bank of Dallas, was added to the Par List on its opening date May 22, 1954. The officers are B. D. Tucker, President; C. E. McLean, Executive Vice President; and Leroy Beavers, Cashier.

REVIEW OF BUSINESS, AGRICULTURAL, AND FINANCIAL CONDITIONS



District department store sales in April rose 12 percent from March and were 1 percent above those of April 1953, reflecting largely the later date of Easter this year. Sales in the first half of May were 4 percent below a year ago. Cumulative 1954 sales through April trailed year-earlier figures by 5 percent.

Consumer buying at department stores in April reflected a strong and rising demand for wearing apparel and small wares and a lower demand for major household durables, compared with a year earlier. Department store inventories at the end of April were 6 percent below a year ago; merchandise on order was down 28 percent.

General rains during May improved greatly the prospects for crop production in the District this year. Planting of summer crops is virtually completed. Farm commodity prices generally held strong or advanced slightly during the month.

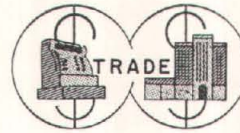
Oil production in the District declined in May following four successive monthly increases. Refinery activity in the District declined moderately in the first part of May, but crude runs in the Nation's refineries were above the April level.

Crude oil stocks in the Nation rose during March and April but were still below a year ago. Gasoline stocks, which have been heavy, showed a 14-percent year-to-year rise as of mid-May.

Total nonagricultural employment in District states increased from February through May to reach a level 1 percent below a year earlier; manufacturing employment was down 2 percent.

The value of construction contracts awarded in the District in April was 3 percent above the year-earlier total. Cumulative awards from January through April showed the same percentage change from 1953.

Loans and investments of weekly reporting member banks increased \$55,329,000 during the 4 weeks ended May 19, reflecting in large part the purchase of United States Government securities offered during that period. Deposits rose \$19,079,000, in contrast with a decline of \$162,112,000 in the corresponding period last year.



The total dollar volume of retail sales at District department stores during April rose 12 percent above March and 1 percent above April 1953. This favorable showing with respect to both a month ago and a year ago was accounted for mainly by the fact that a greater proportion of Easter sales was in April this year than was the case last year. Dollar-volume sales rose further during the first half of May but were 4 percent under the comparable period a year earlier.

The seasonally adjusted index of sales, which allows for varying seasonal influences, rose 5 percent above that for March and was 3 percent under the adjusted index for April 1953.

The more than seasonal rise in consumer buying during April offset the dip that occurred in March; as a consequence, cumulative sales for the first 4 months of 1954 moved to 5 percent below those of a year earlier, compared with a year-to-year decline of 8 percent at the end of March. Cumulative sales at department stores in the Nation were 3 percent below those in the first 4 months of 1953.

The pattern of consumer buying during April emphasized the strong and rising demand for wearing apparel and small wares and the lower demand for major household durables, compared with the same month last year. Sales of men's clothing rose 10 percent, while sales of various categories of feminine apparel registered gains ranging from 2 percent for sportswear to 38 percent for girls' wear. On the other hand, total sales of durable goods in April declined 17 percent from a year ago; losses ranged from 3 percent for radios and phonographs to 38 percent for television sets, with a 19-

RETAIL TRADE STATISTICS

(Percentage change)

Line of trade by area	NET SALES			STOCKS ¹	
	April 1954 from		4 mo. 1954 comp. with 4 mo. 1953	April 1954 from	
	April 1953	March 1954		April 1953	March 1954
DEPARTMENT STORES					
Total Eleventh District.....	1	12	-5	-6	1
Corpus Christi.....	-5	12	-11	-7	1
Dallas.....	8	14	-2	-3	3
El Paso.....	2	22	-8	-5	-1
Fort Worth.....	4	21	-6	-5	#
Houston.....	-3	6	-5	-9	-1
San Antonio.....	-7	-2	-10	-9	#
Shreveport, La.....	-1	15	-4	-13	1
Waco.....	8	24	-7	1	5
Other cities.....	5	22	-2	-5	5
FURNITURE STORES					
Total Eleventh District.....	-12	1	-	-14	-2
Austin.....	-13	-7	-	-3	2
Dallas.....	-1	13	-	-25	-12
Houston.....	-8	12	-	-	-
Port Arthur.....	-15	6	-	-	-
San Antonio.....	-21	-6	-	-	-
Shreveport, La.....	-13	6	-	-18	-2
Other cities.....	-15	-8	-	-10	-#
HOUSEHOLD APPLIANCE STORES					
Total Eleventh District.....	-4	6	-	-	-
Dallas.....	-1	6	-	-	-

¹ Stocks at end of month.

Indicates change of less than one-half of 1 percent.

WHOLESALE TRADE STATISTICS
Eleventh Federal Reserve District
(Percentage change)

Line of trade	NET SALESp			STOCKS ¹ p	
	April 1954 from		4 mo. 1954 comp. with 4 mo. 1953	April 1954 from	
	April 1953	March 1954		April 1953	March 1954
Dry goods.....	-13	-6	-12	-9	2
Grocery (full-line wholesalers not sponsoring groups)....	17	-1	1	17	-1
Hardware.....	#	6	-1	-5	-3
Industrial supplies.....	-14	-3	-7	-13	6
Metals.....	2	-9	-8	-12	3
Tobacco products.....	-7	-7	-7	0	0
Wines and liquors.....	-17	-9	-8	22	-6
Wiring supplies, construction materials distributors.....	-5	11	—	—	—

¹ Stocks at end of month.

p—Preliminary.

Indicates change of less than one-half of 1 percent.

SOURCE: United States Bureau of the Census.

percent decline in sales of major appliances and an 18-percent decrease in furniture sales. Durable goods sales during the month represented 13 percent of total store sales, compared with 17 percent in April 1953.

The influence of the shift in consumer preference in April was reflected in other important phases of department store operations. Both cash sales and charge account sales were 10 percent above those of March, while instalment sales declined 1 percent. Compared with a year earlier, charge account sales were up 9 percent, while cash sales and instalment sales declined 1 percent and 5 percent, respectively.

The wider use of short-term, or charge account, credit (reflecting larger sales of wearing apparel) and a 12-percent decline in charge account collections in April resulted in a month-to-month increase of 4 percent in department store charge accounts outstanding. On the other hand, instalment collections during the month exceeded instalment sales, resulting in a month-to-month decline of 2 percent in longer term credit outstanding. At the end of April, charge account receivables were 2 percent higher than a year ago, and instalment accounts were up 5 percent.

Inventories at District department stores rose 1 percent during April but at the end of the month were 6 percent below a year earlier. Most reporting stores consider their inventory positions sound, both in balance and in volume, as related to individual store plans and the current level of trade.

INDEXES OF DEPARTMENT STORE SALES AND STOCKS
(1947-49 = 100)

Area	UNADJUSTED				ADJUSTED ¹			
	April 1954	Mar. 1954	Feb. 1954	April 1953	April 1954	Mar. 1954	Feb. 1954	April 1953
SALES—Daily average								
Eleventh District.....	119	102	98	117	120	115	121	124r
Dallas.....	116	98	102	107	122	106	120	118r
Houston.....	133	120	110	137	134	137	140	146r
STOCKS—End of month								
Eleventh District.....	138p	136	127	146	130p	127	130	138

¹ Adjusted for seasonal variation.

r—Revised.

p—Preliminary.

Merchandise on order at the end of April was 26 percent and 28 percent, respectively, below a month ago and a year ago. This lower volume of orders reflects the present atmosphere of relatively stable wholesale and manufacturers' prices, the absence of shortages, and the assurances of adequate supplies and prompt deliveries, which have enabled department stores to adopt the policy of holding down the volume of forward buying and of making frequent replacement orders for immediate delivery to fill week-to-week requirements.

Leaders in the department store trade have expressed the feeling that the margin of decline in sales from a year ago has about reached the maximum amount expected and, after holding to the current amount during the summer months, should narrow in the fall.

Furniture stores in the District reported that sales during April gained 1 percent over those of March but were 12 percent under April 1953 sales. Approximately 90 percent of April sales were on credit terms, and total accounts receivable rose 1 percent. However, credit outstanding at the end of the month was 2 percent lower than at the same time last year. Total inventories were also below those of a year earlier by 14 percent.



General rains during the past month improved sharply the outlook for crop production in all parts of the District, although heavy rainfall caused some damage in local areas.

Planting of summer crops has been virtually completed under generally favorable moisture conditions, while ranges and pastures are providing some green feed in all areas.

The United States Department of Agriculture estimate of the Texas winter wheat crop as of May 1 is 23,418,000 bushels, which reflects some improvement over the April 1 estimate but is less than half the 1944-53 average. About 45 percent of the 4,731,000 acres seeded last fall had been abandoned prior to the April and May rains. In the northcentral Texas area, excellent yields are expected, although they probably will not reach the near-record level of 1953.

Cotton planting is being rushed to completion in northwestern areas of the District under favorable conditions. In earlier areas, the cotton crop is making satisfactory growth following the rains of early and mid-May. A considerable acreage in central Texas was planted late because of dry

WINTER WHEAT PRODUCTION

(In thousands of bushels)

State	1954 Indicated May 1	1953	Average 1943-52
Arizona.....	546	598	591
New Mexico.....	410	515	3,063
Oklahoma.....	61,334	70,776	75,634
Texas.....	23,418	23,035	57,221
Total.....	85,708	94,924	136,509

SOURCE: United States Department of Agriculture.

weather in April, while much of the acreage in northern and northwestern counties of the State was planted 2 to 3 weeks earlier than usual. Cool weather during the last week in April and the first week in May caused some frost damage to cotton in northern counties of Louisiana and Texas, but much of the acreage recovered.

In the Lower Rio Grande Valley, cotton harvest is expected to get under way within the next 2 or 3 weeks. Prospects for the cotton crop in this area are much better than a year ago, as the supply of irrigation water has been adequate and a substantial part of the dry-land acreage is expected to produce a crop. Cotton insect infestation in the District has not been serious, although control measures have been necessary in the Lower Rio Grande Valley and in the Coastal Bend section.

The District's corn and grain sorghum crops are making rapid growth, and production prospects are better than those a year earlier. Harvest of the south Texas flax crop is about complete; yields have been very low.

The acreage of spring vegetables for commercial production in Texas is estimated to be one-fifth larger than the 1953 acreage. Sharp increases were recorded for cantaloupes, cucumbers, sweet corn, and late-spring tomatoes. Onions were the only major vegetable with reduced acreage this year. Above-average production is indicated for all vegetable crops except snap beans.

Ranges and pastures in all parts of the District have shown a marked improvement during the past 2 months. Green feed is now available in virtually all areas, and prospects for summer grazing in the ranch country are relatively favorable. In range areas seriously affected by the 1953 drought, rainfall has been sufficient to restore surface moisture supplies and stimulate the growth of grasses and weeds. In the eastern half of the District, dry weather in March and cool weather in late April and early May retarded the growth of pastures and hay crops, reducing the amount of forage available. Growing conditions since mid-May have been generally favorable.

The condition of cattle and sheep in the range areas of the District generally is good. More than the usual number of spring lambs was marketed out of the Edwards Plateau sheep country as feeders, but early May rains revived pastures and permitted the sale of later marketings as slaughter lambs. Marketing of cattle and calves has continued in heavy volume, equaling or exceeding the volume for the comparable period a year ago.

LIVESTOCK RECEIPTS

(Number)

Class	FORT WORTH MARKET			SAN ANTONIO MARKET		
	April 1954	April 1953	March 1954	April 1954	April 1953	March 1954
Cattle	55,007	57,379	60,612	28,924	27,751	35,343
Calves	13,793	15,345	16,061	12,348	11,058	13,818
Hogs	52,083	47,139	57,631	—	1,603	—
Sheep	163,347	129,678	132,908	140,039	119,655	127,295

¹ Includes goats.

FARM COMMODITY PRICES

Top Prices Paid in Local Southwest Markets

Commodity and market	Unit	Week ended		
		May 20, 1954	Comparable week last month	Comparable week last year
COTTON, Middling 15/16-inch, Dallas	lb.	\$.3415	\$.3380	\$.3345
WHEAT, No. 1 hard, Fort Worth	bu.	2.62	2.70½	2.57
OATS, No. 2 white, Fort Worth	bu.	1.03¼	1.02¾	1.01¾
CORN No. 2 yellow, Fort Worth	bu.	1.88¾	1.87¾	1.92¾
SORGHUMS, No. 2 yellow, Fort Worth	cwt.	3.28	2.95	2.97
HOGS, Choice, Fort Worth	cwt.	28.00	28.50	24.75
SLAUGHTER STEERS, Choice, Fort Worth	cwt.	25.00	25.00	23.00
SLAUGHTER CALVES, Choice, Fort Worth	cwt.	23.25	22.00	23.00
STOCKER STEERS, Choice, Fort Worth	cwt.	22.00	22.00	19.50
SLAUGHTER SPRING LAMBS, Choice, Fort Worth	cwt.	26.00	25.50	27.50
HENS, 4 pounds and over, Fort Worth	lb.	.20	.20	.25
FRYERS, Commercial, Fort Worth	lb.	.25	.24	.28½
BROILERS, south Texas	lb.	.25	.24	.29
EGGS, Graded and candled, Fort Worth	case	8.75	9.00	12.75
WOOL, 12-months, west Texas	lb.	1.76	1.85	1.78
MOHAIR, kid, west Texas	lb.	1.11½	1.05	1.26½

¹ Clean basis.

Prices of most District agricultural commodities were generally steady to slightly higher during May. Some increase occurred in the prices of cattle and calves, and cotton prices advanced seasonally. In general, prices at the end of the month were slightly above those which prevailed a year earlier. Cotton prices were up about 1½ cents, while prices of all classes of cattle, except cows, were up \$1 to \$2. Wholesale milk prices and broiler prices were down moderately from the same date last year. The index of prices received by Texas farmers as of April 15, 1954, was 270 percent of the 1910-14 average, compared with 271 at mid-March and 279 on April 15, 1953. On April 15, the index of prices paid by farmers in the Nation, at 283 percent of the 1910-14 average, was 3 points above that of the comparable date in 1953.

The average value of farm and ranch land in the Nation declined 2 percent from November 1953 to March 1954, according to the United States Department of Agriculture. Declines of 4 percent in Texas and New Mexico and 2 percent in Oklahoma and Louisiana were reported, while Arizona showed no change. These decreases reflect, in part, the effects of the severe 1953 drought and are a continuation of the downward trend which began in late 1952. Lower prices for most farm commodities since 1952 have been a major factor in lower land values during the past year and a half.

CASH RECEIPTS FROM FARM MARKETINGS

(In thousands of dollars)

State	January		February	
	1954	1953	1954	1953
Arizona	\$ 49,652	\$ 73,033	\$ 27,252	\$ 36,007
Louisiana	33,558	33,182	16,378	12,705
New Mexico	16,470	18,058	9,868	10,435
Oklahoma	34,621	37,851	26,837	26,805
Texas	189,078	168,709	96,316	101,806
Total	\$323,379	\$330,833	\$176,651	\$187,758
State	March		Cumulative receipts January—March	
	1954	1953	1954	1953
Arizona	\$ 21,533	\$ 26,313	\$ 98,437	\$135,353
Louisiana	14,165	14,871	54,101	60,558
New Mexico	8,865	14,122	35,203	42,615
Oklahoma	24,043	30,739	85,501	95,395
Texas	81,242	95,986	366,636	366,501
Total	\$149,848	\$181,831	\$649,878	\$700,422

SOURCE: United States Department of Agriculture.



On April 30 the Treasury announced that it would raise \$2,000,000,000, or thereabouts, of new cash by the sale on May 4 of 17/8-percent 4-year, 9-month notes. The notes, dated May 17, will mature February 15, 1959. Holders of the \$4,858,000,000 of 25/8-percent certificates maturing on June 1 were offered a choice of the new 17/8-percent notes or a 11/8-percent 1-year certificate also dated May 17. In the same announcement, holders of three outstanding bond issues maturing or called for redemption on June 15, 1954, were offered the 11/8-percent 1-year certificate in exchange.

On May 7 the Treasury announced that cash subscriptions totaled about \$9,750,000,000, with allotments of approximately \$2,200,000,000. Subscriptions for \$10,000 and less were allotted in full, while 22 percent were allotted on subscriptions in excess of \$10,000. Exchange subscriptions for the 17/8-percent note totaled \$2,889,000,000 and for the 11/8-percent 1-year certificate, \$3,881,000,000, leaving approximately \$515,000,000 of the maturing or called securities to be redeemed in cash. In this District, total cash subscriptions for the 17/8-percent note amounted to \$286,230,000, against

CONDITION STATISTICS OF WEEKLY REPORTING MEMBER BANKS IN LEADING CITIES

Eleventh Federal Reserve District

(In thousands of dollars)

Item	May 19, 1954	May 20, 1953	April 21, 1954
ASSETS			
Commercial, industrial, and agricultural loans....	\$1,292,648	\$1,168,924	\$1,306,010
Loans to brokers and dealers in securities.....	13,737	11,280	12,928
Other loans for purchasing or carrying securities..	86,256	70,640	76,181
Real estate loans.....	137,076	134,071	136,869
Loans to banks.....	9,903	22,065	7,709
All other loans.....	400,766	393,920	398,227
Gross loans.....	1,940,386	1,800,900	1,937,924
Less reserves and unallocated charge-offs..	17,396	19,043	17,215
Net loans.....	1,922,990	1,781,857	1,920,709
U. S. Treasury bills.....	138,414	90,839	116,078
U. S. Treasury certificates of indebtedness.....	138,147	114,654	172,845
U. S. Treasury notes.....	195,989	182,525	148,037
U. S. Government bonds (inc. gtd. obligations)...	775,972	708,631	771,668
Other securities.....	219,852	190,748	206,879
Total investments.....	1,468,374	1,287,397	1,415,507
Cash items in process of collection.....	283,892	279,862	301,435
Balances with banks in the United States.....	436,050	406,597	444,168
Balances with banks in foreign countries.....	985	1,234	1,120
Currency and coin.....	44,847	44,741	44,849
Reserves with Federal Reserve Bank.....	608,357	565,256	600,476
Other assets.....	91,897	87,539	95,926
TOTAL ASSETS.....	4,857,392	4,454,483	4,824,190
LIABILITIES AND CAPITAL			
Demand deposits			
Individuals, partnerships, and corporations....	2,577,923	2,461,509	2,564,424
United States Government.....	122,514	57,981	82,988
States and political subdivisions.....	178,236	218,323	192,705
Banks in the United States.....	823,943	721,878	853,847
Banks in foreign countries.....	10,833	9,527	9,723
Certified and officers' checks, etc.....	45,051	46,158	45,033
Total demand deposits.....	3,758,500	3,515,376	3,748,720
Time deposits			
Individuals, partnerships, and corporations....	563,480	470,671	550,464
United States Government.....	9,805	10,393	9,813
Postal savings.....	450	450	450
States and political subdivisions.....	128,323	75,788	132,032
Banks in the U. S. and foreign countries.....	1,883	953	1,883
Total time deposits.....	703,941	558,255	694,642
Total deposits.....	4,462,441	4,073,631	4,443,362
Bills payable, rediscounts, etc.....	16,500	23,000	3,000
All other liabilities.....	42,994	46,036	45,150
Total capital accounts.....	335,457	311,816	332,678
TOTAL LIABILITIES AND CAPITAL ACCOUNTS	4,857,392	4,454,483	4,824,190

CONDITION STATISTICS OF ALL MEMBER BANKS

Eleventh Federal Reserve District

(In millions of dollars)

Item	April 28, 1954	April 29, 1953	March 31, 1954
ASSETS			
Loans and discounts.....	\$3,122	\$2,900	\$3,119
United States Government obligations.....	2,329	2,271	2,306
Other securities.....	456	428	456
Reserves with Federal Reserve Bank.....	979	986	982
Cash in vault ^e	135	117	146
Balances with banks in the United States.....	1,005	894	1,010
Balances with banks in foreign countries ^e	2	1	1
Cash items in process of collection.....	290	277	335
Other assets ^e	146	129	151
TOTAL ASSETS^e.....	8,464	8,003	8,506
LIABILITIES AND CAPITAL			
Demand deposits of banks.....	959	864	991
Other demand deposits.....	5,800	5,658	5,817
Time deposits.....	1,060	866	1,061
Total deposits.....	7,819	7,388	7,869
Borrowings ^e	4	23	0
Other liabilities ^e	54	52	60
Total capital accounts ^e	587	540	577
TOTAL LIABILITIES AND CAPITAL ACCOUNTS^e..	8,464	8,003	8,506

^e—Estimated.

which allotments of \$66,527,000 were made. Exchange subscriptions for the notes aggregated \$80,560,000, while those for other issues amounted to \$27,184,000.

Between April 21 and May 19, total deposits of weekly reporting member banks in the District rose \$19,079,000, in sharp contrast with the decline of \$162,112,000 during the comparable 4 weeks in 1953. The increase this year was about equally divided between demand deposits and time deposits and resulted from sharply contrasting movements among the several categories of deposits. Demand deposits of the United States Government increased \$39,526,000 over the 4 weeks, resulting from credits during the last week of the period to Treasury Tax and Loan Accounts of funds received in payment of cash subscriptions to new Treasury issues. The demand and time deposits of individuals, partnerships, and corporations rose \$26,515,000. Partially offsetting this gain, demand deposits of banks declined \$29,904,000, and the decline in both demand and time deposits of states and political subdivisions aggregated \$18,178,000.

Loans at weekly reporting banks rose only slightly during the 4 weeks ended May 19, as the decrease of \$13,362,000 in commercial, industrial, and agricultural loans was more than offset by the substantial increase of \$10,884,000 in borrowings for financing security transactions and moderate increases in other loan categories.

Among the various categories of business loans, there were offsetting seasonal movements, with most of the categories showing repayments in excess of new loans. Practically all manufacturing and mining concerns and dealers in commodities reduced bank borrowings; on the other hand, retail and wholesale trade, public utilities, sales finance companies, and construction industries increased bank borrowings. Construction loans reached an all-time high around the reporting date of May 19.

Weekly reporting member banks added \$52,867,000 to their investment portfolios, of which \$39,894,000 was in

GROSS DEMAND AND TIME DEPOSITS OF MEMBER BANKS

Eleventh Federal Reserve District

(Averages of daily figures. In thousands of dollars)

Date	COMBINED TOTAL		RESERVE CITY BANKS		COUNTRY BANKS	
	Gross demand	Time	Gross demand	Time	Gross demand	Time
April 1952....	\$6,451,803	\$ 734,170	\$3,021,143	\$401,280	\$3,430,660	\$332,890
April 1953....	6,700,806	855,308	3,180,189	465,370	3,520,617	389,938
December 1953	7,104,841	971,988	3,453,418	545,675	3,651,423	426,313
January 1954..	7,232,657	993,495	3,517,349	561,053	3,715,308	432,442
February 1954.	6,886,847	1,008,497	3,277,961	565,389	3,608,886	443,108
March 1954....	6,821,245	1,031,005	3,277,128	579,324	3,544,117	451,681
April 1954....	6,802,386	1,057,137	3,295,363	594,744	3,507,023	462,393

United States Government securities and \$12,973,000 was in other securities. The major changes in Government security holdings occurred during the final week of the period and were associated with United States Treasury financing involving both cash and exchange issues. The increase in holdings of Treasury bills which occurred earlier in the period resulted chiefly from purchases of Tax Anticipation bills which were sold by the Treasury on April 27.

Gross demand deposits of all member banks in the District averaged \$6,802,386,000 in April, reflecting a decrease of \$18,859,000 from the March average but an increase of \$101,580,000 over April 1953. The March-to-April decline, which was the smallest for that period since 1945, occurred entirely at country banks. Time deposits of member banks, which averaged \$1,057,137,000, rose \$26,132,000 during April, with about 60 percent of the increase occurring at the reserve city banks. The dollar volume of time deposits in April was 24 percent higher than that in April last year.

BANK DEBITS, END-OF-MONTH DEPOSITS AND ANNUAL RATE OF TURNOVER OF DEPOSITS

(Amounts in thousands of dollars)

City	DEBITS ¹			DEPOSITS ²			
	April 1954	April 1953	March 1954	April 30, 1954	April 1954	April 1953	March 1954
ARIZONA							
Tucson.....	\$ 106,343	—1	—4	\$ 86,009	15.0	14.5	15.5
LOUISIANA							
Monroe.....	48,926	—4	—5	43,016	13.8	15.4	14.5
Shreveport.....	201,947	—2	—7	166,259	14.5	15.2	15.7
NEW MEXICO							
Roswell.....	25,652	4	—7	28,783	10.8	10.8	11.5
TEXAS							
Abilene.....	54,339	3	—6	51,181	12.8	12.5	13.6
Amarillo.....	122,869	—9	—8	97,849	15.0	15.4	16.3
Austin.....	121,372	8	1	102,059	14.4	13.0	14.6
Beaumont.....	109,363	—16	—15	95,481	13.7	16.4	15.6
Corpus Christi.....	146,748	#	—4	104,700	16.9	15.7	17.8
Corsicana.....	12,221	3	—13	20,762	7.0	7.2	7.9
Dallas.....	1,676,149	5	—7	890,795	22.6	22.3	24.2
El Paso.....	183,599	—12	—13	119,707	18.4	20.4	21.0
Fort Worth.....	517,480	2	—1	328,543	19.2	18.5	19.4
Galveston.....	73,152	—7	—9	67,477	12.7	12.2	12.7
Houston.....	1,708,627	3	—8	1,145,451	18.6	17.5	20.9
Laredo.....	20,426	—6	—1	18,262	13.2	13.3	13.2
Lubbock.....	99,845	—7	1	80,609	14.6	14.8	13.9
Port Arthur.....	44,645	—1	—2	39,795	13.7	14.0	13.9
San Angelo.....	39,824	6	—1	42,431	11.2	9.8	10.9
San Antonio.....	396,338	3	—3	306,574	15.5	14.3	16.0
Texarkana ³	17,315	—10	—3	17,640	11.6	11.5	12.0
Tyler.....	56,268	—4	—6	56,325	12.1	12.8	12.8
Waco.....	74,815	#	—11	62,076	14.4	15.2	15.6
Wichita Falls.....	81,286	—6	—6	99,031	10.0	10.8	10.6
Total—24 cities.....	\$5,939,549	1	—7	\$4,070,815	17.8	17.3	19.1

¹ Debits to demand deposit accounts of individuals, partnerships, and corporations and of states and political subdivisions.
² Demand deposit accounts of individuals, partnerships, and corporations and of states and political subdivisions.
³ These figures include only one bank in Texarkana, Texas. Total debits for all banks in Texarkana, Texas-Arkansas, including two banks located in the Eighth District, amounted to \$34,493,000 for the month of April 1954.
Indicates change of less than one-half of 1 percent.

CONDITION OF THE FEDERAL RESERVE BANK OF DALLAS

(In thousands of dollars)

Item	May 15, 1954	May 15, 1953	April 15, 1954
Total gold certificate reserves.....	\$ 825,273	\$ 623,279	\$ 825,669
Discounts for member banks.....	5,569	17,200	0
Other discounts and advances.....	1,081	428	376
U. S. Government securities.....	967,903	1,152,666	967,903
Total earning assets.....	974,553	1,170,294	968,279
Member bank reserve deposits.....	1,014,598	1,035,714	1,005,622
Federal Reserve notes in actual circulation.....	713,558	721,537	700,767

Debits to individual demand deposits in 24 cities of the District during April declined 7 percent from March, reflecting in part the heavy income tax payments included in the March figures. However, debits were 1 percent larger than a year earlier. The annual rate of turnover of deposits in April was 17.8, compared with 19.1 in March and 17.3 in April 1953.

Total earning assets of the Federal Reserve Bank of Dallas rose \$6,274,000 between April 15 and May 15, reflecting increases of \$5,569,000 in borrowings of member banks and of \$705,000 in other discounts and advances. Holdings of Government securities were unchanged from a month earlier. Other changes over the period included a decline of \$396,000 in gold certificate reserves and an increase of \$8,976,000 in member bank reserve deposits. Federal Reserve notes of this bank in circulation on May 15 aggregated \$713,558,000, representing an increase of \$12,791,000 over a month earlier but a decline of \$7,979,000 from a year earlier. Compared with a year ago, gold certificate reserves were up \$201,994,000, reflecting mainly a reduction of \$184,763,000 in holdings of United States Government securities. Total earning assets were lower than a year earlier by \$195,741,000, accounted for by lower holdings of Government securities and a smaller volume of loans.



The demand for petroleum products in the Nation thus far this year has been falling somewhat below industry expectations. During the first 3 months of 1954, total demand for petroleum products was only 1.7 percent higher than in the same period of 1953, according to preliminary data of the Bureau of Mines. A 3-percent increase in domestic demand was offset partly by a 21-percent decline in exports.

Even a less favorable picture appears to have prevailed in the demand situation during April and the early part of May. The demand for major refined products at refineries and bulk terminals during the 5 weeks ended May 8 averaged 3 percent less than during the comparable period last year. The demand for gasoline in this latest period showed a year-to-year gain of about 1 percent, but the demand for heating oils was below the year-earlier level.

Daily average crude oil production in the Eleventh District declined during May, following successive increases in the previous 4 months. District production in the first half of May averaged an estimated 3,016,000 barrels per day, which is 147,000 barrels below the April rate and 38,000 barrels less than in May a year ago. Daily average production in the

CRUDE OIL: DAILY AVERAGE PRODUCTION

(In thousands of barrels)

Area	April 1954 ¹	April 1953 ²	March 1954 ¹	Change from	
				April 1953	March 1954
ELEVENTH DISTRICT.....	3,163.4	3,091.7	3,098.0	71.7	65.4
Texas.....	2,847.3	2,789.6	2,783.6	57.7	63.7
Gulf Coast.....	612.3	622.4	602.4	-10.1	9.9
West Texas.....	1,089.8	1,060.5	1,052.2	29.3	37.6
East Texas (proper).....	248.4	255.3	242.0	-6.9	6.4
Panhandle.....	86.4	76.5	85.1	9.9	1.3
Rest of State.....	810.4	774.9	801.9	35.5	8.5
Southeastern New Mexico.....	204.7	187.3	203.7	17.4	1.0
Northern Louisiana.....	111.4	114.8	110.7	-3.4	.7
OUTSIDE ELEVENTH DISTRICT.....	3,416.4	3,354.6	3,358.2	61.8	58.2
UNITED STATES.....	6,579.8	6,446.3	6,456.2	133.5	123.6

SOURCES: ¹ Estimated from American Petroleum Institute weekly reports.
² United States Bureau of Mines.

Nation during the first half of May was an estimated 6,438,000 barrels, or 142,000 barrels less than in April but 48,000 barrels higher than in May 1953.

Daily average production allowables in Texas for June were placed 70,024 barrels above the mid-May level. In contrast, June allowables in Louisiana were reduced for the second consecutive month.

Refinery crude runs in the District during the first part of May were down moderately, after having shown little change during the preceding 2 months. On the other hand, refinery crude runs in the Nation increased appreciably, following a marked decrease in April. Crude runs in the Nation's refineries during the first half of May averaged 6,899,000 barrels per day, compared with 6,791,000 barrels in April and 7,002,000 barrels in May a year ago.

Crude oil stocks in the Nation rose markedly during March and April, reflecting the increase in crude production and the decline in refinery runs. On May 8, crude stocks totaled 273,000,000 barrels, which is 11,100,000 barrels higher than on March 6 — the low point for this year — but 5,200,000 barrels less than on the same date last year. Although accounting for more than half of the recent rise in the Nation's crude stocks, stocks of District origin showed a considerably larger year-to-year decline than those in the Nation. District-origin crude stocks on May 8 were 9,500,000 barrels less than a year earlier.

Refined products stocks followed seasonal patterns during April and the first part of May, with gasoline stocks declining and heating-oil stocks rising. Gasoline stocks, however, continued on the heavy side; on May 15, they were 14 percent higher than a year earlier. Residual fuel oil stocks also were up substantially from a year ago, but stocks of distillate fuel oil and kerosene showed only modest gains.

Major suppliers on the East Coast announced small reductions in prices of home-heating oils near the end of April, and corresponding small decreases were noted in Gulf Coast cargo prices for these products. Residual fuel oil prices in the Mid-Continent area showed further weakening during April and early May. Gasoline supplies continued to be freely available, but prices were unchanged.



Total nonagricultural employment in the five states of the District increased 1,700 workers from February to March to reach 3,801,400. The primary changes during the month were increases in finance and construction employment and decreases in manufacturing employment and transportation and public utilities employment. While the total was 15,900 workers below that of March 1953, individual categories within the total showed considerable variance compared with last year's levels. The year-to-year losses were concentrated in the transportation and public utilities category, which was down 5 percent; manufacturing employment, down 3 percent; and construction employment, off 2 percent. The year-to-year gains occurred mainly in finance and service employment.

NONAGRICULTURAL EMPLOYMENT

Five Southwestern States¹

Type of employment	Number of persons			Percent change March 1954 from	
	March 1954p	March 1953	February 1954	March 1953	Feb. 1954
Total nonagricultural					
wage and salary workers..	3,801,400	3,817,300	3,799,700	-.4	.6
Manufacturing.....	702,900	721,600	707,600	-2.6	-.7
Nonmanufacturing.....	3,098,500	3,095,700	3,092,100	.1	.2
Mining.....	225,900	224,200	225,300	.8	.3
Construction.....	280,400	285,700	278,700	-1.9	.6
Transportation and public utilities.....	395,000	415,000	396,800	-4.8	-.5
Trade.....	966,900	963,400	964,800	.4	.2
Finance.....	155,800	148,000	154,500	5.3	.8
Service.....	443,600	433,600	443,200	2.3	.1
Government.....	630,900	625,800	628,800	.8	.3

¹ Arizona, Louisiana, New Mexico, Oklahoma, and Texas.

p—Preliminary.

SOURCE: State employment agencies.

Manufacturing employment in March reached 702,900, or 1 percent below February and 3 percent below March 1953. Losses in manufacturing employment from February to March were principally in the ordnance, food, chemicals, and primary metals categories. On the other hand, gains in stone, clay, and glass, transportation equipment, furniture and fixtures, and printing and publishing employment partially offset some of those declines.

Unofficial estimates indicate that both total nonagricultural employment and manufacturing employment increased considerably from March to May to reach approximately 3,819,000 and 713,000, respectively. These estimates are 1 percent and 2 percent, respectively, below the comparable levels for May 1953.

VALUE OF CONSTRUCTION CONTRACTS AWARDED

(In thousands of dollars)

Area and type	April 1954p	April 1953	March 1954	January—April	
				1954p	1953
ELEVENTH DISTRICT.....	\$ 124,502	\$ 120,560	\$ 114,676	\$ 426,551	\$ 413,600
Residential.....	55,161	54,549	54,554	206,662	200,918
All other.....	69,341	66,011	60,122	219,889	212,682
UNITED STATES ¹	1,691,868	1,741,542	1,527,577	5,592,692	5,186,238
Residential.....	796,133	673,887	667,737	2,435,125	2,157,691
All other.....	895,735	1,067,655	859,840	3,157,567	3,028,547

¹ 37 states east of the Rocky Mountains.

p—Preliminary.

SOURCE: F. W. Dodge Corporation.

BUILDING PERMITS

City	April 1954		Percentage change in valuation from		4 months 1954		Percentage change in valuation from 4 months 1953
	Number	Valuation	April 1953	March 1954	Number	Valuation	
							April 1954
LOUISIANA							
Shreveport....	377	\$ 1,602,064	11	-26	1,386	\$ 6,823,441	-12
TEXAS							
Abilene.....	161	1,113,435	266	-13	621	3,948,641	40
Amarillo.....	246	2,354,983	-12	27	741	6,046,770	-36
Austin.....	244	4,597,393	72	18	1,037	13,336,076	29
Beaumont.....	242	935,283	30	73	859	3,504,041	8
Corpus Christi..	493	2,064,167	-23	-23	1,825	9,160,136	-24
Dallas.....	2,644	12,705,171	15	3	8,329	44,648,863	16
El Paso.....	505	1,596,678	18	-10	1,532	6,432,645	-34
Fort Worth.....	875	3,446,157	-15	-16	2,828	13,525,694	-15
Galveston.....	127	960,026	24	-37	420	2,756,255	-16
Houston.....	1,087	11,389,662	-4	-25	4,299	49,270,485	23
Lubbock.....	331	1,748,117	4	27	1,094	8,417,554	11
Port Arthur.....	142	280,389	15	-47	507	1,165,099	-2
San Antonio.....	1,582	4,478,058	-3	1	5,665	14,941,518	-15
Waco.....	231	1,038,666	-19	-5	920	4,371,634	23
Wichita Falls..	150	860,911	57	7	488	2,969,666	9
Total.....	9,437	\$51,171,160	7	-8	32,551	\$191,318,518	3

Average weekly hours of Texas manufacturing workers continued to decline through March to a total of 41.1, compared with 41.8 in March 1953. Average weekly earnings of these workers declined slightly from February to a March level of \$71.10, or \$2.13 above that of March a year ago.

Unemployment in Texas, contrary to the national trend, decreased from 145,000 in February to 140,400 in March. This trend continued through May, but June is expected to show an increase, raising the total to 140,000 again. The decline from February through May was primarily a result of outmigration of farm labor and an increase in agricultural and trade employment following recent rains. The increase anticipated for June is attributed to seasonal additions to the labor force from high schools and colleges.

The value of construction contracts awarded in the District in April was \$124,502,000, which is 9 percent above the March total and 3 percent higher than the value of awards in April 1953. Residential awards and nonresidential awards in April were 1 percent and 5 percent, respectively, above a year earlier.

DOMESTIC CONSUMPTION AND STOCKS OF COTTON

Area	(Bales)			
	April 1954 ¹	April 1953	March 1954 ²	August—April This season Last season
CONSUMPTION				
Total				
Texas mills.....	11,382	13,517	14,153	110,457 110,110
U. S. mills.....	660,209	909,240	845,036	6,610,983 7,192,899
Daily average				
Texas mills.....	579	548	566	575 573
U. S. mills.....	33,564	36,856	33,802	34,507 37,545
STOCKS, U. S.—End of period				
Consuming establishments..	1,728,497	1,869,231	1,806,301	— —
Public storage and compresses.....	9,727,732	5,536,648	10,522,907	— —

¹ Four weeks ended May 1.

² Five weeks ended April 3.

SOURCE: United States Bureau of the Census.

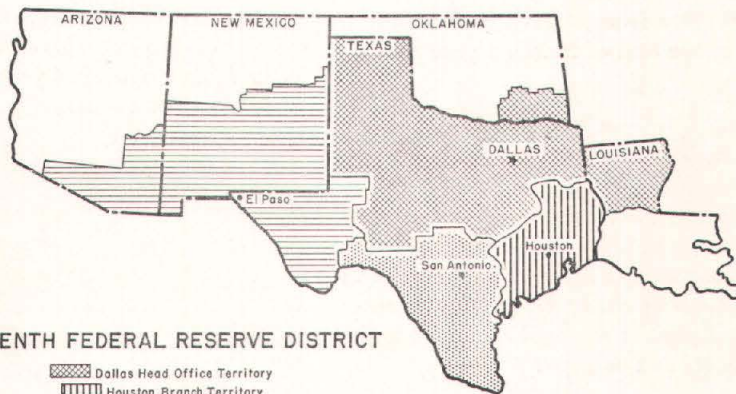
Construction contracts awarded in the District in the first 4 months of 1954 were valued at \$426,551,000, up 3 percent from a year earlier. Awards in the United States gained 8 percent in the same period.

The number of permanent nonfarm dwelling units started in the Nation in April is tentatively placed at 110,000, according to the United States Department of Labor. A year ago the figure was 111,400. Housing starts in the first 4 months of 1954 numbered 346,000, compared with 368,500 in the same months last year. Starts during the January-April period were at a seasonally adjusted annual rate of well over 1,100,000 units.





COTTONSEED AND COTTONSEED PRODUCTS

Item	TEXAS		UNITED STATES	
	August 1 to March 31		August 1 to March 31	
	This season	Last season	This season	Last season
COTTONSEED (tons)				
Received at mills.....	1,646,526	1,353,228	6,067,335	5,419,470
Crushed.....	1,283,120	1,198,571	4,883,364	4,520,488
Stocks, end of period.....	451,537	216,679	1,332,089	949,436
COTTONSEED PRODUCTS				
Production				
Crude oil (thousand pounds)..	418,955	387,412	1,591,430	1,453,564
Cake and meal (tons).....	610,690	586,137	2,309,146	2,169,295
Hulls (tons).....	292,259	277,390	1,074,069	974,372
Linters (running bales).....	373,000	350,480	1,547,211	1,448,324
Stocks, end of period				
Crude oil (thousand pounds)..	24,763	11,682	91,820	63,503
Cake and meal (tons).....	33,182	61,063	167,313	208,612
Hulls (tons).....	25,269	20,843	94,588	82,479
Linters (running bales).....	47,755	40,625	226,576	197,301

SOURCE: United States Bureau of the Census.



ELEVENTH FEDERAL RESERVE DISTRICT

-  Dallas Head Office Territory
-  Houston Branch Territory
-  San Antonio Branch Territory
-  El Paso Branch Territory