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McClellan-Kerr Arkansas River
Economic Case Study

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REGIONAL RESPONSE THROUGH PORT DEVELOPMENT:
AN ECONOMIC CASE STUDY ON THE
McCLELLAN-KERR ARKANSAS RIVER PROJECT

A Report Submitted to the
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Introduction

The construction of the McClellan-Kerr Arkansas River Waterway created a new resource that enhances the economic growth opportunities of the Arkansas-Verdigris Region and its adjacent areas. (The Region is shown on the map at the end of this report.) However, the ultimate contribution of the Waterway to the Region's economic development will be largely determined by the response, at the state and local levels, of the Region through the creation of efficient ports and related industrial parks.

The following paper contains a description of the present state of port and industrial park development along the Waterway; the underlying conditions related to the inception, at the state and local levels, of these facilities; and conclusions stemming from this investigation of the Region. Table I contains a summarization of the development of public ports on the Waterway in a matrix format.

The evidence gathered indicates that overall port development in the Region has been generally adequate in both location and capacity. In some instances, development may suffer from inadequate planning horizons and perhaps from the lack of a more intensive cooperative development effort on the part of the states of Arkansas and Oklahoma. At this point, there does not appear to be any indication that the

Region is on the threshold of a substantial surge of development; but the Waterway provides a significant improvement in the Region's transportation system, which may, in the future, be the focal point of economic expansion in the Arkansas-Verdigris Region.

TABLE I
PUBLIC PORT DEVELOPMENT MATRIX

	PORTS				
	<u>Pine Bluff</u>	<u>Little Rock</u>	<u>Fort Smith</u>	<u>Muskogee</u>	<u>Tulsa</u>
Port Authority Created	Jan 4, 1961 Aug 5, 1964 ^a	Jul 6, 1957	May 19, 1969	Oct 12, 1961	Jan 21, 1963
Planning ^b Started	May 1966	Oct 1960	Fall 1969	Jul 1962 Apr 1966 ^c	May 1963 Mar 17, 1965 ^d
Bond Approval	Dec 14, 1965	May 12, 1964	Sep 1, 1971 Jul 3, 1972	Oct 19, 1965 May 2, 1972	Sep 1965 Aug 1967 Nov 1967
ω Bond Amount	\$1,200,000 ^e	\$4,300,000	\$ 175,000 275,000 ^f	\$ 300,000 1,250,000	\$ 2,500,000 17,500,000 1,200,000 ^g
Construction Started	Fall 1967	Jul 1967	Jun 1971	Fall 1968	Apr 1967
Construction Completed	Apr 1970	Apr 1969	Dec 1971 ^h	Jan 1971	Dec 1970
First Inbound Shipment	May 19, 1969	Jan 1969	Oct 19, 1970	Jan 3, 1971	Jan 21, 1971
First Outbound Shipment	May 19, 1969	Apr 1969	Oct 1970	Aug 16, 1971	Apr 3, 1971
Investments in Port					
Private	\$1,750,000 ^j	\$3,850,000 ^k	\$ --	\$ --	\$ 1,500,000 ^m
Local	2,858,050	4,898,235	559,450	1,557,000	21,582,000
State	--	--	--	--	-- ⁿ
Federal	2,506,000 ^o	1,798,390 ^p	392,500	5,222,100	573,000

TABLE 1 (cont.)

	<u>Pine Bluff</u>	<u>Little Rock</u>	<u>Fort Smith</u>	<u>Muskogee</u>	<u>Tulsa</u>
Accessibility to Other Transportation Modes					
Rail ^q	Cotton Belt (MoPac)	MoPac,Rock Island, Cotton Belt	Frisco (MoPac,KCS)	MoPac-Texas Pac (Frisco, Katy)	Santa Fe, Frisco
Highway	US 65,79,270 Ark 15,54,81 88, 104	I-30,I-40 US 67,167	I-40, US 71	I-40,I-44 US 69	I-44, US 64, 66, 75, 169, Okla 33
Air	Grider Field 4 miles	Adams Field 1 mile	Fort Smith 4 miles	Davis Field 7 miles	Tulsa Int'l 9 miles
Pipeline ^r	not avail.	not avail.	not avail.	not avail.	not avail.

Footnotes on following page

TABLE I
FOOTNOTES

^aThe date the Pine Bluff Port Authority became the Pine Bluff-Jefferson County Port Authority.

^bExcept where indicated otherwise, the dates given are when a consulting firm was employed or when the consulting firm's report was submitted.

^cAn updated engineering and feasibility report.

^dDate the master plan became official.

^eThe entire bond issue was for \$2,550,000, of which \$1,200,000 was for the port.

^fA portion of this bond issue was used to retire the previous issue.

^gThis bond issue was by Rogers County, the other two bond issues were by Tulsa.

^hCompletion of the first phase, which centered on the warehouse. Additional construction is presently underway.

ⁱConstruction is over 95% completed.

^jDoes not include an estimated \$1 million which is to be invested by the port operator.

^kPrivate investment in land within the industrial park has been \$491,000. Investments in structures within the industrial park, both present and future, approximates \$3,850,000.

^l\$1.65 million in revenue bonds was recently issued for the construction of a steel warehouse and a liquid storage facility. These facilities are a private venture by the port operator.

^mThis figure only represents the amount of investment by WillBros Company's fertilizer facility. The amounts of other investment was not available.

ⁿThe State of Oklahoma constructed roads leading into the port area. The cost of this construction was not available.

^oIncludes a \$1,206,000 EDA grant and \$1,300,000 investment in the Corps of Engineers and U.S. Coast Guard depots.

^pIncludes a \$1,440,000 EDA grant for a water system of which only a small portion is going to the port area and industrial park.

^qThe railroads indicated first are those that serve the port, either directly or indirectly. Those railroads within parentheses are railroads that serve the surrounding area.

^rPipeline transportation refers to long distance transfer of commodities, not local movement as may exist within the port area.

Summary Report

The McClellan-Kerr Arkansas River Project (hereinafter, the Project) has brought both direct and indirect benefits to the region through which it runs. The direct benefits include low-cost shallow draft navigation; the indirect benefits include the resulting downward pressure on railroad and pipeline rates (while this cannot be proven as a cause-effect relation, the researchers found evidence to indicate this was the case). Although the Arkansas-Verdigris Region (hereinafter, the Region) may be thought of as encompassing a territory roughly two counties in width on either side of the McClellan-Kerr Arkansas River Waterway (hereinafter, the Waterway), the Project's sphere of influence varies greatly depending on the aspect under consideration. Transportation benefits, direct or indirect, may extend to wheat farmers in Kansas who conceivably could, in the future, avail themselves of cheaper transportation by shipping via the Waterway. But benefits to shippers depend in part on the Region's response to the Waterway via port development. If efficient ports and related industrial parks are developed on the Waterway, benefits may be very considerable; if the ports are inefficient or inadequate, the potential navigation benefits of the Project will not be fully realized.

In general, favored localities on the Waterway can be expected to benefit more than localities remote therefrom. The former tend to gain greater freight savings, since they do not have to bear the expense of a connecting overland haul, and they also gain from the transshipment, storage, and processing that grows up at and near the ports.

The Project may also impose losses on the Region, as when commodities newly imported from other regions begin to compete more severely with those produced at home. The resulting cost-of-living reduction may be only a partial compensation, for when a region begins to import more from outside, it loses in the interregional balance of payments. Such losses put downward pressure on its population and standard of living.

A related and perhaps more serious problem is that an inland waterway may tend to drain a relatively underdeveloped region of its bulk raw materials if they are barged to the major population centers for processing and consumption. Coal, ores, and clays barged out in raw form bring in less dollars than if they were first converted to metal products and brick. The selectivity of an inland waterway system for bulk commodities can be explained to some extent by the bulk-nonbulk cost differential, which has its basis primarily in terminal costs.

Line-haul barging costs are substantially the same for bulk and nonbulk freight, at least where weather-protection requirements

and cargo density are similar. But nonbulk commodities are more expensive to handle to and from barges; this differential in handling cost is likely to grow unless the labor intensiveness of general-cargo handling is reduced. Nonbulk goods not only cost more to handle, they also cost more to store in the port terminals before being barged out and after being barged in. Production and usage rates (in tons per day) are typically lower for nonbulk; so it takes longer to accumulate or to use up a barge load. And value per ton ordinarily is greater and storage space per ton is more expensive.

If the bulk-nonbulk cost differential is to be reduced, much of the necessary innovation will have to take place in the ports and port-related industrial parks. The concentration of the Region's waterfront industry in a relatively few large industrial parks could be helpful, at least if several local plants produced or used the same commodity; bargeloads then could be accumulated or used up more quickly. Industrial concentration would reduce costs for both bulk and nonbulk, but especially for the latter.

Because terminal costs tend to be relatively important in barge transportation, the location and design of ports and related industrial parks can be critical. Where freight must be trucked over public roads or streets between plant and port, transfer and handling costs may eat up most of the rail-barge freight differential.

The Physical and Economic Setting

The Project includes a navigation waterway that extends 10 miles up the White River from the Mississippi, 9 miles through the Arkansas Post Canal, 280 miles up the Arkansas River to the Muskogee area, and 50 miles up the Verdigris River to the eastern outskirts of Tulsa. In addition to the above, there is a 5-mile branch waterway extending into Pine Bluff Harbor and an 11-mile branch in Robert S. Kerr Reservoir extending up Sans Bois Creek.

Topography

The first 118 miles of navigable waterway lie in the Mississippi Alluvial Plain, almost entirely in the recent alluvium of the Mississippi and Arkansas River valleys; the Arkansas Post Canal (hereinafter, the Canal) does cut through the southernmost fingers of the Grand Prairie terrace lands, and in places between Pine Bluff and Little Rock the right bank of the river is formed by the clay bluffs of the Jackson Formation. Going upstream, one crosses the fall line at Little Rock and, after traversing a tip of the Ouachita Mountains section, enters the Arkansas Valley, which comprises the northern section of the Ouachita province and borders on the Boston Mountains on the north. From Muskogee on, the route runs in the Osage Plains section of the Central Lowlands province.

The Navigation Profile

Low water on the White River is estimated at elevation 110 (in feet above mean sea level) at the mouth and 112 at the junction with the Canal. Based on normal pool level the first lock provides 30 feet of lift from elevation 112. The second lock, located where the Pleistocene terrace rises out of the alluvium, provides 20 feet of lift and backs Pool No. 2 some 37 navigation miles upstream to the vicinity of Linwood. The third dam provides 20 feet of lift and the fourth, 5 miles downstream from the entrance to Pine Bluff Harbor, provides 14 feet. The fifth and sixth dams, between Pine Bluff and Little Rock, provide 17 and 18 feet of lift, respectively. The seventh, eighth, and ninth dams lie between Little Rock and Russellville and respectively provide lifts of 18, 16, and 19 feet.

The tenth is Dardanelle dam, which, with 54 feet of lift, is the first high dam as one moves upstream (unless one counts Dam No. 2, which loosely speaking might be said to match the combined 50-foot lift of the first two locks), Next upstream is the Ozark Dam, which, with 34 feet of lift, is also a high dam. The twelfth dam (known as No. 13 because plans were changed and numbering was not) is just downstream from Fort Smith and provides 20 feet of lift.

The first dam as one moves upstream in Oklahoma is the W. D. May, with 20 feet of lift. Here the slope of the land tilts

upward more steeply, and the next two dams are high: the Robert S. Kerr provides 48 feet of lift and Webbers Falls provides 30 feet. The two remaining dams are on the Verdigris River and have 21- and 21-foot lifts.

Resources and Products

Among the important resources of the Region are petroleum, coal, stone, and bauxite, as well as agricultural and timber lands. On the Mississippi Alluvial Plain between the Mississippi River and Little Rock, important field crops are soybeans, cotton, and rice; hardwoods grow in the river bottomlands, especially on the lower Arkansas and White Rivers. Southwest of the lower Arkansas River alluvium the pine covered sand hills and flatlands extend into Louisiana and East Texas. In southern Arkansas are limited quantities of petroleum and natural gas, along with the untapped but sizable Louann salt bed. South of Pine Bluff are the deep magnetite iron ore deposits of the Rison area, also untapped commercially and something of a mystery to the public as far as quality and quantity are concerned.

At Little Rock, the sandstones and nepheline syenite outcrop, and derived from the latter are bauxite and high-alumina clays. Generally south and southwest of Little Rock are scattered deposits of lignite and sizable reserves of clays, some rivaling in quality the famous ball clays of Mississippi. Northeast of Little Rock and near the margin of the uplands, there are (near Batesville)

very large reserves of limestone - - some of chemical grade - - and further up the White River lie the silica sands of the Guion area.

Upstream from Little Rock are sandstones and shales. Just east of Clarksville and Scranton, semianthracite coal deposits begin; westward they grade into low volatile bituminous that extends to the vicinity of the Robert L. Kerr Reservoir. The eastern limit of coal coincides roughly with that of the Arkoma Gas Field, which extends approximately as far westward as the coal fields. In the uplands north and south of the river, there is significant production of timber, both hardwood and pine. The chief farm products in much of the valley between Little Rock and Fort Smith are soybeans and poultry, although spinach and other vegetables are of some importance in the Fort Smith area.

There is limestone in eastern Oklahoma, including chemical grade limestone at Marble City, 15 miles north of the Arkansas River. Limestone also outcrops in windows on the steep southern slopes of the Boston Mountains in Arkansas with distances from the river ranging from some 14 to 23 miles. West of the Verdigris River, there are very large deposits of petroleum and natural gas. In northeastern Oklahoma, coal mines are in operation and clays are mined for use in cement production; the major field crops are winter wheat, soybeans, and milo; but the total quantities are moderate. To the west and northwest of Tulsa, in central

Oklahoma and in Kansas, very large quantities of winter wheat are grown.

Complementary Routes

The routes that best complement the Waterway are the railroads that run perpendicular to its trend, along with those that radiate generally to the north and west of Tulsa. These routes are the major potential feeders and distributors for long-distance traffic moving to or from ports or industrial plants on the Waterway. Highways are also important as complementary routes, but primarily, where short- and medium-haul traffic is involved, the line-haul costs of motor carriers are considerably higher than those of railroads, except on short hauls. The chief ports and waterfront industrial parks can therefore be expected to locate near points where major railroad routes cross the Waterway.

There are five important rail crossing areas on the Waterway, not counting the head of navigation, which is unique. In the Canal area, the Missouri Pacific crosses the White River about two miles below the Canal; 15 navigation miles upstream from the railroad bridge Arkansas Highway No. 1 crosses the Arkansas River at Pendleton Bend. And, in this area, the Waterway joins the non-Project portion of the White River navigation route, which extends to Newport and is being considered for improvements that would include a year-round 9-foot channel.

The main northeast-southwest St. Louis Southwestern line crosses the Waterway just below Pine Bluff and 7 miles downstream from the U.S. Highway 79 crossing. At Little Rock, there are three railroad bridges and three highway bridges, and a fourth highway bridge is under construction. Perhaps the most important crossing is that of the Missouri Pacific northeast-southwest route that skirts the fall line of the Ozarks and the Ouachitas.

In the Fort Smith area, the St. Louis-San Francisco Railroad and the Missouri Pacific Railroad cross the Waterway; both use the same bridge, which is owned by the Frisco. Some 24 navigation miles upstream the Kansas City Southern crosses at Redlands. There are three highway bridges in the area. At Muskogee, the Missouri-Kansas-Texas (MKT) and the Texas and Pacific cross the Verdigris River on a jointly owned bridge; there are in the general area three highway bridges across the Waterway.

Several railroads radiate from the Tulsa area. The railway legs most complementary to the Waterway appear to be: the St. Louis-San Francisco lines extending northeast to Springfield, west to Enid, southwest to Oklahoma City, and the Santa Fe line extending north to Kansas City; and the Midland Valley line extending northwest to Wichita.

Governmental Coordination and Support

The federal government (Corps of Engineers) constructed the project, the nonfederal obligation being that of providing

ports and bearing the increased operating costs of altered bridges and relocated transportation and public utility routes. The publicly owned ports have been provided by port authorities created by local governments acting under powers conferred by enabling state legislation and to some extent, using federal EDA grants. Enacting the necessary statutes has been the major direct contribution of the states of Arkansas and Oklahoma toward port development.

The Level of Port Investment

It is difficult to judge whether overall investment in port-related industrial parks in the Region has been inadequate or excessive; much depends on the future response of the private sector. There has been no duplication of publicly owned ports in any area, although at times local rivalries threatened to lead down this road to redundant investment. The main rivalries arose between Little Rock and North Little Rock, and between Fort Smith and Van Buren. In each case, the larger city acquired a publicly owned port and the smaller a privately owned port that offered custom services, although not necessarily to the general public. (There was a proposal to build a port at Fort Gibson that would have been competitive with the Port of Muskogee, but implementation was never begun.)

Since there are significant economies of scale in port construction and operation, there is a presumption that each

metropolitan area should not have more than one public port, although local circumstances might justify an exception. The fact that local duplication of publicly owned ports has been avoided is to the credit of the local governments, for the states have taken no action in this area either directly or through a bistate agency.

The Structure of Port Investment

Even if the level of investment in ports and port-related industrial parks is appropriate for the Region as a whole, there is the question of whether the structure -- in terms of geographic pattern and types of facilities -- is reasonably close to the optimum. Again, there has been no state or bistate action, and here some action may have been needed. In view of the considerable number of private docks (about 30) that already have sprung up along the Waterway and the availability of a number of them for custom handling of barge cargo, the handling capacity of public ports is perhaps somewhat excessive.

Although investment in industrial parks, at least in the forms of long-term planning and acquisition of site options, appears to be inadequate, any general movement toward construction of high-quality industrial harbors could quickly result in over-investment and industrial dispersion that would preclude full realization of the advantages of agglomeration. The efforts of the states, and perhaps of a bistate agency, might be needed

to limit the number of such developments and to provide the extensive background studies needed for their location and design. Also, some attention might have to be given to closer state-wide or even interstate coordination of the Economic Development Districts, which, through their influence over Economic Development Administration (EDA) grants and loans, can encourage the proliferation of ports and industrial parks by the subsidizing of submarginal developments.

Ports and Comprehensive Planning

The construction of ports has, of course, had an effect on the planning of local roads, railroad extensions, and public utility lines and on local traffic patterns. In at least one instance, the existence of a port was proposed as a justification for a sewage project to be financed in part by federal funds. The existence of a port at Pine Bluff is said to have constituted a significant argument for classification of the city as a development center, thus qualifying it for certain EDA grants and loans.

The existence of ports has affected broad planning within the Region primarily by reinforcing anticipations of navigation-based employment growth. The port-related industrial parks are expected to attract new basic industry and, thus, new basic employment, which is expected to turn to cause increases in local service employment. This increased employment is expected to result in

higher rates of immigration (or lower rates of out-migration) and, hence, in higher population growth than would have occurred in the absence of the Project. The larger expected population affects planning for schools, roads, water supply, and other government services. Public planners point out that the plans of privately owned public utility companies are also affected.

Some of the planners in the multicounty economic development districts are trying to anticipate the types of industries that are likely to locate within their respective districts and to estimate the effects on employment, water demand, and other factors. However, the general feeling of EDD planners is that it is still too early to make very useful projections of navigation-based industry in any particular economic development district.

The economic development districts also have been involved directly in planning for ports and industrial parks. While the individual district board does not have the power to accept or reject an application by a port authority or other local government for a port-related grant or loan, it can make a recommendation. The federal Economic Development Administration gives such weight to these recommendations as it sees fit, but the economic development districts presumably have some influence on the approval of grants and loans. The appropriate state governmental agencies are consulted by the Economic Development Administration to make sure that the proposed project does not conflict with overall

plans. A significant source of objection at the state level has been failure of a proposal to comply with environment quality standards.

Port-related industrial parks probably should be restricted to plants that utilize navigation in a reasonably direct and important way, since land for industrial sites in these areas is scarce and expensive. Also, it might be well to reserve areas near the port and along any available waterfront for plants that actually ship, receive, or handle waterborne freight. A high price for waterfront land is helpful and, in most cases, may be sufficient. The Pine Bluff port authority claims to have taken the high price approach for the purpose of preventing use of prime waterfront land by non-navigation-oriented industry. Local governments are under competitive pressure to acquire new industry, however, and, especially when capital investment is slow and jobs scarce, this pressure may undermine an initial resolve to reserve waterfront land for its best use. Hence there may be a place for state or bistate action. The action might take the form of zoning, or perhaps of loans to port authorities that have good long-term, but poor short-term, prospects for acquiring navigation-related industry. The Dillaha Fruit Company's planned warehouse in the Little Rock Port Industrial District is a possible example of a facility not strongly oriented to waterborne commerce.

There may be some need for Region-wide coordination of major port and industrial park development. Without interstate

coordination, the competition between the states of Arkansas and Oklahoma and among the local governments could lead to excessive dispersion and illogical location patterns as industry develops along the Waterway. The two states also face in common the problems of flow maintenance and water quality in the Arkansas River Basin. The latter problems are related in turn to proposals for moving water upstream to the semiarid lands of central and western Oklahoma and to parts of Texas, New Mexico, Kansas, and Colorado. Finally, Arkansas and Oklahoma might do well to consider an increased joint effort aimed at promoting and facilitating commercial navigation on the Waterway (ARDC is now acting to promote navigation, but an even stronger effort may be required).

On March 16, 1970, Arkansas and Oklahoma executed a compact that apportions between the two states certain interstate waters in the Arkansas River Basin. Oklahoma is to get at least one-half of the annual yield of Arkansas' Spavinaw Creek Sub-basin and at least 40 percent of the annual yield of Arkansas' Illinois River and Poteau River sub-basins. Arkansas is to get at least 40 percent of the Arkansas River Sub-basin annual yield, this sub-basin beginning just downstream from the Grand Neosho River, ending just below Lee Creek, and excluding the basins of the Illinois and Poteau Rivers, Spavinaw and Lee Creeks, and the Canadian River upstream from Eufaula Dam. In the Lee Creek Sub-basin, each state gets the waters originating within its boundaries, or the equivalent. The Arkansas River Basin Compact,

as this agreement is titled, is rather limited in scope; it neither gives nor denies Arkansas any rights to the waters of Eufaula Reservoir or of the Grand Neosho, Verdigris, or upper Arkansas Rivers. Nor does it set standards for water quality control. It appears, nevertheless, to be a significant step in the direction of bistate cooperation.

There has been some concern over the alleged need for cooperation between Arkansas and Oklahoma for the purpose of their coordinating development along the Waterway. The Arkansas River Development Corporation (ARDC) was established by the states of Arkansas and Oklahoma in February, 1972. The major task of the ARDC is to recommend a permanent form of organization for bistate control of development on the Waterway.

Bistate cooperation would appear to be useful in planning a logical geographic structure for heavy industry in the Region, promoting the plan among industrialists, developing nonlocal traffic on the Waterway, and seeking system-wide improvements in navigation facilities, techniques, and policies. A plan for the geographic structure of industry would be useful for the avoidance of duplicate complexes in cases where, because of scale economies, the Region would be better off with just one complex. It might be better, for example, to have one organic chemicals complex at Tulsa and one inorganic chemicals complex in the Canal area than to have one of each at each location. A Region-wide organization might promote Waterway traffic by seeking broad agreement on

standards for certain inbound and outbound commodities, in an attempt to achieve more barge-lot shipments. If, for example, a relatively few thicknesses of steel sheet were adopted as regional standards, users of off-standard thicknesses might find it profitable to shift to a technically nonoptimum size because of the lower transportation and storage costs of the popular standard sizes. In addition, the potential of the Waterway for the transportation of regional products to distant markets may be frustrated by branding. It might take a long time for one canner to accumulate a barge load of Brand X spinach at Fort Smith for shipment to Chicago. If most of the Arkansas Valley canners could be persuaded to use a regional brand, after the fashion of Sunkist Oranges, they might find it feasible to reach major markets by barge.

But suppose the furniture manufacturers wanted to stack crated furniture on top of spinach cases for a barge ride to market. The high hatch covers needed to provide cubage are not commercially available, and it might be difficult to find a waterfront warehouse in Chicago or Pittsburgh that would handle both canned goods and furniture. Such technical and logistical problems are broader in scope than the Region and are best solved at a higher level.

A bistate organization (perhaps ARDC) might seek to initiate broader cooperation, at least within the Mississippi-Gulf waterway system. It is even conceivable that such an organization could

engage in the purchase, storage, transportation, and distribution activities that would give the relatively small businesses of the Region some of the advantages enjoyed by a few very large companies. Thus, through standardization, the creation of otherwise unavailable facilities, and encouragement of cooperative efforts among the Region's small businesses, a bistate organization could enable the Region to capitalize more effectively in its Waterway Resources.

The Major Port Areas

Seven areas on the Waterway are of special interest as actual or potential port areas. Five of these - - Pine Bluff, Little Rock, Fort Smith, Muskogee, and Tulsa - - have their respective publicly owned ports, along with privately owned facilities. The Russellville area has privately owned port facilities and is far enough from larger cities to preclude its classification as a satellite area. The seventh is the Canal area, which may be thought of as encompassing the lands in the vicinity of the Arkansas Post Canal and along the Arkansas River upstream to Cummins Bend; although this area has no major port facilities, it appears to have considerable potential for future development. In each of six major port areas, there is at least one railroad route and at least one highway route that run generally perpendicular to the trend of the Waterway and cross it. (In the Russellville area only a highway crosses.) These six areas encompass all rail crossings on the Waterway, provided that the Kansas City Southern crossing

at Redlands is included in the Fort Smith area and the Missouri Pacific Benzal Bridge is included in the Canal area.

The Canal Area

Population is sparse in the Canal area; the land is almost entirely in field crops, pasture, and bottomland timber; a repair yard and a tow-boat refueling station comprise the only dock facilities. Yet, despite the present lack of adequate public utility services and industrial labor, this area has advantages that make it worth consideration for future port and port-related development.

The most favorable industrial sites lie above the highest known flood levels and just north of the Arkansas Post Canal and could be reached via Dismal Swamp, if the latter were developed as an industrial harbor. Such a harbor would have a moderately stable water level if connected directly to the canal; there, the two-percent flowline is only 4 feet and the flood of record 13 feet above normal pool. If, during high water, the harbor were isolated from the canal by a small navigation lock, water level in the former could feasibly be held to a fluctuation of a foot or two; the interior drainage situation is favorable in that the ratio of runoff area to sump area is extremely small. Industry located here would be close to the transportation nodes formed by the White, Arkansas, and Mississippi Rivers. In view of the steady growth of traffic on the Mississippi, prospective

growth on the Arkansas-Verdigris, and possible future development of a 9-foot channel on the White, this nodal position could become highly significant. A rail connection between the Missouri Pacific's main line and the St. Louis Southwestern's Gillett branch would cross the area and provide it with flexible railroad service.

An industrial complex in the Canal area might be based largely on timber, grains, oilseeds, limestone, salt, coal, and ores. A subcomplex at Cummins Bend might receive and/or process softwoods, cottonseed, soybeans, and possibly Louann salt. Another subcomplex at Dismal Swamp might receive and/or process hardwoods, rice, soybeans, and cottonseed. It might receive: limestone and silica sand via the White River; corn, molasses, coal, and ores via the Mississippi; and metallurgical coals, petroleum fractions, and possibly iron and zinc ores via the Mississippi; and metallurgical coals, petroleum fractions, and possibly iron and zinc ores via the Arkansas. The subcomplexes would be in the same pool and could easily transfer intermediate products by barge. The array of products might include animal feeds, vegetable oils, packaged rice, glass containers, paper and paperboard, plywood, lumber, roofing, fertilizers, steel, zinc, and a number of organic and inorganic chemicals.

Although the economic prospects of this general type of complex in the Canal area are unclear and the specific operations

highly speculative, the area appears to have sufficient locational and site advantages to warrant preliminary steps toward possible future development. These steps might include purchase of options on land and studies of industrial potential and of possible White River navigation routes alternative to the main-stem, five-dam route being studied by the Memphis District of the Corps of Engineers. (One plausible alternative is to come up the Canal and go through Dismal Swamp, up La Grue Bayou, and the via land cut into the White River below De Valls Bluff, thereby utilizing the lift of the Project's first two locks.) Certain alternative routes offer very substantial benefits for local industrial development, whereas the main-stem route would merely pass through the alluvial backwater area.

The local response to the engineering works that for the first time in history bring navigable water across this flood-free terrace - - and hold it at least 50 feet above low water on the White River - - has been virtually nil. This is not surprising; there are few people there to respond. That the State of Arkansas should ignore the industrial implications of this development and of the White River study is not so easy to explain. The oversight appears to grow out of the traditional policy of delegating responsibility for local development to local governments. This may have worked in the gradual conquering of the wilderness; it does not appear to work where a vast federal

construction program suddenly creates a large investment opportunity in a rural area, at least where the opportunity may depend on the exercise of governmental powers such as planning and zoning or eminent domain.

The Pine Bluff Area

Pine Bluff's public port and harbor industrial park are located on a bend of the Arkansas River that was cut off from the Waterway during construction of the Project. The bend connects at its lower end with the navigation channel. This new oxbow lake, known as Lake Langhofer, is some 8 miles in length. The lower 5 miles are navigable and comprise Pine Bluff Harbor. Except for being located in the alluvium, the Pine Bluff port and industrial park have one of the most favorable physical situations on the Waterway. The harbor is free from current and the possibility of heavy through traffic; the two-percent flowline is about 6 feet and the 50-year flood level is 16 feet above normal pool. (Tulsa also has a slack water harbor, but there the 50-year flood is 40 feet above normal pool.) The harbor area is almost entirely surrounded by levees.

The Pine Bluff-Jefferson County Port Authority, created in August, 1964, is governed by a board of directors, three members being appointed by the Circuit Court of Jefferson County and four by the City Council of Pine Bluff. The Authority obtained an option and, after a successful bond vote, purchased 372 acres

of land in the harbor area. By March, 1968, 85 acres had been filled to an elevation of 214.5 feet, which is one foot above the projected 300-year flood. A public wharf and terminal building were constructed and utilities, road access, and a railroad extension provided. On May 19, 1969, the first barge left Pine Bluff Terminal loaded with 800 tons of newsprint from International Paper Company's Pine Bluff plant. On May 19, 1969, the first inbound shipment arrived, a barge of 42 rolls of steel for Vargo-Proden, Inc.

An Economic Development Administration grant of some \$1.2 million approved in 1968 allowed the Authority to complete its construction program by April, 1970, rather than over a long period of time as originally planned. The project included filling of the entire 372 acres to a flood-free elevation of 214.5 feet and constructing a 160 by 68 foot reinforced concrete wharf, six mooring dolphins, a 40,000 square foot transit shed, and utilities, streets, and a railroad spur. The public terminal was allocated 22 acres; roads and utilities took 55, leaving 295 acres available for sale or lease to industrial users. Total project cost was \$3.0 million, which was met by \$1.2 million in general obligation bonds, \$0.6 million in revenue bonds, and the \$1.2 million EDA grant.

Occupants of the Harbor Industrial District are: the Corps of Engineers and the U.S. Coast Guard (each has a depot); Martin

Terminal Company with its caustic soda unloading and distribution facility; Valmac Corporation with its million dollar poultry feed plant under construction; and Arkansas River Terminal, which is the operator of the Pine Bluff Terminal and also owns liquid fertilizer and methyl alcohol storage facility and a rice handling facility and has under construction a dry bulk fertilizer storage and bagging plant. Investment in the port and industrial area is about \$4 million, exclusive of money invested by the Port Authority.

The major private docks in the Pine Bluff area are: Bunge Corporation's soybean elevators, one at Linwood and one just upstream from the U.S. Highway 79 bridge at Pine Bluff; the Moore Terminal and Barge Company's fuel oil terminal, storage tank, and pipeline in the International Paper Company plant; and the Pine Bluff Sand and Gravel Company's sand unloading dock and ready-mix concrete plant located in Pine Bluff Harbor but not in the Harbor Industrial District. The MonArk Shipyard, on the Pine Bluff Cutoff, builds small towboats, special purpose barges, and other watercraft.

The response of the Pine Bluff area to the Waterway appears to have been both timely and adequate, at least when judged by conventional standards. Yet, this response might have been even better if planners had started earlier and peered further into the future. (From the viewpoint of topography and flood levels, the Pine Bluff Harbor offers a rare opportunity for the low-cost

development of a large, stable industrial harbor.) Also, it is significant that no long range plan or set of alternative plans for future expansion can be discovered, despite the reasonable possibility that the remaining 256 acres in the Harbor Industrial District will be committed within a decade.

The Little Rock Area

The Little Rock area's publicly owned port lies on the right bank of the Arkansas River at navigation mile 112.8 and is officially designated Little Rock Port. The port and associated industrial park are being developed by the Little Rock Port Authority, an entity created by the City of Little Rock in July, 1957.

The Authority employed a New York firm to make a port study; the firm presented a draft in April, 1961, and a preliminary report on feasibility in October, 1962. Five port sites were evaluated; the site of the present port was recommended for development.

The Authority accepted this recommendation and employed a Little Rock firm to do the engineering and supervise construction. This firm submitted a study in February, 1964, recommending a modified plan that would require an estimated \$4.5 million to carry out; in May the voters approved, by a narrow margin, a \$4.3 million City of Little Rock general obligation bond issue.

The port includes a 350-foot-long wharf and 30,000 square foot transit shed. Currently under construction are a liquids pier upstream from the wharf and a bauxite unloading facility

downstream, the latter being financed by a \$3 million revenue bond issue. The industrial park comprises 1,186 acres. Land sales began in 1968, when Arkansas Foundry Company bought 21.75 acres for its now completed 98,000 square foot steel service center. Other occupants are: Murphy Oil Corporation, which has a tank farm and will use the liquids pier now under construction; Orgulf, which will use the bauxite facility; Rico Liquids, which has molasses tanks and uses liquid unloading equipment attached to the general cargo wharf; Perkins Automatic Sprinkler Company, which fabricates and installs automatic sprinkler fire protection systems; Democratic Printing and Lithographing Company; and Dillaha Fruit Company. There also are plans for a truck terminal and an electric utility substation.

Traffic moving through the port was, to the nearest thousand tons: 29,000 in 1969; 30,000 in 1970; 35,000 in 1971; and 26,000 during the first seven months of 1972. Steel appears to have been the most important commodity, although it was exceeded in tonnage by bauxite in 1971 and approximately equaled by vanadium slag in 1972. Fertilizer was important initially, but much of this traffic has shifted to the Jones-Kirby Port of North Little Rock. There also have been sizable movements of scrap iron, molasses, lumber, and potlining waste.

The response of the Little Rock area to the Waterway appears to have been reasonably timely, at least in view of the response of private industry. The port was operational when the river

was opened for navigation on December 31, 1968, and the industrial park sold land earlier that year. Furthermore, the response appears to have been adequate, at least in a quantitative sense. The port has been able to handle the traffic, and the industrial park has ample reserves of land.

If a number of private firms had wanted to build large new plants in the industrial park and have them operational when the river was first opened for navigation, the Authority's timing of land acquisition and development of water supply would have been a little too slow. And it seems possible to question the adequacy of the response in terms of the quality of the services offered in the industrial park. Firms in the park can transfer freight between plant and port via highway or railroad, and there is waterfront land available for those that want to have their own private docks. This is as much as many port-related industrial parks provide. Nevertheless, a not entirely implausible alternative was the provision of a slack water industrial harbor, perhaps with some control of water level fluctuation via placement of the harbor entrance close to Terry Lock and Dam, installation of a navigable flood gate, and/or use of a small harbor-entrance lock. Apparently this sort of alternative was not considered seriously in any of the planning, although Mary Raines, one of the land-owners in the proposed industrial area, suggested that Old Channel Fourche Creek could be dredged and docks constructed inland. Also,

the county judge of Pulaski County later proposed the dredging of Fourche Creek upstream to the Sixty-fifth Street Industrial Park.

Perhaps the most serious inadequacies of the response were a tardiness in planning and the failure to take a very broad and long-range look at alternatives. The public port and industrial park were created by the City of Little Rock. Neither the City of North Little Rock nor Pulaski County has been directly involved so far, although such involvement would seem to be desirable. As usual, port planning began after it was too late to consider any but minor modification of the Project.

Finally the Little Rock Port Authority does not have broad jurisdiction over port planning and development in the entire metropolitan area. Joining the two cities and the county in a port authority would appear to be part of the remedy.

The Russellville Area

The Russellville area includes the cities of Russellville, Dardanelle, and Clarksville, along with the rural lands that lie around and separate them. The area is far enough from Little Rock and Fort Smith to require a port of its own. Russellville and Dardanelle are connected with Harrison to the north and Hot Springs to the south by Arkansas Highway No. 7. There is no north-south railroad route in this area and, because of the topography, no real prospect for one in the foreseeable future. A shortline railroad extends from Russellville (on an east-west

Missouri Pacific line) to the unincorporated industrial community sometimes known as North Dardanelle. In this community are located Keenan's Port of Dardanelle, the Valmac feed mill, and Mobley Construction Company's sand and gravel plant, which includes a dock for receiving materials dredged from the river.

The Russellville area's response to the Waterway has come largely from the private sector. Keenan's port has handled: inbound corn for Valmac; inbound synthetic rubber for the Firestone Rubber Company's inner tube plant; inbound steel; and outbound soybeans and wheat. It has the prospect of handling outbound chlorine cells manufactured in Dow Chemical Company's Russellville plant. The City of Russellville and the City of Dardanelle have joined in forming a port authority, but no land has been acquired. The City of Clarksville formed a municipal port authority in 1966. The authority leases 28 acres on Dardanelle Reservoir, but has not built port facilities nor the mile of access road that would be needed. The major prospective traffic through the proposed port is outbound coal.

Several proposed industrial sites have been investigated in the area. Of greatest interest, perhaps, is the Knoxville site, which lies between Clarksville and Russellville and south of Knoxville, and apparently was proposed first by Ross Mauney, then on the Arkansas Industrial Development Commission staff and now Executive Director of the Little Rock Port Authority. There

seems to be almost universal agreement that this is an excellent site for long-term development. It has: a relatively slack, stable navigation pool; flood-free, moderately level terrace land; potential water supply; easy access to a railroad, an interstate highway, electric power, and natural gas; and nearby mineral resources and sites for new towns.

Perhaps the chief shortcoming of the area's response to the Waterway is a lack of intercity cooperation and of long-range planning for navigation-related industrial development. Keenan's port appears to be able to take care of the prospective traffic, but there is no industrial park offering the benefits of agglomeration to prospective plants.

The Fort Smith Area

It appears that as early as 1965 the City of Fort Smith had an understanding with Kansas City Southern Railroad interests that the latter would build and operate a public port and industrial park in the city. The city traded 200 acres of industrial land for the railroad's old downtown terminal area, and there is some evidence of a verbal commitment by city officials to provide roads, water, and sewage disposal for the industrial park. Subsequently the city changed from the commission form of government to the city administrator form. The new government did not carry out the alleged agreement; refusal by Kansas City Southern to allow reciprocal switching in the industrial park appears to have been

a factor. In the spring of 1968, the Kansas City Southern interests disclosed that they had dropped their plans for constructing the port and industrial park. Since there was a reasonable expectation that Fort Smith would have navigation by the end of 1969, the city had little time to consider alternatives.

In May of 1969, the city directors created a port authority. After failing to negotiate purchase of 440 acres from the Kansas City Southern interests, the authority engaged a local firm to make a study. A report that considered six sites was published in January, 1970. The authority selected one of these and modified the recommended plan, coming up with a proposed 40,000 square-foot transit shed, concrete wharf, and four mooring dolphins to be located on the right bank of the Poteau River about 1.5 miles from its mouth. The proposal included a 1300-foot railroad extension, including a bridge across Mill Creek, along with surfacing of access roads. Cost was projected at \$785,000 with one-half to be financed by a grant from the Economic Development Administration.

The Fort Smith Port Terminal went into operation in September, 1970, before the transit shed and wharf were constructed. The port operator mounted a crawler crane on a deck barge and worked between cargo barge and highway rig. From May, 1971, to May, 1972, some 41,000 tons of freight were handled in this manner, all of it inbound iron and steel. A 38,400 square-foot transit shed was completed in December, 1971.

The privately owned Co-op Port of Van Buren, operated jointly by Frontier Steel and Co-op of Arkansas and Oklahoma, does both captive and custom handling in the Fort Smith area. Important commodities include: inbound steel, soda ash, fertilizer, and feed-grade phosphate; and outbound coal.

The response of the Fort Smith area to the Waterway got behind schedule because of the misunderstanding between the City and the Kansas City Southern interests. The City moved quickly, however, and with a makeshift port did a very creditable job in 1971, handling more tonnage than the Little Rock Port. A well-equipped port will soon be in operation on the Poteau, and the chief inadequacy in Fort Smith's response will be the lack of a sizable port-related industrial park. The city owns 17 acres of land adjacent to the port, and this could be used for port-related industry; but a much larger area is needed in view of Fort Smith's brisk industrial growth rate during recent years. The Van Buren Industrial Park on the Arkansas River does provide sites for plants that could be served satisfactorily by the Co-op port, but the fact remains that the Fort Smith area does not have a public industrial park that offers convenient waterfront sites for private industry.

An earlier start in planning and a more broadly based port authority might have been helpful. The two river cities and the two counties (Crawford and Sebastian), possibly along with

Sequoyah County, Oklahoma, might have formed a single port authority for the metropolitan area.

The Muskogee Area

In 1960, the city and county of Muskogee appropriated \$7,000, which was matched by federal funds, for a port feasibility study. In October, 1961, the Muskogee City-County Port Authority was created. The voters approved in October, 1965, a \$300,000 general obligation bond issue to pay for land for a port and industrial park and in May, 1967, a \$1,250,000 general obligation issue to build the initial port facilities. Federal grants and loans for port and industrial park development totaled some \$5.2 million. More recently \$1.65 million in revenue bonds was issued to pay for construction of the iron and steel warehouse and crane and the liquids storage facility. The first barges arrived on January 3, 1971, ten days after the Fort Smith-Muskogee portion of the Waterway was opened to navigation; unloading began the next day. During 1971, some 64,346 tons were handled, about 30,000 tons being inbound steel pipe and the remainder paper, steel, and fertilizer.

The port and industrial park, located on the right bank of the Arkansas River at mile 390, comprise 15 and 305 acres, respectively. An 18,000 square-foot transit shed joins a 60 by 250 foot concrete dock flanked by twenty pipe-pile dolphins. An iron and steel warehouse has been completed; it has two overhead craneways extending

over the water. Also under construction are two 10,000 barrel general purpose liquid tanks, along with a liquids handling pier. In the industrial park is a 40,000 square-foot shell building that the port authority built and is offering for sale or lease. The only lease of industrial park land has been to Muskogee Marine Services, a company that provides refueling and other services for towboats.

The Muskogee area's response to the Waterway appears to have been timely and adequate, at least as far as general purpose port facilities are concerned. The present lack of a grain facility might possibly be considered a flaw in the response. (Construction of such a facility in time to handle 1973 wheat has been proposed.) The existing joint control of the port authority by the city and county is conducive to a broad view of port development within the county. The port authority has placed an unusual degree of reliance on one private firm, however. WillBros Terminal Company, a subsidiary of Williams Brothers Company of Tulsa, has a non-cancellable, 25-year lease to operate the Port of Muskogee and develop the associated industrial park. This lease, which expires in 1997, seems unusually long and otherwise favorable to the operator. The port authority receives only five cents per ton for unloading fees. (This is considerably less than those received by the Little Rock Port Authority, which gets seven and one-half cents per ton for dry bulk cargo, ten cents for iron and steel

articles and for liquids, and twenty cents per ton for package goods.) WillBros leases or sells land in the industrial park, and real estate dealers are excluded. (In Little Rock the port authority sells industrial land, but cooperates with realtors.) There also appears to be a conflict of interest in that WillBros operates the Port of Muskogee and the dry-bulk unloading facility at the Port of Catoosa. When the latter went into operation, inbound fertilizer traffic at Muskogee ceased.

At Muskogee, as elsewhere, there was the lack of early and extensive investigation of alternatives. Perhaps more than any of the major Waterway cities downstream, Muskogee needed a lower position on a navigation pool. The city is 27 miles upstream from Webber Falls Dam and consequently suffers from a wide range of water levels, the 50-year flood being 30 feet above normal pool. But here, as almost everywhere else, the nonfederal interests seem to have expected the federal designers to think of everything, for apparently no proposals or even preliminary studies were made by local interests or by the state.

The Tulsa Area

In 1962, the Tulsa Chamber of Commerce sponsored several inspection trips to various inland ports in the United States and published the results. Early in 1963, the city created a port authority, which in May contracted with two engineering

firms to set site criteria for a port and to recommend a site. Tee Bird Creek site was chosen in October, 1963, and the official plan established in March, 1965. On request of the port authority, the Corp of Engineers extended the waterway a mile and a half, placing the new head of navigation upstream from U.S. Highway 66 and the St. Louis-San Francisco Railroad and at the boundary of the selected port site.

In September, 1965, a \$2.5 million general obligation bond issue was sold to finance the purchase of land; 513 acres were acquired for the port and 1,500 acres for the industrial park. In August, 1967, Tulsa voters approved almost two-to-one a \$17.5 million general obligation bond issue to finance port construction. In 1967, Rogers County voters approved a \$1.2 million general obligation bond issue to finance the purchase of right-of-way for access roads, the county having joined the City of Tulsa to form a city-county port authority. Once right-of-way was provided, the state constructed the roads. Connecting the port with the Santa Fe and Frisco railroads required 8.2 miles of track, which the port financed with revenue bonds. On February 20, 1971, the Tulsa Port of Catoosa was dedicated. On January 21, the first commercial shipment had reached the port; the first outbound shipment left April 3, 1971.

In June, 1972, a \$573,000 EDA grant was approved for construction of access roads and railroad spurs within the industrial park. This brought total funds for the port and industrial park to

\$22,155,000, exclusive of revenue bonds. The port facilities are built on a harbor channel 1 1/3 miles long with a minimum 200 foot bottom width and 12 foot depth below normal pool. At its dead end the channel includes a 400-by-600 foot turning basin. Port facilities include a 720 foot long general cargo wharf; a 38,400 square foot transit shed; a 200 ton overhead crane extending over water and wharf; and a dry-bulk unloading facility with crane platform, hopper, and 600 foot belt conveyor.

In the industrial park 54 acres are under lease and 14 under option. WillBros Terminal Company was the first lessee, with 6.5 acres on the turning basin, where it has constructed a \$1.5 million fertilizer warehouse and leases the port's dry bulk unloading facility. The Tulsa Port Warehouse Company leases 7.04 acres and the Tulsa Warehouse Company leases 6.97 acres and has an option on 8.23 acres. Each company has constructed a 120,000 square foot general storage warehouse. Flint Steel Corporation leases two 2.3-acre tracts for storage of tainter gates. KimCo Chemicals, Inc., leases 0.92 acre on the turning basin and has a tank and barge unloading facility for liquid chemicals. Western Continental, Inc., leases four acres on the turning basin; it has in operation a truck-to-barge wharf for coal and under construction a coal cleaning and sizing plant and loading conveyor. The Arrow Transportation Company leases 11.6 acres for outdoor storage and has four acres under option. Port City Bulk Terminal, Inc., leases 4.57 acres and has 2.07 acres under option. Additional lessees

include: Lee C. Moore Corporation, 2.94 acres; McMichael Concrete Company, 1.37 acres; and Midcon Fabricators, Inc., 3.03 acres.

Barge traffic handled at the Tulsa Port of Catoosa amounted to 86,754 tons in calendar 1971 - - 78,266 tons inbound and 8,488 outbound. Inbound steel at 69,695 tons was by far the most important commodity. Inbound paper was second and outbound steel third. In the January-June period of 1972, 165,750 tons were handled, 84,182 tons inbound and 81,568 outbound. Outbound coal was first with 71,960 tons, inbound steel second with 40,237 tons, and inbound fertilizer third with 36,008 tons. Perhaps the most surprising aspect of the port's traffic mix is the absence of any significant movement of farm products.

The overall response of the Tulsa area to the Waterway is impressive. About twice as much public money has gone into the development of the Tulsa Port of Catoosa as into the other four public ports taken together. Furthermore, very little of Tulsa's port investment came from the federal government, whereas at Pine Bluff, Fort Smith, and Muskogee federal funds were relatively important. The 2000-odd acres of port and industrial land would appear to be ample for some time. As to timeliness, the port handled its first inbound shipment only 21 days after the Verdigris was officially opened and well before Waterway construction had been completed. And despite its being last to get navigation, the Tulsa port has handled far larger tonnages than any of the other public ports.

The fact that Tulsa can reasonably expect to retain its position as the head of navigation at least into the 1980's explains, in part, its strong response. Each of the other ports on the Waterway encounters competition from one or more ports located further upstream, but Tulsa can expect to develop a large hinterland to the west and northwest, unhindered by upstream competitors. Tulsa's large size, high per capita income, and superior position as an industrial center also help explain its relatively large port and industrial development effort and its large tonnages. Even more important in the matter of tonnages, however, is the fact that Tulsa has managed to funnel all of its traffic through the public port, whereas the other areas developed significant tonnages at privately owned ports and docks. At Little Rock, for example, large tonnages of bauxite were unloaded at a temporary private facility, considerable steel and dry fertilizer came in through the privately owned Jones-Kerby Port of North Little Rock, and sizable tonnages of stone went out over captive docks.

Perhaps the most obvious lack at Tulsa's port is that of grain storage and handling facilities. Apparently this will be remedied shortly, the port authority having applied in October, 1972, to the Corps of Engineers for a Section 10 permit to construct a grain handling wharf and mooring dolphins. The roll-on, roll-off wharf that was originally planned has not been constructed, but this type of operation has not developed elsewhere on the Waterway and may not be economical.

The Tulsa area showed unusual initiative in requesting the Corps of Engineers to extend the navigation channel beyond the originally designated head of navigation. The extension increased the feasibility of utilizing Bird Creek site for the port and industrial park. Whether this request was wise is another question. Use of the Verdigris River route rather than the Arkansas River route apparently reduced the cost of getting navigation to the vicinity of Tulsa, one saving being some 60 feet of lift based on a comparison of port sites located 15 miles from downtown. Hence, use of the Verdigris route tended to increase the probability that Tulsa would retain its status as the head of navigation.

Catalytic Economic Effect of Ports
on Surrounding Regions

Prior to development of ports along the Waterway, it was believed that the 436-mile-long system from the Port of Catoosa to the Mississippi River would soon stimulate a great surge of industrial growth. City, State and Federal agency leaders, local citizens--and even some economists--anticipated that the less expensive water transportation and beehive of port activity (a seaport in the plains at Catoosa!) would be an enormous incentive for new water-oriented industry to move into port-spawned industrial parks to take advantage of the relatively cheaper labor costs, the less expensive land costs, and the comparative advantages of water transportation.

Past studies have shown how just one new industry can boost an area's economy in almost unbelievable proportions, and how, later, there is the tendency toward what geographers call "agglomeration"--the propensity for enterprises to locate near one another. For example, the Texas Industrial Commission once concluded from an economic study that if one new industry adds 100 workers to a local labor force, the community gains 295 more people, 112 more households, 51 more school children, \$590,000 more personal income per year (in approximately 1960 dollars), \$27,000 more bank deposits, 107 more passenger cars registered, 174 more workers employed, 4 more retail establishments, and \$360,000 more retail

sales per year (again, approximately 1960-dollars purchasing power). And all of these did not even include the additional state and local taxes paid by the new plants, by the additional workers employed, and by the business establishments favorably affected by the new employment.

In the case of Arkansas, it was pointed out that there was a storehouse of untapped wealth to be exploited. In addition to its agriculture and lumbering (Arkansas cuts at least a billion board feet a year), the river basin had some of the largest oil, gas, and coal reserves in the nation. Colonel Francis J. Wilson, former vice president of the Arkansas Basin Development Association, once pointed out that "there are 65 commercially producible minerals in Arkansas--untouched because transportation costs have prevented taking advantage of them." He noted that 30 of those minerals were on the government's list of 38 "critical" minerals at the time (the "critical" classification means that considerable amounts of such minerals must be imported into the United States), and that low-cost water transportation would permit the processing of these raw materials and open up a host of new industries and jobs.

However, for the most part, this anticipated economic development has not taken place around the port areas at the time that this study is written. There has been some; but not much. Freight tonnage through the ports looks good; the first year (1969) that the system operated up to Pine Bluff, the Waterway carried more than 2.5

million tons of freight--two and one-half times earlier predictions-- and the tonnage has held up since. Catoosa announced recently that its 1972 tonnage would total 5.0 million tons. However, the future may not be as bright somewhere down the road unless new water-oriented industry--built into the long-range forecasts--can be attracted, as anticipated.

Other waterways have consistently exceeded predictions. The Ohio River Valley experienced an industrial growth of more than \$1 billion a year during the 1960's (returning \$13 for every \$1 of federal investment). And the Gulf Intracoastal Waterway has carried about 13 times the freight that was originally predicted.

As already noted, the Arkansas-Verdigris system looks good at this point, if one considers only the short run. Three score or more new--or relatively new--facilities have been constructed in and around the port areas; but the point to be emphasized here is that these new developments are mostly changes in location of existing plants, they are relatively small by most standards, and very few of the new plants are really water-transportation oriented. Some are water-oriented only regarding ore, rather than manufacturing operation (i.e., Valmac at Pine Bluff). These may provide some incentive to other types of non-water-oriented industry because of lower costs, but there is no direct "multiple" employment effect of consequence. Unquestionably, there is reason at this time for some degree of pessimism for the long-run--though the future may still prove surprising.

What are some of the reasons for new industry's apparent slowness in locating in larger numbers around the port facilities along the river? Undoubtedly several factors are relevant, and their comparative weights vary among the individual ports; as was noted previously in this study, no two ports are exactly alike, and--except for the short-time aspect--it is impossible to pin-point any single factor that is dominant at any one of them--much less find a factor that applies to all of them.

The time element unquestionably is an important consideration. The initial section of the Waterway (up to Little Rock) was not officially opened until December 31, 1968--just four years ago. Various ports opened at even later dates; for example, the first barge did not arrive at Tulsa until January 21, 1971--less than two years before the completion of this study. Thus, the time element has not been very long, if one considers how long it generally takes industry to reach a decision on new locations or relocations.

Of course, knowledge of the project's pending completion predates the opening by many years; the first work to be done (bank stabilization) was started just above Fort Smith, Arkansas, in Oklahoma in 1952. But it took a long time to reach the point of actual availability of port facilities, and national publicity on this availability has come even later--and the publicity really has not been on a very grand scale. Some industries may be waiting to see how this relatively "new" operation works.

The nation's business cycle also must be figured into the time element, too. The early 1970's witnessed a rather sharp business recession--even a depression for some industrial segments. While the later quarters of 1972 have seen considerable business recovery, and prospects look good for the future, the more favorable business outlook has not had time to take hold at the time of this study.

A factor evident at several of the ports is the philosophy of port and city officials that it is more important to concentrate on serving existing industry than to attract new firms into the area. The Pine Bluff port manager sees little hope of enticing new industry; he feels that he has a good operation going without it right now. Fort Smith's port manager says he certainly would be happy to get new industry, but he is not looking for any; even the city's Chamber of Commerce has a basic philosophy that the port should serve primarily existing firms. The port manager at Little Rock is actively seeking water-oriented industry for the area; he said that is the only real answer to the Port's growth, and he had "a couple of nibbles" at the time he was interviewed; but nothing had materialized yet. A rather new industrial park nearby has seen very little activity, and what has occurred is not water-oriented. Of course, the Little Rock port has two other factors that work to its disadvantage at this time; the port operators have a rather short-term contract, which is not conducive to much capital investment on their part (although some is occurring); and the arterial road facilities from the port are very

poor--though it is anticipated that this will be improved at some future date (which is rather uncertain). Pine Bluff also does not have very good trucking facilities out of the port; it is a long way from any interstate highway. Fort Smith has very poor direct access to a highway.

The relatively small size of most port cities in the system might be one factor keeping them from actively seeking new industry. This section indicated earlier some of the benefits that can be derived from the enticement of new firms; but it did not discuss some of the costs that are involved. New firms require additional city facilities--considerable energy, like electric power or natural gas for some (and some Arkansas towns already have had a couple of cold winters with a shortage of natural gas), abundant fresh water for others, and sewage for all. They take more fire and police protection; their workers burden the already-crowded schools, city parks, swimming pools, and city streets; the new firms and their employees place an additional strain on the already-short capital markets of the financial institutions (mid-1972 saw home mortgage interest rates running 8½ percent when some surrounding states had 7½ percent, and West Texas was going at 7 percent). All of these problems are not as characteristic of the more prosperous Tulsa area, with its Port of Catoosa; but the relatively less developed, smaller communities in Arkansas can find the prospects of rapid industrial development quite frightening--especially when the citizens are afraid that new

industry might pollute their clean air (except for Tulsa and Little Rock) and their clear water--though the Arkansas River is already too saline for some industry. There is still an aversion to "bigness" in many of the towns and cities of what is even now the basically rural State of Arkansas.

There was a time when Arkansas was known for its "cheap labor" (though firms now recognize that labor is not "cheap" when there is a shortage of skilled labor). Arkansas--and Oklahoma to a lesser extent--does not now have an abundance of available labor; it had one of the nation's smaller unemployment rates in the recent recession.

There once was a tax advantage if a firm located in the Southwest; but this comparative advantage is not as great as it once was. Arkansas' tax changes of two years ago--increases in both sales taxes and income taxes--could be a factor, also, if the facts were known.

Also, the incumbent state administrations of both Arkansas and Oklahoma have not given top priority to the attraction of new industries into their respective states, as did the previous administrations. Former Arkansas Governor Rockefeller and former Oklahoma Governor Bartlett--were more successful in attracting new industry than current Governors Bumpers and Hall--primarily because the former governors gave this goal a much higher priority and probably also had more out-of-state contacts than do the present governors.

Additionally, reduced water-transportation costs could have some backlash effect on the attraction of industries that consume large amounts of energy. If the coal or petroleum can be moved cheaply

by barge, there is less incentive for the industries to move close to the sources of the energy. There is still less incentive to move if the coal that is there is going to foreign nations under long-term contracts.

All of the foregoing factors undoubtedly explain to some degree why the new ports along the Waterway have not brought in the new water-oriented industry that was expected; but the specific weights that should be placed on any one factor are not known by the researchers of this study. A detailed analysis of these and other possible factors would require a different type of study, and a far broader one. There are many other questions, especially socio-economic aspects, that should be raised for some future study.

If one assumes, in making a locational study for industry, that the firms in question are strongly motivated by expected profits, then he must conclude that apparently water transportation, alone, does not offer enough in the way of cost savings to provide a comparative advantage to locate in the areas of these new ports. From a transportation standpoint, a firm must look, of course, at two factors in deciding on location: proximity to markets and proximity to immobile factors of production. Apparently the ports have not provided enough differential in costs to offset the disadvantages from a proximity standpoint. One needs to analyze the type of industries that might benefit most from water transportation; then the needs of these firms might provide a clue as to what governmental actions are needed to mollify these needs (and that assumes that the people of an area want

the government to act). Such a study might find that certain bottlenecks exist, like an insufficient supply of fresh water, an inadequate land transportation system, a lack of inter-industry linkage or "satellite" firms in the area that might use products or furnish raw materials, an apprehension about pollution-control enforcement, a fear of state and local tax structures (though this probably is no longer a major factor), an inadequacy of city services or capital markets, or perhaps it is just an industrial inertia that makes a firm hesitant to alter its established supply lines (incoming raw materials or outgoing finished products) even when the profit-oriented firms sees slightly more profit in doing so. It might even be that publicity about the availability of industrial sites and the advantages offered by the navigation system have not "hit their mark," even though such publicity has been national in scope.

Of course, it is possible that existing firms in the port areas have expanded in income and employment as a result of the new navigation facilities; a determination of this aspect was not a part of the original "charge" to this study group. To the extent that such internal growth took place, it would partially offset the lack of new industry's movement into the areas.

At the present time, federal efforts at industry location in relatively depressed regions are comparatively low, being restricted basically to infrastructure--social overhead capital improvements. A new approach in this area might be needed; direct subsidization

and investment tax credits are two of the most commonly proposed solutions.

Research efforts of the associated problems to plant locations will be necessarily large, and the local, state, and federal governments apparently need to provide funds for such research. Perhaps only a redirected effort by state and local officials is needed so that the current minimum critical effort is exceeded.

Therefore, the following factors might be considered--not as a rigid goal, but only as a suggested guide, with no priorities intended:

- (1) Ascertain if a minimum critical effort really has been made to entice location in the industrial parks.
- (2) Determine if a long-run vs. a short-run problem exists.
- (3) Search for possible local impediments that are discouraging new industry from locating in the areas.
- (4) Determine the requirements of potential users of the waterway, especially as these relate to local impediments.
- (5) Seek ways to attack industrial inertia as it relates to a hesitancy to break existing supply lines and to locate in a relatively "unproven" area.
- (6) Research the means to create inter-industry linkages, and possibly provide research funds for such studies.
- (7) Devise means to subsidize new industry openly.
- (8) Possibly use federal government discretion to obtain industry for the areas.
- (9) Ascertain ways to alter local philosophies that prefer to serve existing industries and fail to realize the advantages of seeking new industries.

Conclusions

Overall port development in the Region has been generally adequate in terms of quantity and geographic distribution of handling capacity. The development of port-related industrial parks has been reasonably adequate in terms of available space, with the possible exception of the Fort Smith area. Port and industrial park facilities appear to be comparable in quality to those built on similar waterways elsewhere. And there is no evidence that port and industrial planning has been less thorough or more shortsighted than in other regions, at least as far as local governments are concerned. It may, therefore, seem like a counsel of perfection to say that: planning horizons should be lengthened; more effort should go into planning; and higher quality facilities should be built. Yet there is much evidence that the Region would be better off if port planning had started earlier, looked further ahead, and considered wider ranges of alternatives. Furthermore, it appears that the state governments have delegated too much of the port and port-related industrial development to existing local governments.

One of the requirements for local cooperation set by the authorizing legislation was that local interests "provide adequate terminal and transfer facilities for navigation." This requirement appears to have been fulfilled, with the possible exception of grain loading facilities in Oklahoma. A privately owned grain elevator near Wagoner was put into operation recently, but it is not served by rail and hence

cannot be expected to service high-volume, long-distance movements, as from the Enid, Wichita, and Salina areas. Possibly the provision of grain-loading facilities at Muskogee and Tulsa has not been timely, but such a facility is now under construction at Tulsa.

Fort Smith does not have a port-related industrial park nor any immediate prospect of getting one. The Crawford County Industrial Park at Van Buren has available space and is close to the Co-op Port, but does not have port facilities or waterfront land of its own.

Typically by the time port planning was far enough along to have some reasonable chance of revealing possible advantages of design changes in the Project, it was rather late to make any but minor changes. Pine Bluff's early studies and its presentation at the public hearing held there in 1946 might be considered an exception. The issue was whether the navigation route below Little Rock would run down the Arkansas River or via a proposed canal across the Grand Prairie to Clarendon and thence down the White. But here the alternatives were posed by the authorizing legislation and had obvious and crucial implications for the localities involved.

Alterations in Project design might, in many cases, have increased overall costs, and obtaining a change might have required an injection of nonfederal funds. If the states of Arkansas and Oklahoma had been standing ready to help bear substantial incremental costs in order to achieve increased Project benefits, local governments might have been encouraged to consider and ask for design changes. Hence the narrow

scope of local planning may have stemmed partly from lack of attention at the state level.

Indeed, it might be argued that the states, themselves, should have engaged in comprehensive river basin planning prior to, and concurrently with, the study that was made by the (federal) Arkansas River Survey Board and submitted December 31, 1943, but apparently no such planning was undertaken. The comments of the governors of Arkansas and Oklahoma (reproduced in Appendix C) are devoid of constructive criticism of the Survey Board's extensive report. In connection with the navigation plan (no hydropower), the Board estimated navigation benefits net of terminal costs; it then used the same navigation benefits for its recommended multiple-purpose plan (moderate hydropower development). Yet the latter plan offered a shorter route with fewer lockages and provided better conditions for the construction of ports. The governors might have bolstered their expression of agreement with the Chief of Engineers' recommendations by citing this element of conservatism in the recommended plan's justification. Perhaps they would have, given adequate river basin planning staffs.

Sizable cities have some ability to grasp opportunities created by the Waterway, and the chief problem may be coordination of the several local developments. Where opportunities are created in rural counties, effective development may have to await state action. The states of Arkansas and Oklahoma have done little to coordinate the Region's ports and industrial parks or to develop new navigation-based cities at promising locations.

Description of Individual Ports

Port of Pine Bluff

The Port of Pine Bluff was developed mostly because the public and area leaders voiced the attitude that "we can't afford not to," rather than because of any appeal that the port would greatly benefit the area. Some minor opposition developed, but it was mitigated and the Jefferson County citizens approved the project by almost a 3-to-1 vote.

The port is located at mile 2.4 in Pine Bluff Harbor. Pine Bluff Harbor is considered to include the area around Lake Langhofer, which is an 8.3-mile slack water lake created by the Boyd Point Cutoff. The lake joins the Arkansas River at river mile 71.2 and is navigable for only five miles.

The public facilities (Pine Bluff Terminal) occupy 22 acres of a total 372 acres in the Harbor Industrial District. These facilities are leased to Arkansas River Terminal, a division of the Pine Bluff Warehouse Company, for operation. As of August, 1972, the Port Authority had sold 38.8 acres of industrial land.

On January 4, 1961, the Pine Bluff Port Authority held its first meeting as a municipal port authority under the City of Pine Bluff. In 1963, the Pine Bluff-Jefferson County Port Authority was organized under Arkansas' Metropolitan Port Authority Act of 1961. In July, 1963, the Circuit Court of Jefferson County appointed three members from the county

to serve on the board of directors. The Port Authority became a separate legal entity on August 5, 1964, when the City Council of Pine Bluff approved Ordinance Number 3788 and appointed four members to the board of directors. Under the Metropolitan Port Authority Act of 1961, the port authority is a separate public corporation and, unlike the other port authorities in Arkansas, operates without direct supervision of a municipal government.

In 1964, the Pine Bluff Chamber of Commerce provided \$119,000 to form the Jefferson County Industrial Foundation and since 1964 has provided an additional \$126,000 to help support it. The primary purpose of this organization is to promote and stimulate development in the overall Pine Bluff-Jefferson County area, not just to sell land in a particular industrial park. Even though the Jefferson County Industrial Foundation and the Pine Bluff-Jefferson County Port Authority are separate corporations, the paid chief executive officer for both organizations is the same individual.

There appeared to be no specific planning for a publicly financed port and industrial park prior to 1966, although the concept and site for the project were basically decided before a December, 1965, bond election. The local Port Authority considered Pine Bluff to be in the early stages of becoming an important regional transportation center and analyzed the economic justification of a port prior to formulating a preliminary plan. Personal inspection of port facilities in Greenville, Memphis, Vicksburg, and other areas permitted direction for a course of action to be taken. G.A. (Fred) Langhofer, past vice chairman of the Port Authority and a

retired Corps of Engineers employee, is credited with the emphasis on a slack water harbor, the selection of the port site, and the initial layout of the Harbor Industrial District. (Mr. Langhofer died in 1967 and the slack water harbor was named in his honor.) The Port Authority decided to initiate the port development by obtaining an option on the 372 acres prior to the 1965 bond election.

As noted earlier, support for a port at Pine Bluff developed more on a "we can't afford not to" basis rather than on an appeal for the benefits that a port would bring to the region. In the December 8, 1965, issue of the Pine Bluff Commercial, William H. Kennedy, Jr., president of the National Bank of Commerce of Pine Bluff, is reported as saying, "Pine Bluff will suffer in the long run without a port." In a speech on the development of the port, Paul K. Lewey, past executive director of the port authority, stated:

Put simply, our port authority and community leadership were convinced that irrespective of the immediate economic justification, Pine Bluff could not afford to be without a local port facility, and the decision to proceed was irrevocably committed.

Also active in supporting the port proposal were Emmett Sanders (a member of the Pine Bluff City Council and the first chairman of the Port Authority), Jefferson County Judge Joe T. Henslee (who developed a financing program that was acceptable to the voters of Jefferson County), the Pine Bluff Chamber of Commerce, and other community business and civic leaders. The only economic benefit proposed to result from the port was stimulation of the future growth and development of the Pine Bluff-Jefferson County area.

Some opposition to the port development arose prior to the bond election. There was some concern over the creation of the slack water

harbor, which would remove Pine Bluff from the main navigation channel; however, this was effectively removed when the Corps of Engineers agreed to maintain the depth of navigation within the slack water harbor. The most vocal group of opposition appeared to be a few blacks who resented the lack of representation on planning groups and the absence of guaranteed job opportunities when the projects financed by the bond issue were completed. (The bond issue contained three proposals: port, health center, and hospital construction.) There were three advertisements placed in the Pine Bluff Commercial objecting to the bond issue because of taxes, although there was to be no increase in the then-established tax millage rates. Finally, one comment was recorded which questioned public financing of a port facility when a railroad company was going to develop a port at Fort Smith.

On December 14, 1965, a \$2,550,000 general obligation bond issue proposal was submitted to Jefferson County voters for approval. County Judge Joe T. Henslee developed the following financing plan so that there would be no increase in the millage rate. In 1957, Jefferson County voters had approved a 20 year, 3.0 mill tax, bond issue for the construction of a Jefferson County Hospital. In 1965, there was \$500,000 outstanding on this bond issue. Henslee's plan was to retire the 3.0 mill hospital bond issue and replace it with three bond issues tied together so that all or none must pass. The proposal submitted to the voters included:

Port Authority bonds		\$1,200,000 - 1.4 mill levy
Hospital bonds		
Construction	\$700,000	
Bond retirement	<u>\$500,000</u>	
Total hospital bonds		\$1,200,000 - 1.4 mill levy
Health center bonds		150,000 - 0.2 mill levy
Total bond issue		<u>\$2,550,000 - 3.0 mill levy</u>

Approval of this proposal allowed retirement of the 1957 bonds and use of the previously approved 3.0 mill levy, which meant no increase in the basic county tax rate for the entire package of new projects. The favorable response of the citizens of Jefferson County may be observed in the election results:

	<u>For</u>	<u>Against</u>
Port Authority bonds	6,739	2,677
Hospital Construction Tax	7,405 6,074	2,183 2,746
Health Center Construction Tax	7,292 5,930	2,282 2,841

The \$1,200,000 in funds for the port were expected to be sufficient for purchase of the land and the initial phase of constructing a public terminal and developing approximately 85 acres of industrial sites within the Harbor Industrial District.

In May, 1966, the Pine Bluff-Jefferson County Port Authority employed the firm of Ellers and Reaves, Inc., of Memphis as consulting engineers. Their first action was to prepare a Commodity Traffic Survey of the area, which was submitted to the Port Authority in December. It provided further justification for port development by stating that the economies associated with barge transportation "can stimulate growth and in turn provide increased employment and income for the community." Anticipated traffic was expected to be associated with area industrial activities. They predicted that approximately 28,000 tons (15,000 inbound and 13,000 outbound) of traffic would be handled at the public

facility in 1970, and approximately 66,000 tons (43,000 inbound and 23,000 outbound) would cross the dock by 1980. The report suggested that complete plans be prepared before any improvements were constructed, but that the plans should allow for flexibility during development stages.

A second study by Ellers and Reaves, Inc., considering a land-use study of the site, was submitted to the Port Authority in March, 1967. The site on the harbor side of the main levee was criss-crossed by abandoned and subordinate levees and contained many borrow pits. Although none of the area was flood free, approximately one-half of the acreage was above the 25- to 50-year flood level. Using the material on the site would reduce the number of acres that would be flood free. Ellers and Reaves, Inc., presented three choices for development of the site: (1) improve existing and abandoned levees to protect useful parts of the site, (2) borrow from the rear of the site to fill waterfront land to an elevation above the flood level, or (3) hydraulically dredge-fill as much waterfront land as funds would allow and then use the sale or lease of the land to pay for progressive filling until the entire area was completed (approximately 10 years). The Port Authority accepted the third choice and instructed the consulting engineers to prepare plans and specifications for the project.

Phase 1 included purchasing the 372-acre site, filling approximately 85 acres at the south end of the site, constructing the wharf and terminal building, and providing utility service, road access, and rail siding for the initial area. Dredging operations by the Pine Bluff Sand and Gravel Company began in the Fall of 1967 and were completed in March, 1968. The

fill placed the site one foot above the Corps of Engineers projected 300-year flood level.

At the north end of the site, there was approximately 3,000 feet of waterfront that was considered useless because of tangled, inoperative pile dikes. Although removal of these pile dikes was included as an alternative in the phase 1 contract, the Port Authority did not have sufficient funds to exercise this alternative. However, a subsequent request to the Corps of Engineers to remove the dikes at no expense to the Port Authority was successful. This added approximately 2,500 feet of usable waterfront and 50 acres of waterfront land.

In August, 1967, the Southeast Arkansas Economic Development District was established, the port project being a major factor in favor of its establishment. Pine Bluff is not considered underdeveloped and therefore cannot receive federal funds for development, per se. Pine Bluff has been classified as a development center, however, and can get federal funds by virtue of its being located in an underdeveloped area.

Using the 10-year development plan as a basis, the Port Authority submitted a request to the Southeast Arkansas Economic Development District for an Economic Development Administration matching grant, which would allow the Port Authority to complete the entire project at one time, rather than in the step-wise schedule previously adopted by the Port Authority. The grant requested was in the amount of \$1,206,000. However, since a portion of the funds from the bond issue had been expended (land acquisition and the dredging operations), the Port Authority found it necessary to raise an additional \$645,000 to provide the required matching

funds. This sum was acquired through the issuance of revenue bonds, which were purchased by Pine Bluff banks, to be repaid from funds received by the sale or lease of land in the industrial park. The EDA grant was approved in the latter portion of the 1967-68 fiscal year, and the consulting engineers prepared new plans and specifications for completion of the entire project. The project was completed in April, 1970, and comprises the following improvements:

1. Filling the entire 372 acre site to a flood free elevation of 214.5 feet above mean sea level.
2. Construction of a public terminal to include:
 - a. A 160 by 68 foot reinforced concrete wharf designed to handle live loads of 1,000 pounds per square foot.
 - b. Three dolphins at each end of the wharf for barge moorings.
 - c. A 40,000 square foot steel building for temporary cargo storage and warehousing (located 185 feet from the wharf front) containing a sprinkler system and lighting sufficient for 24-hour operation.
 - d. A rail siding on the wharf for barge-to-rail-car loading and unloading, and a rail siding for the warehouse building.
 - e. A 22-foot access road to the terminal building, and paved drives and parking areas around the building and wharf.
3. A Harbor Industrial District containing:
 - a. A 44-foot wide paved four-lane street through the center of the site extending the full length.
 - b. Ancillary streets and parking areas to allow access to industrial sites.
 - c. A 12-inch main water line providing primary service to the Harbor Industrial District with an 8-inch lateral along the two-lane streets. The system includes 6-inch laterals stubbed out from the main line prior to construction of the roadways and rail lines to allow easy tie-in without tunneling or making street cuts.

- d. A 500,000 gallon elevated water storage tank.
- e. An independent sanitary sewer system including an oxidation pond to serve the Harbor Industrial District.
- f. Utilities provided by Arkansas Power and Light and Arkansas-Louisiana Gas company.
- g. Storm water drainage provided by shaping of the fill land and drainage ditches. Some subsurface drainage is provided in the public terminal area. Additional subsurface drainage may be required in the industrial area depending upon the type of structures constructed.
- h. Rail connections to the St. Louis Southwestern Railway yard which adjoins the industrial park on the east.

The 372-acre tract includes 22 acres for the public terminal, 55 acres for access roads, rights of way, utilities, etc., and 295 acres of industrial land for sale or lease to private interests.

The total funds available for construction of the project were \$3,064,050. This figure is computed as follows:

General Obligation Funds	\$1,213,050
EDA Grant	1,206,000
Revenue Bonds	<u>645,000</u>
Total	\$3,064.050

However, the Harbor Industrial District reports total construction costs at \$3,100,201. In 1966, the Corps of Engineers purchased 18.7 acres from the Port Authority for \$3,450. This land is presently occupied by depots of the Corps of Engineers and U.S. Coast Guard. Adding this sale, which predated the 1968 issue of revenue bonds, to the unaccounted for investment by the Port Authority, in the amount of \$32,700.45, the Pine Bluff-Jefferson County Port Authority investment would total \$1,249,201. This

increases the total public investment to \$3,100,201. At the present time, there are no plans for additional public investment in the Harbor Industrial District. All future expenditures are to be either private or through Act 9 revenue bonds.

Capital expenditures not financed directly by the Port Authority include:

1. A Corps of Engineers depot (which supports the navigation system) and a U.S. Coast Guard depot (which supports navigational aids); construction began in 1966 and was completed at an estimated cost of \$1,300,000.
2. The Martin Terminal Company liquid handling complex; this facility consists of two 1,000,000 gallon storage tanks involving an investment of \$750,000.
3. Arkansas River Terminal, operator of the Pine Bluff Terminal, has four additions that will involve an investment of approximately \$1 million:
 - a. Four 500,000 gallon storage tanks for liquid fertilizer.
 - b. One 600,000 gallon liquid storage tank for methyl alcohol.
 - c. A bulk dry fertilizer unloading facility and bagging plant that includes a 320 foot conveyor system (a duplicate of the structure at the Port of Catoosa); included in this project still being constructed are: a scale, a 350 foot extension of rail tracks, and an additional 250 square feet of office space at the terminal building.
 - d. A rice handling facility.
4. Valmac Corporation is constructing a \$1 million poultry feed processing and distribution facility; this project is being financed by Act 9 revenue bonds, approved by Jefferson County voters in the Spring of 1972.

Investment, excluding the port area and Harbor Industrial District, totals approximately \$4,050,000.

Total capital investment in the Pine Bluff Terminal and Harbor In-

dustrial District to date is identified, by source of funds, below:

<u>Federal</u>		
EDA Grant	\$1,206,000	
Corps of Engineers and U.S. Coast Guard depots	<u>\$1,300,000</u>	
Total Federal		\$2,506,000.00
<u>Local (Jefferson County)</u>		
General Obligation Bonds	\$1,213,050.91	
Port Revenue Bonds	645,000.00	
Act 9 Revenue Bonds (Valmac Corp.)	<u>1,000,000.00</u>	
Total Local		\$2,858,050.91
<u>Private</u>		
Martin Terminal Company	750,000	
Arkansas River Terminal	<u>1,000,000</u>	
Total Private		\$1,750,000.00
<u>Port Authority</u>		
Sale of land to Corps of Engineers & U.S. Coast Guard	\$ 3,450.00	
Construction credit to Arkansas River Terminal	12,186.18	
Unaccounted for Investment	<u>32,700.45</u>	
Total Port Authority		<u>\$ 48,336.63</u>
Total Capital Investment		\$7,162,387.54

The Pine Bluff Terminal is operated by Arkansas River Terminal, a division of the Pine Bluff Warehouse Company; selection was achieved through competitive bidding. The operating company was instrumental in finalizing the layout, plans, and specifications for the public terminal. On February 4, 1969, a five-year lease agreement was signed between the warehouse company and the Port Authority. The contract included an option for an 11-year renewal of the lease, and the lease agreement commenced upon substantial completion of the terminal facilities in September, 1969, the same month that the port was officially dedicated by Arkansas Senator John L. McCellan.

The operating contract calls for the lessee to pay the port authority an income based upon tonnages handled, with a minimum of \$12,000 per year. In 1970, the lessee improved the facilities at a cost of \$12,186. This expense is being recouped by a reduction in rental payments of \$500 per month. As of June 30, 1972, the unrecovered cost was \$186. As previously indicated, the operator of the public terminal is investing approximately \$1 million in new facilities. The operator has indicated that the unrecovered investment will be paid by the Port Authority in the event the lease contract is not renewed in 1985.

In August, 1969, the Port Authority signed an Industrial Tract Agreement with the St. Louis Southwestern Railway Company to recover from the railroad \$87,586 in rail construction costs. Terms of this agreement require the railroad to pay the port authority \$3 per car of freight received or shipped on the Port Authority's railroad tracks, provided that the St. Louis Southwestern Railway Company receives at least \$75 of roadhaul revenue per car. As of June 30, 1972, the Port Authority had recovered \$1,146.

To recover some the construction costs associated with the installation of gas mains, on September 24, 1969, the Port Authority and Arkansas Louisiana Gas Company entered into a contractual agreement. Beginning on the contract date, for a period of 10 years, the Port Authority will annually receive 20 percent of the gross revenues received, or receivable, by the gas company from customers who use gas from the mains in the project area. The maximum amount that the Port Authority will receive is \$29,347. Recovery, as of June 30, 1972, was \$693.

On October 17, 1969, the Port Authority leased the water system to General Waterworks Corporation for a period of 40 years. At the beginning of the contract, the lessee prepaid the entire 40-year, \$125,000 rent. If the Port Authority ceases to operate the Harbor Industrial District, it was agreed that the Port Authority would sell, and the water company would purchase the water system. The price would be adjusted for depreciation and for rent previously paid by the water company.

As mentioned earlier, the Port Authority and St. Louis Southwestern Railway Company (Cotton Belt) have signed an Industrial Track Agreement for the recovery of trackage construction costs. Although the Harbor Industrial District is within the reciprocal switching limits for both the Cotton Belt and Missouri Pacific (MoPac), the area is served by the Cotton Belt. Adjoining the industrial park property on the East is a main line and an electronic classification yard (gravity yard) of the Cotton Belt. Rail rates to Pine Bluff include spotting and pickup of cars; therefore, the Port Authority has no plans to acquire a switch engine of its own.

The Pine Bluff Terminal is publicly owned and privately operated for the purpose of providing low-cost water transportation for those firms that do not feel it is feasible to invest in a private dock. The Pine Bluff Warehouse Company has expanded its operations (through Arkansas River Terminal) to include the public wharf. Expansion plans will result in Arkansas River Terminal operating the following additional facilities: liquid storage tanks, a dry bulk fertilizer facility, and a rice handling facility.

Traffic handled at the public terminal has exceeded the estimates set forth by the consulting engineers in both tonnages and types of goods. The Commodity Traffic Survey submitted to the Port Authority in December, 1966, presented the following breakdown:

ESTIMATED PROSPECTIVE COMMERCE AT PORT OF PINE BLUFF PUBLIC BARGE TERMINAL (Short tons)				
	1970		1980	
	In	Out	In	Out
<u>Animal and Vegetable Products</u>				
Crude Vegetable Oils				5,000
<u>Wood and Paper Products</u>				
Lumber		8,000		10,000
Paper Products		5,000		8,000
<u>Metal and Metal Manufacturers</u>				
Rolled & Finished Steel Mill Products	15,000		30,000	
<u>Non-Metallic Minerals</u>				
Salt			3,000	
<u>Chemicals and Related Products</u>				
Industrial Agricultural and other Chemicals			10,000	
Totals	15,000	13,000	43,000	23,000

These tonnage estimates total 28,000 tons for 1970 and 66,000 tons for 1980.

The Port Authority did not release specific tonnage figures; however, detailed information pertaining to the types of commodities handled was obtained. The first barge outbound from the Pine Bluff Terminal left on May 19, 1969, loaded with 800 tons of newsprint from the International Paper Company at Pine Bluff for Omaha, Nebraska. On the same day, the first inbound shipment arrived and was unloaded. The barge contained

42 rolls of steel coils weighing 200 tons from Gravity City, Illinois, and destined to Vargo-Pruden, Inc. Both the terminal operator and executive director of the Port Authority indicated that the total tonnage figure for 1971 was approximately 88,000 tons. The executive director also said that approximately 70,000 tons had been handled during the first five months of 1972, and that it was expected that total 1972 traffic would "substantially" exceed 100,000 tons.

The table below shows the types of goods handled by the Pine Bluff Terminal. It should be noted that these commodities have greater variety than the consulting engineers expected in their 1966 study.

<u>Commodity</u>	<u>In</u>	<u>Out</u>	<u>Remarks</u>
<u>Grain</u>			
Wheat		X	
Rice		X	To date the method of handling rice has been uneconomical for the terminal; however, the new facilities proposed are expected to alleviate this situation.
<u>Fertilizer</u>			
Liquid	X		
Dry	X		
<u>Machinery</u>			
Ore	X	X	
Herculite	X		
Vermiculite	X		Used for insulation
<u>Jute</u>			
	X		Goes to Burlington Industries carpet plant at Monticello
<u>Methyl Alcohol</u>			
	X		
<u>Steel</u>			
	X	X	Mostly inbound
<u>Paper</u>			
Newsprint		X	Both are from International Paper Company's Pine Bluff Plant
Milk Carton Stock		X	
<u>Forest Products</u>			
Lumber		X	LASH barges
Pulp board		X	LASH barges
Cellulose board		X	LASH barges
Ply board	X		LASH barges from Japan

An in-house study prepared by the Port Authority in early 1972 made several projections for the Port of Pine Bluff in the year 1990. (It should be recalled that the Pine Bluff-Jefferson County Port Authority considers the Port of Pine Bluff to include private terminals in the nearby area, not just the public terminal. This should be kept in mind when reading the commodities that are expected to be handled in 1990.) Below is a table indicating the commodities that are expected to be handled in 1990, in addition to those that are presently being handled.

<u>Expected Principal Imports</u>	<u>Expected Principal Exports</u>
Tractors and Machinery	Logs
Salt	Sand
Cement	Soybeans
Heavy Electrical Materials	Chemicals
Coal	Cotton
Crushed stone	Animal feed and pitch prill
Gravel	
Crude Oil	
Gasoline	
Flake board	
Textiles	
Sugar	
Raw materials for lumber and paper products	

The in-house study also projected economic benefits for the Port of Pine Bluff for 1990. These include 25 tenants in the area employing 1,500 to 2,000 employees, with an annual payroll (without inflation) of \$10 million. Also projected (without inflation) is \$100 million in annual flow of goods and services and annual property tax revenue of \$500,000.

To date, 38.8 acres of land within the Harbor Industrial District have been sold. The Corps of Engineers and U.S. Coast Guard depots

comprise approximately 20 acres. The Martin Terminal Company has purchased 12 acres for liquid storage facilities and Valmac Corporation has purchased 6.8 acres for a poultry feed processing and distribution facility. With 55 acres set aside for public facilities and 22 acres leased for the public terminal, there are presently 115.8 acres in use, leaving an additional 256.2 acres available for sale or lease.

Private Docks in the Pine Bluff Area

The Pine Bluff-Jefferson County Port Authority considers all port and dock facilities in the immediate area which have an impact on the overall economic growth the region to be in the Port of Pine Bluff. All facilities below are in this category.

The Martin Terminal Company was the first private venture to take advantage of the opportunities offered by the Pine Bluff Harbor Industrial Park. Located at Pine Bluff Harbor mile 2.1, the facility occupies 12 acres, has two 1,000,000 gallon storage tanks, and comprises an investment of \$750,000 to date. The company handles and stores caustic soda for Dow Chemical Corporation, its sole customer.

Also located within the Harbor Industrial Park is Valmac Corporation, who is constructing a poultry feed processing and distribution plant. The facility will be located at Pine Bluff Harbor mile 2.3 and will occupy 6.8 acres. The financing for this facility was obtained through Act 9 Revenue Bonds in the amount of \$1,000,000. The issuance of these bonds was approved by Jefferson County voters in the Spring of 1972. Initially, incoming barges will be handled by the public facility, which adjoins the Valmac property.

Turner's Dock is also located on the Pine Bluff Harbor, at mile 4.1. This facility is not within the Harbor Industrial District. Turner's Dock is owned by Mrs. Allen R. Russell of Pine Bluff and offers barge fleeting service, above-water repairs, and barge cleaning. It also charters barges and boats. Another service offered is that of

transferring dry bulk and general cargoes from barge to truck.

The wharf is rectangular, constructed of steel-pilings and earth fill. Handling is performed by a crawler crane.

Also located on the Pine Bluff Harbor, but not within the Harbor Industrial District, is the Pine Bluff Dock of the Pine Bluff Sand and Gravel Company. The facility is located at navigation mile 4.4 and is used only for unloading sand that has been dredged from the harbor. A 30-ton crawler crane equipped with a clamshell bucket stands on a steel-pile, earth-filled wharf. The crane discharges sand to a conveyor system, which feeds to stockpiles. Trucks are loaded from the stockpiles by a front end loader. Other waterside facilities include: ten wooden pile-cluster dolphins; an earth fill wharf with a concrete wall and mooring fitting; a small ramp-type slip; and rock-earth abutment and barge supported bridge from which trucks can dump directly onto barges. Also on the site is a ready-mix concrete plant.

Downstream from the confluence of the Pine Bluff Harbor and the Arkansas River, on the right bank of the river, lies the Bunge Corporation's Linwood Dock. The dock is located at navigation mile 54.5, approximately 4.2 miles upstream from Lock and Dam No. 3. The Bunge Corporation is involved in grain warehousing and in exporting and importing grains, chemicals, and general merchandise. The Linwood facility is designed for the transfer of soybeans and grain from truck to barge and for seasonal storage. It has two storage silos (one 200 feet in diameter and one 35 feet in diameter), a conveyor belt for loading grain into barges, and a 335-foot row of pile dolphins.

The next facility upstream is the Victoria Bend Terminal, which is owned by the Moore Terminal and Barge Company, Inc., of Monroe, Louisiana. It is located on the right bank of the Arkansas River at navigation mile 64.5, one and one-half miles downstream from Lock and Dam No. 4. The terminal transfers fuel oil, for the International Paper Plant at Pine Bluff, from barge to storage tank. Facilities include mooring dolphins, a liquid unloading pier, and a catwalk and two pipelines extending to the pier. Two pipelines, insulated and wrapped together and apparently steam traced, extend some 3,000 feet southwestward from the dock and connect with a 4.2 million gallon heated storage tank.

Upstream from the confluence of Pine Bluff Harbor and the Arkansas River is the MonArk Shipyard. It is located on the right bank of the Arkansas River at the northwestern end of Boyd's Point, at approximately navigation mile 74.2, and occupies 40 acres. MonArk Shipyards, Inc., is a subsidiary of MonArk Boat Company of Monticello, Arkansas. Although the parent company is a producer of recreational boats, the new facility is designed to produce towboats, steel boats, barges, personnel launches, fishing vessels, dredges, dredge tenders, and other types of vessels up to 300 feet in length and 400 tons gross weight. The company had initially thought that two or three orders per year would justify the operation; however, with the first craft launched in June, 1972, MonArk Shipyards, Inc., had orders for 26 vessels.

The final water oriented operation in the Pine Bluff area is Bunge Corporation's Pine Bluff Dock. The facility is operated by the River Grain Division and is used for storing soybeans and wheat and loading

them into barges. Approximately 95% of the cargo handled consists of soybeans. There are two cylindrical steel bins with conical roofs for storage. One can hold two million bushels, but the other is much smaller. There is also a truck scale and a hydraulic dumper. Commodities are discharged to the small bin by means of a vertical elevator and to the large bin via a belt conveyor. A catwalk and covered conveyor belt extend to the barge-loading pier. There are four steel mooring dolphins and an electric winch-and-cable system for moving barges.

Little Rock Port

Operations of the Port of Little Rock are self-sustaining, and it is not expected that monies from the sale of land in the nearby industrial park will be necessary to maintain port operations. This is fortunate, for there were few businesses in the industrial park at the time of this study--five years after the park lands were acquired.

Commodities moving through the port generally have not been directly associated with the industrial park at all; most of them move between the port and previously existing firms in the Little Rock area. One future stimulus to future industrial location within the port area will be the recent approval of a four-acre plot around and including the port terminal and warehouse as a foreign trade zone.

The Little Rock port, approximately seven miles east of downtown Little Rock and three-miles east of the municipal airport (Adams Field), is located at navigation mile 112.8 on the right bank of the Arkansas River. Situated about two miles above Terry Lock and Dam (No. 6), the terminal facilities are not subject to a great variation in water level.

The normal navigation pool level is 231 feet and 50-year flood level is 248 feet. The dock and warehouse are at 250 feet, which puts the area above the 50-year flood level and provides a 19 foot cargo-handling lift.

The first step toward creation of a port at Little Rock was the establishment of the Little Rock Port Authority on July 6, 1957, under the terms of Act 167 of 1947 by means of Ordinance 10957 of the City

of Little Rock. This ordinance provides that the city manager nominates five members of the Port Authority Board, confirmed by the city Board of Directors.

In October, 1960, the Port Authority commissioned the engineering and architectural firm of Tippetts-Abbett-McCarthy-Stratton of New York to perform a \$30,000 study on development of port facilities. A first draft of the report (submitted May 5, 1961) included five proposed sites for the port and recommended the present site; a later report (submitted October 31, 1962) recommended a 1,100-acre site for the port and adjoining industrial park, and estimated the cost of acquisition and development of terminal facilities and the entire industrial park as \$8,700,000.

The Tippetts justification for a port at Little Rock estimated that the port would break even during the period 1970 to 1975; however, it would provide an estimated \$250,000 annually in direct benefits to Pulaski County during the same period. Indirect benefits were expected to be twice the direct benefits, or \$500,000 annually for the 1970-1975 period.

Garver and Garver of Little Rock then was employed to do the engineering work, lay out the plans, and supervise construction. It submitted a report in early-1964 and proposed that, rather than proceeding with development of the entire area (as suggested by Tippetts), only minimal terminal facilities be constructed and only 210 acres of the entire 1,100 acres be prepared for industrial occupancy. This proposal also included the installation of a rail spur and utility lines. The table below presents a breakdown of the cost estimates set

forth by Garver and Garver:

Land Acquisition		
700 acres at \$2,000 per acre inside levy	\$1,400,000	
400 acres at \$1,000 per acre outside	<u>400,000</u>	\$1,800,000
Land Development - 210 acres		
Railroad Access	1,250,000	
Highway Access	40,000	
Street Paving	232,400	
Drainage	210,000	
Water Supply and Fire Protection	<u>140,000</u>	\$1,037,400
Terminal Facilities		
Site Preparation	140,000	
Wharf Structure	450,000	
30,000 square feet Transit shed (including utilities)	150,000	
Barge Moorings	45,000	
Paving (Parking and Loading areas)	95,000	
Loading and Yard Tracks	50,000	
Rail Access	135,000	
Highway Access	120,000	
Utilities	<u>65,000</u>	\$1,250,000
Consulting and Contingencies (estimated at 10%)		<u>408,740</u>
	TOTAL	<u>\$4,496,140</u>

Little Rock voters approved on May 12, 1964, a 30-year general obligation bond issue in the amount of \$4.3 million for acquisition of the land and development of the port and adjoining industrial park according to Garver and Garver's proposal. These bonds had a levy of 1.75 mills. Support for the bond issue was provided by: Governor Faubus, the Little Rock Chamber of Commerce, Little Rock Junior Chamber of Commerce, Board of Realtors of Little Rock and North Little Rock, Little Rock Engineers Club, East End Civic League, and some labor

leaders. Although the bond issue passed, it was by a narrow margin (2,305 to 2,079).

If results of the bond issue election can be considered a response of the local citizenry, then it may be concluded that the local populace did not strongly support the proposed port development. However, a plausible reason for the voter response is that there was no large-scale promotional campaign in favor of the development of a port, as was observed in Pine Bluff, Muskogee, and Tulsa. Instead, immediately preceding the election day, several individuals (James Smith, Harlan Hill, and Lloyd Pearce, all of Little Rock) placed advertisements in the local newspaper against the proposed bond issue. They contended that private capital should finance construction of the port. Charles Mason of Little Rock also placed an advertisement in the local Arkansas Gazette saying that he felt a port would be "nice", but the development should be financed in another manner.

The Port Authority encountered no difficulty in acquiring land needed for the port, itself; the purchase price was \$150,000 for 151 acres. However, opposition arose in attempts to purchase land for the industrial park. In July, 1965, the Authority found it could not purchase the land needed for the industrial park, so it decided to obtain the land through the right of eminent domain. A battle developed between the Port Authority and owners of 553 acres--Mr. and Mrs. Samuel Raines III and Mrs. Mary J. Raines:

The Port Authority offered \$1,250 per acre, but the family wanted \$2,050 per acre. This acreage was situated

between two sections of land in the planned industrial district and comprised three blocks, 387, 80, and 76 acres each. Proceedings were initiated to condemn the land and on October 9, 1965, Raines filed a suit against the action. The city lost the condemnation action on September 27, 1966, by a ruling from Chancellor Kay L. Matthew, who stated, ". . . proposed industrial park is not a public purpose or use permitted by the constitution under the right of eminent domain." The city appealed Chancellor Matthew's decision.

Early in February, 1967, legislation was introduced that would permit Little Rock to continue with the port-industrial park development. HB 429 was designed to give cities and counties explicit power to condemn land for industrial development. But, on February 20, 1967, Associate Justice John A. Fogleman of the State Supreme Court ruled that the City of Little Rock could not condemn land for an industrial park, and with this ruling, HB 429 was withdrawn because it would have been unconstitutional. After defeating the city, the property owners said that the land would be sold to provide developers within a few weeks.

On March 3, 1967, Mrs. Mary J. Raines filed a protest with the Corps of Engineers against the location of the port. She said the port should be moved farther downstream so that the Old Channel Fourche Creek could be dredged. She contended that the channel could be dredged in order to make it navigable and with a navigable channel, inland docks could be constructed. The proposed moorings upstream from the port would prevent the creek from being dredged. The present port moorings are located somewhat downstream from Fourche Creek and will not hinder navigation if the creek is dredged to a navigable depth. Mrs. Raines also objected that a railroad would cross her property and the Old Channel Fourche Creek, and contended that the proposed type of crossing would not permit water traffic in the channel.

Within a week after the protest was filed, the 76 acre tract, which was jointly owned by all three Raines's, was sold to the Port Authority. However, Mr. Raines kept his undivided one-quarter interest. Shortly thereafter, Mr. Raines told the Port Authority that he wanted to see their plans and specifications for the industrial park development because he wanted to develop

his industrial district in accordance with the overall plans of the port. The Port Authority rejected Raines's request, but said that, if he wanted the plans, he would have to pay for them.

In July of 1967 the principal roadblock in the port development--that of acquiring land for the industrial park--was finally resolved. A purchase price of \$1,500 per acre was negotiated with the Raines's for the land needed to complete the industrial park, and the Port Authority purchased 1,186 acres of land for the industrial park for \$1,400,279.

The Corps of Engineers issued a permit to the Little Rock Port Authority on March 21, 1967, for the port construction. In July, 1967, the Carter Construction Company of Benton and Little Rock was awarded a contract for the first phase of construction.

The following is a summary of approximate expenditures:

Land Acquisition

Port	\$ 150,000.00	
Industrial park	<u>1,250,276.05</u>	\$1,400,279.05

Construction

Phase I	811,960.56	
Railroad track (4.5 miles)	354,896.00	
Terminal building, foundation	141,492.00	
Access road (1 mile)	164,391.00	
Sanitary sewer	517,634.25	
Extension of port rail lines	75,973.02	
Water system	<u>75,000.00</u>	\$2,141,346.82
TOTAL PORT AUTHORITY EXPENDITURES		<u>\$3,541,625.87</u>

Others

Feasibility study (City of Little Rock)	30,000.00
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Sewers

Commerce Department (grant)	98,390.00	
U. S. Department of the Interior, Water Pollution Control Administration (grant)	<u>100,000.00</u>	198,390.00

Roads

City of Little Rock	200,000.00	
Bureau of Public Works	<u>200,000.00</u>	400,000.00

Water System

Little Rock Waterworks Commission	1,400,000.00	
EDA grant	<u>1,400,000.00</u>	<u>2,800,000.00</u>
OTHER GOVERNMENTAL EXPENDITURES		\$3,428,390.00

Total public investment in the Little Rock Port and Industrial District must be adjusted for double counting. This adjustment is computed below:

Port Authority Investment	3,541,625.87	
Other Governmental Investment	<u>3,428,390.00</u>	\$6,970,015.87

Less Adjustments

Sewer grants	198,390.00	
Water system expenditure by Port Authority	<u>75,000.00</u>	<u>273,390.00</u>

APPROXIMATE TOTAL CAPITAL EXPENDITURE IN PORT AND PARK		\$6,696,625.87
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To date, there has been only one publicly financed private venture in the industrial park. In November, 1970, a \$3 million Act 9 revenue bond proposal was passed by local voters (1,814 for, 221 against). The bond issue funds are to construct a high speed bauxite loading and unloading facility at the port for Eastern Associated Terminals, Inc., a subsidiary of the Ohio River Company. The Port Authority plans to use Act 9 revenue bonds to help companies that do not have available funds to construct facilities within the industrial park.

Operations of the Port Authority are self-sustaining and monies from sale of land in the park are not necessary to maintain port operations. The port operating fund is composed of revenue from the lease of unused industrial park acreage for farm land, income from the dock and terminal facilities, the liquid pier, and the unloading of bauxite. In 1970, income to the Port Authority totaled \$33,315 and expenses were \$25,481.

The terminal at the Port of Little Rock is operated by a private contractor. General Stevedores of Arkansas was under contract to operate the terminal facilities from the inception of the port until April, 1972. Early in 1972, pending the expiration of the contract with General Stevedores, the Port Authority sought new bids for the operating of the terminal facilities. General Stevedores continued to operate the port until July 1, 1972, at which time Inland River Terminals, an operating subsidiary of Atlantic and Gulf Stevedores, took over the terminal operations, although the new contract was dated May 8, 1972.

Atlantic and Gulf Stevedores is under a 10 year contract and it guarantees to pay the Port Authority a minimum of \$18,500 for the first year of operations, with the guarantee minimum going up \$1,000 per year to a total of \$27,500 in the tenth year. The Port Authority also will receive a portion of the cargo handling fees.

- 20¢ per ton for packaged merchandise
- 7½¢ per ton for dry bulk cargo
- 10¢ per ton for iron and steel articles
- 10¢ per ton for liquid cargo
- 30% of all receipts from warehouse rentals (goods must remain in the transit shed more than seven days for a storage fee to be charged)
- 10% of all receipts from outside storage

The Port Authority will receive all income from the new bauxite loading and unloading facility and the new liquid pier.

Present facilities at the Little Rock Port include the wharf, rail access, a liquid handling facility, and the terminal building. The terminal building has 15,000 square feet and, in addition to storage space, offices for the terminal operator and port director. The foundation for the building is 30,000 square feet, which leaves an additional 15,000 square feet for expansion of the present terminal building. This area is presently used for outside storage. A unique feature of this foundation is that there is a slight rise from the wharf side to the land side. On the land side of the foundation there is a sharp drop that forms a loading dock for rail cars and trucks.

In conjunction with the railroad track owned by the Port Authority within the port and industrial park, the Authority also operates its own locomotive. The Port Authority obtained a permit from the Interstate Commerce Commission to operate its own railroad service within the port and industrial park and to transfer rail cars to both the Missouri-Pacific and Rock Island tracks. It has leased a 1,000 horsepower locomotive from Relco Equipment Company for \$750 per month, and the Port Authority charges a tariff on cargo that is moved by rail on its own tracks.

The port operator is responsible for providing the cargo handling equipment. Present equipment consists of several forklift trucks and a 65-ton crane. Inland River Terminals is in the process of making arrangements to obtain equipment that can handle specialized loads,

such as 20-ton rolls of steel.

Tonnage figures issued by the Little Rock Port Authority do not distinguish between inbound and outbound traffic. Also, these figures are based on Port Authority receipts and may or may not indicate traffic over the public wharf that is handled directly by the operating company (particularly in the case of bauxite receipts). Below is an annual summary of the Monthly Port Authority Tonnage report.

<u>COMMODITY</u>	YEAR			Jan through July 1972
	<u>1969</u>	<u>1970</u>	<u>1971</u>	
Steel	28,880	29,946	34,913	26,338 ^a
Pipe	2,791	-	2,073	990 ^b
Lumber	4,536	164	207	-
Fertilizer	13,585	3,737	9,099	2,050
Bauxite	9,335	13,818	88,885	-
Scrap Iron	-	6,788	5,892	-
Molasses	-	2,200	11,425	5,190
Vanadium Slag	-	-	6,807	26,402
Potlining Waste	-	-	3,745	-
Peanuts	-	-	-	163
Soil in Bulk	-	-	-	2,008
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Totals	59,127	56,653	163,052	63,141
Total barges	75	85	174	87

Note: all figures are in net tons, rounded to the nearest ton.

^a40.4625 net tons by truck

^b79.4050 net tons by truck

The overall tonnage figures from January through July, 1972, ap-

pear to indicate that total 1972 tonnages will be below those for 1971. However, the drop in bauxite shipments accounts for the bulk of the reduced tonnage (88,885 net tons in 1971 versus none in 1972). Excluding bauxite, which presently is not being handled by the public port, the tonnages passing over the public wharf should show a substantial increase for 1972 over 1971. With completion of the bauxite unloading facility and the new liquids facility, the executive director of the Port Authority estimates that approximately 1.1 million tons will be handled in 1973.

Commodities moving through the port have, in general, not been directly associated with the port's industrial park. Most of the goods are either going to or coming from firms in other locales within the Little Rock area. However, the port industrial park has attracted some new businesses and has permitted some firms to plan for expansion.

The first tract of land sold in the industrial park was purchased by the Arkansas Foundry Company. The tract comprises 21.75 acres and was acquired by a high bid of \$87,000 at an auction on May 20, 1968. Arkansas Foundry Company has constructed a 98,000 square foot warehouse and distribution center.

In 1970 Rico Liquids, a subsidiary of Pro-rico Industries of Mobile, Alabama, purchased a 6 acre tract for \$36,000. The firm has constructed three tanks--one 500,000 gallon tank and two 250,000 gallon tanks--that are used to store molasses used in cattle feed. A pipeline carries the molasses from barges at the public terminal to the tanks, which are located approximately 400 feet south of the river bank.

In 1971, two firms purchased land within the industrial park. Dillaha Fruit Company acquired three acres at a price of \$24,000. The company is moving its operations from Little Rock to the port area and is building a 24,000 to 30,000 square foot one-story distribution center-warehouse at a cost of \$400,000. Dillaha Fruit Company is a wholesaler of fresh fruit and produce. Company executives feel that very little use will be made of the Arkansas River.

Murphy Oil Corporation of El Dorado, Arkansas, also purchased an industrial tract in 1971. On its 10 acres, purchased at \$4,000 per acre, it is constructing a \$600,000 tank farm, office building, and terminal. Initially, the storage silos will have a combined capacity of about 5 million gallons. Pipelines will connect the new liquid handling facility at the port with the terminal. The Murphy Oil Corporation facility will store gasoline, kerosene, diesel fuel, and residual oil. Loading racks are available to load trucks from the tanks. The company is planning to distribute its products in Central Arkansas.

Eastern Associated Terminals Company has leased approximately 10 acres of river front property from the Port Authority. The lease is for 10 years and includes an option for two 10 year renewals. The executive director of the port preferred not to release the financial terms of the lease. Orgulf, a subsidiary of Eastern Associated Terminals Company, is constructing bulk unloading and rail facilities, and a

conveyor belt to transport imported bauxite ore from barges to rail cars. The installation includes dolphins and a loop access. Estimated cost for the entire project is approximately \$2 million. The bauxite is from the Caribbean and South America and is destined for the Hurricane Creek alumina plant of Reynolds Metals Company, located near Bauxite, Arkansas. The lease agreement includes a payment to the Port Authority of 3 cents per ton of unloaded ore.

In January of 1972, the Port Authority approved the sale of four tracts of land within the industrial park. Atlas Transit, Incorporated, an intrastate trucking firm, purchased 27 acres at \$6,000 per acre. The company plans to construct a new truck terminal, general offices, and a separate maintenance garage. Operations began in September, 1972. Total investment in the land and buildings is expected to exceed \$500,000. The port location was chosen because it offered room for expansion (the company was previously in Little Rock) and because of the potential of handling some of the river and nearby air freight.

Perkins Automatic Sprinkler Company purchased four acres at \$8,000 per acre. The company fabricates and installs automatic sprinkler fire protection sprinklers. Perkins presently uses pipe that arrives by barge and chose the port industrial park site because it is close to the port terminal, has rail access (which the previous plant did not have), and because the site offers room for expansion. The initial construction plans call for a 30,000 square foot building to house offices and fabrication facilities.

Democratic Printing and Lithograph Company purchased 10 acres for \$60,000. This company also is moving to the port industrial park from Little Rock. Finally, Arkansas Power and Light purchased 30 acres for \$70,000 to build an electrical substation.

Land sold by the Authority in the industrial park is held in the name of the City of Little Rock until it is sold, at which time it goes on the tax records in the name of the purchaser. If land in the industrial park is leased, such as to Eastern Associated Terminals Company, the lease terms include payment of a negotiated sum to the City in lieu of taxes. To date, however, most of the land transactions have involved outright purchases.

As a stimulus to industrial location within the port area, the Arkansas Industrial Development Commission was instrumental in having about four acres around and including the Port of Little Rock terminal and warehouse declared as a foreign trade zone. The zone was approved on October 4, 1972, and initially will be located in a 5,000 square foot fenced enclosure inside the present transit warehouse. The Port Authority is funding the first phase and will offset the cost by charging fees for the use of the facilities. The Port Authority director said that eventually there will be industrial sites available within the proposed foreign trade zone. In July, 1970, the Little Rock Port was designated as a port of entry.

Jones-Kerby Port of North Little Rock

Approximately two miles upstream, river mile 114.5, from the Port of Little Rock, on the left bank lies the Jones-Kerby Port of North Little Rock. This port is privately owned, but handles commodities for the public.

The port site is owned by Mr. Kerby and the port operations are handled by Mr. Jones. Adjacent to the site is Jones Rigging and Heavy Hauling Company, which is a division of Casey Jones Equipment Company of Pine Bluff. According to Mr. Jones, the availability of equipment from his other operations permits the Jones-Kerby Port to offer a complete service. This includes the port, loading and unloading of barges, outside storage space, and transportation via truck to and from the port.

The port is located in a slack water harbor that has been dredged perpendicular to the Arkansas River. To date, there has been no problem with silting and it has not been necessary to dredge the harbor since operations began in July of 1969. However, during times of low water, some barges have gone aground; but this has not created any major problem. The wharf is approximately 405 feet long, dirt filled, and the working area is approximately 15 feet above normal pool elevation. The water front of the wharf has been shored with steel, wood, and some concrete. There are four acres available for outside storage at the north end of the harbor and approximately 15 acres of usable land adjacent to the wharf.

Permanent facilities at the port include a 40-ton mobile crane for loading and unloading barges, and a hopper for loading bulk materials into trucks. Also available are 50 cranes from the Casey Jones Equipment Company in Pine Bluff. The capability at the port consists of moving a single item that weighs up to 150 tons. Also, the capacities of the cranes permit the unloading of two barges moored side by side at the same time. Furthermore, by mooring barges on all three sides of the harbor it is possible to unload nine barges simultaneously. Cranes are used to move barges within the harbor. Mr. Jones also owns construction and crane barges that are available to assist in the port operations, if needed.

A breakdown of tonnages handled by commodity was not available; however, total tonnage figures were obtained.

	<u>1969 Tonnage</u>	<u>1970 Tonnage</u>	<u>1971 Tonnage</u>	<u>Jan-Jul 1972 Tonnage</u>	<u>Total Expected 1972 Tonnage</u>
<u>INBOUND</u>					
Total	7,528.8	60,689	72,181	75,526	90,000
Barges	9	52	65	59	70
<u>OUTBOUND</u>					
Total			4,500		
Barges			3		

Approximately 90 percent of the inbound tonnage had been fertilizer. Other inbound commodities include aluminum aggregate, steel and four barges of animal feed. The entire outbound shipments have consisted of aluminum ore slag, the first barge being loaded in March, 1971.

Olin Chemical Company has used the harbor facilities to load eight barges of outbound acid; however, all equipment and personnel were furnished by Olin. Although some steel is handled at the port, it is not solicited because it is not as profitable as bulk commodities. The port has some contracts to handle commodities for chemical companies. It also has some other trial contracts which are not long-term or firm commitments. Mr. Jones feels that most shippers and receivers are taking a "wait and see" attitude concerning the use of water transportation.

There are no personnel located at the port. When there are barges to be loaded or unloaded, Mr. Jones brings in employees from his other operations. The number of workers brought in depends upon how many are needed. The tariffs for loading and unloading barges are negotiated, rather than being published.

There are no specific facilities proposed for the Jones-Kerby Port of North Little Rock. However, additional facilities will be constructed for someone if needed and if it is profitable for the port. All of the present facilities have been privately financed (Mr. Jones would not divulge the amount of his investment) and the port is a profitable operation. Mr. Jones indicated that there have been opportunities to handle additional commodities; however, he felt that there was not enough traffic to justify the expenditures needed to handle the new items.

One disadvantage that the Jones-Kerby Port has over other ports along the Arkansas Waterway is the lack of rail facilities. A main line of the St. Louis and Southwestern Railway is located just the

other side of the Baucum Levee. This levee runs parallel to England Road, which is the main highway passing the entrance to the port. To gain rail access to the port it would be necessary to run the tracks through the levee and across England Road. Mr. Jones has not approached the railroad concerning a spur track and he has no plans to provide rail service to the port.

There have been no new plants in the area because of the availability of a port in North Little Rock. At the present time, the port serves existing companies. An industrial park is not associated with the port, but approximately two acres of land have been leased to the Christopher Oil Company. The company has constructed two petroleum product liquid storage tanks, a pipeline and catwalk to the unloading pier, and a truck loading facility. A 300-foot docking area has been dredged for the berthing of barges.

Private Docks in the Little Rock-North Little Rock Area

The Eastern Associated Terminals Company dock is located at navigation mile 112.6 on the right bank of the River, just downstream from the Port of Little Rock and on land leased from the Little Rock Port Authority, although the dock and terminal facilities are owned by the company. The Christopher Oil Company dock is located on the left bank of the Arkansas River at navigation mile 114.6, just upstream from the Jones-Kerby Port of North Little Rock. These docks are described in greater detail hereinabove.

The Massman Construction Company dock is located at navigation mile 115.3 on the right bank of the Arkansas River. The navigation pool is 231 feet and the dock area has an average ground level of approximately 236 feet. The land rises to 255 feet against the river side of the levee. Four slips have been dredged at right angles to the river. Ramps have been formed to permit the unloading of equipment from barges. The facility is used for maintenance and fleetings of company equipment; expansion plans include barge cleaning, barge and towboat repairs, unloading facilities (with a 100-ton crane), and a warehouse. Mr. Beilmann, Project Manager of Massman Construction Company, said that these facilities will be complementary and not in direct competition with other port facilities in the area. It is not expected that these plans will be implemented in the near future. Improvements will be

constructed only if it appears economically feasible, which it does not at the present time. Massman Construction Company is involved in heavy construction and owns several barges and towboats. It is active in river construction, including bridge construction, rock work, and re-
vetments.

Upstream on the left bank at navigation mile 166.3 is the Arkansas Power and Light Company Dock. This is a facility for unloading fuel oil that will be used for electric power production when natural gas is in seasonal short supply. A pipeline extends from the production plant to the shoreline. A catwalk and the pipeline then extend to the unloading pier, which consists of two pile clusters and two rock-filled pile cells.

The River Service Corporation Port of North Little Rock is located on the left bank of the Arkansas River at navigation mile 118.1. This is just downstream from the Rock Island Railroad bridge and about three-tenths of a mile downstream from the I-30 bridge. The site includes the Granite Mountain Quarry Dock that was formerly used by the Pine Bluff Sand and Gravel Company. Just downstream from the old dock is a new sheet-piling, earth-filled wharf with a concrete apron. There is a crawler crane on the site. This facility has been used to transfer dry bulk fertilizer from barge to truck and to transfer scrap iron from truck to barge.

The Granite Mountain Quarry Dock, mentioned above, is still in place, but no longer in use. The site does not have rail service and the transfer facilities consist of a rock-and-earth wharf that trucks

can back onto for loading broken stone onto barges. It was designed as a temporary facility pending removal of the Missouri Pacific Railroad shoofly bridge. (The shoofly bridge carried rail traffic while the Baring Cross Railroad Bridge was being modified.) When greater clearance became available at Baring Cross, the company discontinued use of the Granite Mountain Quarry Dock and began using the Crystal Hill Quarry Dock, located upstream from Baring Cross Bridge.

The Ashley Street Port is located on the right bank of the Arkansas River at navigation mile 119.0 and some 400 feet east of the Broadway Bridge. The port is owned by Criss and Shaver, Inc., of Little Rock, which produces ready-mix concrete, crushed stone, cement, sand, and gravel. Ashley Street Port has 1,000 feet of river frontage and is served by the Missouri Pacific Railroad. Transfer facilities include a 20-ton Clyde Whirley crane. The first barge was unloaded on January 3, 1972. Since its opening to the end of July, 1972, the port has handled 196 barges and 62,550 tons of sand dredged from the Arkansas River.

The Jeffery Sand Company Dock No. 1, owned by Jeffrey Sand Company of Fort Smith, is located on the left bank of the Arkansas River at navigation mile 119.5. This location is just downstream from the Missouri Pacific Baring Cross Bridge and is within 1,000 feet of Arkansas Highway 365 in North Little Rock. The port is served by two 25-ton crawler cranes equipped with clamshell buckets. One crane is mounted, along with a hopper and a first-stage conveyor belt, on a deck barge. The conveyor system feeds a large stockpile. A front-end

loader is used to load trucks from the stockpile. The other crane stands on a steel-frame, wood-deck wharf and discharges to a stock-pile-and-conveyor system that feeds three truck-loading hoppers.

The North Little Rock Port is located on the left bank of the Arkansas River at navigation mile 122.0 at the foot of Big Rock Mountain, which is northwest of North Little Rock. This port is owned by Criss and Shaver, Inc., of Little Rock and is used to handle incoming sand that is dredged from the Arkansas River. The company owns 5,000 feet of river frontage and a 60 acre open storage area. The port is served by the Missouri Pacific Railroad, which has two parallel tracks on the site. Transfer facilities include a crawler crane (converted to electric power), with a 2½ yard clamshell, and a hopper mounted on a barge. Conveyor belts stockpile the products, which consist mainly of masonry sand, concrete sand, and filter sand. Sand is classified on the dredge, Big Sandy III, which works the river in the vicinity of the dock. Donafill, which is a finely divided nepheline syenite, a by-product of roofing-granule manufacture, is trucked in and blended with the masonry sand when it is necessary to reduce average particle size. A front-end loader loads trucks from the stockpiles, and there is a truck scale near the road entrance to the site. The first barge was unloaded on April 1, 1969. Since that time, barges unloaded and tonnages handled have been:

	Apr-Dec <u>1969</u>	<u>1970</u>	<u>1971</u>	Jan-Jun <u>1972</u>
Barges	858	1,006	893	472
Tonnage	191,217	212,550	209,725	106,990

The last private port in the immediate vicinity of Little Rock is the Crystal Hill Quarry Dock, owned by the Pine Bluff Sand and Gravel Company, which produces ready-mix concrete, sand, gravel, concrete blocks, and quarry sandstone. This dock is used for the out-bound shipment of stone and is located at navigation mile 128.4 on the left bank. This is three miles upstream from the Murray Lock and Dam and is just west of North Little Rock. The loading facility consists of a rock-and-earth wharf on which trucks back up to dump broken sandstone onto a deck barge. There are three pile-cluster dolphins downstream and two upstream from the wharf. A haul-road connects the dock with the company's Crystal Hill Quarry approximately two miles away. Because the road is private and the haul is generally downhill, the trucks are loaded far above the legal load limits that apply on public highways. The broken sandstone is barged downstream on the Arkansas and Mississippi Rivers, where it is used for river improvements. Somewhat more than one-half of the sandstone quarried is used on the Arkansas River.

The Jeffrey Sand Company Dock No. 3 is located on the left bank of the Arkansas River at navigation mile 157.8, which is about one mile downstream from the mouth of Cadron Creek and about two miles upstream from the Toad Suck Ferry Lock and Dam near Conway. It is owned by the Jeffrey Sand Company of Fort Smith and used to bring in sand and gravel dredged from the Arkansas River about 1 to 1½ miles upstream from the dock. All material is inbound and all barge movement intrapool. Facilities include a crawler crane with a clamshell

for unloading barges. Material is discharged to a hopper that feeds a conveyor belt. The conveyor system permits transfer to a truck-loading hopper, direct loading into trucks, and semicircular stockpiling. A front-end loader is also available for loading trucks. Trucks are weighed on a scale at the site. A gravel road provides access to U.S. Highway 64, approximately 2 miles away. The crane stands on a reinforced concrete apron that is poured on a shale ledge; there is also some concrete work on the river side of the shale bluff. Also on the site is a small wharf, a double track railroad ramp for lifting towboats and barges out of the water for repair, and a crawler crane and tackle system for pulling the lift-dollies up the ramp. Custom repair is not offered; only company boats are repaired at the site.

Keenan's Port of Dardanelle

The Keenan's Port of Dardanelle is a private facility owned by Mrs. Betty Keenan and her son, Robert. It currently serves mostly the Keenan interests (cotton ginning, feed and grain, fertilizer, and extensive farming activities--cotton, soybeans, feed grains), Dow Chemical (chlorine cells), and Firestone Rubber Company (bulk rubber).

The port was privately financed--costs are confidential--and neither state nor federal money has been used. A Dardanelle-Russellville Port Authority is authorized; but Gari Ward of the Russellville Chamber of Commerce says it is inactive.

Keenan's Port has 2.10 acres of land on the left bank of the Arkansas River at navigation mile 203.3, about two miles downstream from the Dardanelle Lock and Dam. The normal pool is 284 feet above sea level, the two percent flowline is 302.8 feet, and the 44 by 107-foot reinforced concrete wharf is at 320 elevation. The port has 750,000 bushels of grain storage capacity, a 26,000 square-foot general cargo warehouse, a 60 ton mobile crane, a forklift, hopper, and conveyor systems for loading and unloading, and radio communications with Little Rock and Fort Smith.

The port is connected to the Missouri Pacific Railroad at Russellville by a short line (the Dardanelle and Russellville Railroad),

and motor carriers can travel seven miles along SH-7 to I-40, which runs either to Fort Smith or Little Rock. The Keenan interests have their own fleet of grain semi-trucks.

No new facilities are proposed at this time; but the Keenans say they will expand at any time that new operations appear profitable. Keenan says he will construct a coal-loading facility if he can get a guarantee on tonnage for shipment; but he is not interested in building such a facility on speculation. Loading, unloading, and storage charges are negotiated with shippers and receivers, and the negotiated tariffs with the general public are confidential.

The port has handled inbound corn (for Valmac feed plant), rubber (for Firestone), and steel (now mostly handled at Fort Smith); outbound has been mostly soybeans and wheat (from Keenan's own grain operation). Tonnages are confidential.

While initial construction on the port was started in 1962, the first barge did not arrive until December, 1969. Some economic activity has developed in the immediate area during the port's brief history. Dow Chemical Company located a plant at Russellville (the county seat) and plans to use the port's shipping facilities; the plant manufactures electrolytic cells for the production of caustic soda and chlorine, and these cells will be barge-shipped primarily to other Dow plants. Firestone Rubber Company, located in the area, uses water to transport bulk rubber for the manufacture of inner

tubes; but the extent that the Waterway and port played in the plant location could not be ascertained.

Pope County, where the port is located, had a population of only 28,607 in 1970; it is mostly a recreation area with some agriculture and coal mining.

Port of Clarksville

The Port of Clarksville currently is more of a dream than a reality. A dirt trail serves as the only "road" to the port, and there are no structures on the 28 acres of land that the municipal port authority leases for \$350 per year from the Corps of Engineers on the Arkansas River bank. The acreage has approximately one-half mile of river frontage.

A municipal port authority, with a five-man board reporting to the City Council of Clarksville, was established in 1966. Dr. Robert T. Smith, a Clarksville dentist and member of the board for the past six years, points out that the authority also holds Section 10 (permit Nr. 03-231) at navigation mile 235.0 for future construction of a small wharf to load coal into river barges, as well as for the erection of tie-up facilities for two or three barges.

The authority has received support from the county judge of Johnson County to build about a one mile road to reach the port. The authority also has been assured of EDA support if the decision is reached to build a port facility; but there are currently no potential users for such an installation, and the authority is reluctant (because of three urban renewal projects that have taken the available municipal funds) to commit resources without any assurance of some return on the investment.

In late 1971, the Prairie Coal Company (with a mine located approximately 4.8 miles from the port site) urged the authority to construct coal-loading facilities, built to Prairie's specifications; but the coal company was unwilling to make a definite commitment on utilization of the facility once it was constructed. The authority did hire an engineer on a contingency basis to develop plans for the facility (and it currently owes him about \$2,000 should the project finally materialize). Also, EDA funding would be available, but only if the port were put entirely under the operational control of the port authority, which could not lease facilities to a strictly private user.

Inasmuch as the port lands are in Johnson County, rather than in the city limits of Clarksville (the county seat), consideration has been given to the organization of a metropolitan port authority; but no action of any type is anticipated until such a time as some firm commitment is obtained for use of the port.

Most industry in Johnson County is concerned with agricultural products and timber processing. Peaches (hardly a candidate for water traffic) are the principal cash crop, and timber is cut from forests on a lease agreement with the government (the Ozark National Forest covers most of the northern half of the county). Coal has been mined in the Clarksville-Spadra-Hartman area since the mid-1800's, and at one time moved on coal barges on the Arkansas, until railroads took over transportation in the area.

Among the contiguous counties, Madison has a developing hard-wood industry; Newton has a few timber products; and Franklin ranks tenth in the state in mineral production with natural gas, coal, sand and gravel, and building stone. There is little to develop around a port at Clarksville currently unless water-oriented industry moves into the area, and there is not much labor force to support a great deal of industry (Clarksville has about one-fourth of Franklin County's 13,630 population).

Fort Smith Public Port

Fort Smith had some difficulty in deciding where to locate its port facilities in its formative days; but, once the decision was made, growth has been steady and sure. The current philosophy among Fort Smith city leaders and port operators is to provide public facilities as an additional service to existing firms in the area; they would not turn away any new industry, but there is no real effort to attract such additional business at this time.

The port--with a U.S. Naval Reserve Station on one side and a large furniture manufacturer on the other--is located on a five acre site on the right bank of the Poteau River, about 1.5 miles above its confluence with the Arkansas River. Another 17 acres south of Mill Creek are available for possible future port expansion.

Fort Smith began operation with a 54 ton crawler crane mounted on a barge and miscellaneous small material-handling equipment; a 38,400 square foot warehouse was completed in December, 1971; a permanent 60 foot wide concrete dock will replace the temporary barge "dock" soon; and a 1,300 foot Frisco railroad spur should be operating before long. Also under construction is surfacing of an extension of South 6th Street into the port area, surfacing of Navy Road, surfacing around the warehouse, and fencing.

The port's brief history verges on confusion:

As early as 1964, Kansas Southern Industries, Inc., the parent of Kansas City Southern Railway Company, announced that it would build a public port at Fort Smith. Civic leaders thought it fortunate that the city would benefit from a public port without the usual need for public investment and subsidy. Southern Industries acquired 2,000 acres of land on the right bank of the Arkansas River just north of downtown Fort Smith. The proposed port was to be located at what is now navigation mile 306.3, with the industrial site extending generally to the east and northeast. The 2,000 acre tract was acquired from the city in a trade that gave the city the old Kansas City Southern five acre railroad terminal--where a new civic center has since been developed. There is considerable evidence of a verbal agreement between the Fort Smith city commissioners and Southern Industries to the effect that the city would provide water, sewer, and street facilities for the port and industrial park, and the firm would provide a public port and adjoining industrial park.

Later, the City of Fort Smith switched from a commission form of government to a city administrator form, and the new government was unwilling and/or unable to carry out its part of the apparent agreement. In the Spring of 1968, Southern Industries decided to drop its plans for developing the port and industrial park.

The Arkansas River was opened for navigation to Little Rock by the end of 1968, and there was a reasonable expectation that navigation would be extended to Fort Smith by the end of 1969--an expectation that was, in fact, fulfilled. The other major cities on the waterway either had under construction--or at least were well along in the planning stages on--facilities. Even with a superior location, a city with a late start could have difficulty acquiring the traffic that should logically flow through its port. Well aware of this, and of the implications for local industrial development, the city directors created a port authority on May 19, 1969. This economic factor probably explains considerably the current city and port philosophy that the port should help mainly existing industry, with the enticement of new industry only a secondary consideration.

The port authority was organized in mid-1969, the site (and temporary facilities described earlier) was chosen, and the port authority contracted with the Ed Thompson Company (operator of the Port of Pine Bluff) to operate Fort Smith's "emergency port" for three years, with a two year renewal option.

The Poteau River site was chosen as the most suitable one of six sites studied. A consultants' report, published January, 1970, designated the sites alphabetically, A through F. Sites A, B, and C were considered for a privately owned port that would be leased by

the port authority as a temporary public port (this leasing of a private port as an alternative to a publicly owned port was considered for a while).

Tentative basic requirements used by the consulting engineers for a public port included: (1) the dock site should be within one mile of paved road and railroad and one-half mile of flood-protected land; (2) the dock platform should be at or slightly above 10-year flood level; (3) the crane platform should support a 50-ton-capacity crawler crane weighing 60 tons, with 2 1/2-cubic-yard bucket at 50-foot maximum radius; (4) the dock should accommodate one standard jumbo barge being loaded or unloaded by a fixed-position, whirley-type crane operation; and (5) the access road should be as high as the dock platform, on a rip-rapped embankment, and ramped over any levee that might be crossed.

Site A was on the Poteau River at the bridge piers of the abandoned river crossing of the Kansas City Southern Railroad, approximately at an extension of South P Street. Site B was on the right bank of the Arkansas River, about 1,800 feet downstream from the Garrison Avenue Bridge and in line with North E Street. Site C was the site selected by Kansas City Southern Industries for its wharf. The other sites for a public port were given brief consideration, but were found to be too costly. Site D was located on the right bank of the Arkansas River between the St. Louis-San Francisco Railroad bridge and the U. S. 64-71 bridge (this site was proposed by the Pine Bluff Warehouse Company). Site E was downstream from, and adjacent to, Arkhola Sand and Gravel Company's Van Buren plant, which is on the left bank of the Arkansas River at what is now navigation mile 300.4 (about half-way between the U.S. 64-71 bridge and the I-540 bridge). Site F was in eastern Fort Smith at the present navigation mile 296.2 (about half-way between the I-540 bridge and Lock and Dam No. 13; it is identical with the Jeffrey Point Dock site described elsewhere in this report, under private docks).

Estimated costs for developing the sites for a publicly owned temporary port were \$68,000 for Site A, \$105,000 for Site B, and \$255,000 for Site C. The high cost for Site C was considered to be partly offset by the likelihood that the access road and a considerable portion of the dock structure would be usable in a permanent port to be developed later. Concerning sites for a privately owned, but publicly leased port, fixed costs appeared high for D, apparently because of likely land acquisition and road construction costs; Site F would have been shared with the private user and had low costs, but no feasible way of acquiring a railroad connection. The consultants' report recommended Site F, but the port authority selected Site A and modified the recommended development plan.

The port authority proposed construction of a 40,000 square foot warehouse, a 60 foot wide concrete wharf apron, four mooring dolphins, and a 1,300 foot railroad spur, including a bridge across Mill Creek; they also proposed surfacing of an area around the warehouse and of a South 6th Street extension into the port and of Navy Road. Most of this work is now under construction; some has been done. Original projected cost was \$785,000; the authority proposed that one-half of this be financed by a grant from the (federal) Economic Development Administration and one-half by the City of Fort Smith.

The major justifications of the proposed port were (1) to help established firms in the area, and (2) to attract new industry--a desire expressed mostly by the Fort Smith Chamber of Commerce (as noted earlier, this latter purpose has not met with reality).

No significant opposition to the port authority's proposal can be found; the general response of local citizens was to tolerate the actions of the city directors in authorizing revenue bond issues, even though the city is obligated to make up any bond obligations in excess of port revenues.

The authority's proposal appears to have been supported by the Chamber of Commerce, the Fort Smith Freight Bureau, and rather generally by local industry. Considerable leadership came from the city administrator, the executive director of the Fort Smith Chamber of Commerce, and the executive director of the Freight Bureau. Several firms also gave substantial support for port development by estimating

tonnages that they would ship and receive by water. The largest estimates came from Whirlpool Corporation, and the second largest from Yaffe Iron and Metal Corporation, both of Fort Smith. Sizable estimates came from Fort Smith Structural Steel Company, Rheem Manufacturing Company, and Hickory Spring Manufacturing Company (all of Fort Smith), from Wilson and Company, Inc. (Springdale, Arkansas), and B. F. Goodrich Tire Company (Miami, Oklahoma).

Railroads serving Fort Smith--the St. Louis-San Francisco, the Missouri Pacific, and the Kansas City Southern--have agreed to reciprocal switching of port traffic, except that Kansas City Southern has refused to allow reciprocal switching arrangements for traffic that might originate or terminate in the Southern Industries industrial park.

A 38,400 square foot warehouse was completed in December, 1971, and most of the earthwork for the railroad spur into the port area was about completed by July of 1972.

Fort Smith is in Sebastian County (79,237 population in 1970), which has two county seats--Fort Smith for the industrialized northern district and Greenwood for the more agricultural southern district. Since 1960, Fort Smith has experienced an unusual period of industrial expansion and growth, which has strengthened the city's position as one of Arkansas' industrial centers. The southern part of the county is mostly agriculture, except for coal mining (carried on since 1880). The northern part of the county has more than 250 factories making lumber and food products (10 or more make furniture), and a wide diversity of other goods.

Current inbound shipments at the port are virtually entirely iron and steel; outbound shipments go mostly to East Texas, Oklahoma, and western Arkansas.

Port of Van Buren

The Co-op Port of Van Buren is a private port and, thus, there is no port authority. It is a joint project of the Farmers Co-op of Arkansas and Oklahoma and of Frontier Steel Corporation.

The Co-op secured the dock permit from the Corps of Engineers and apparently owns the port real property, although Frontier Steel owns 15 acres of land adjacent to the port. Jack White, manager of the Co-op, and Herman Pardue of Frontier say that their organizations built the facility for their own use and for custom handling for others. Frontier has priority on use of the dock for its own cargo.

Jack White says that the port tries to cooperate as closely as possible with the City of Van Buren and the Van Buren Industrial Park, which is less than one mile from the port. The Co-op is not actively soliciting barge traffic; but it indicates a willingness to work with the city in providing barge terminal facilities on a profitable basis. The port operators reflect no long-range plans, except to continue at present levels of operation and handle only those goods that are profitable; no public financing is anticipated, and no new structures are foreseen unless some future private contracts are negotiated with other parties.

The dock is located on the left bank of the Arkansas River at navigation mile 299.0, and the land is about 408 feet above sea level. The normal pool is 391 feet, the 2 percent flowline is about 394,

and flood stage is 404 feet, which is 13 feet above the normal pool level.

The Co-op has a warehouse and Frontier a warehouse. Co-op has a coal chute and conveyor for loading dry bulk onto barges. Co-op and Frontier each has a 25 ton crawler-type crane, and Frontier also has available two 125 ton floating cranes, normally used in bridge construction. Frontier has a large outdoor surface storage area and fueling facilities for its own towboats.

Co-op has under construction a building designed to store feed-grade phosphates. Construction of storage facilities for fish meal is being considered, and will be started if lessees can be found; but it will be built only if firm contracts can be obtained. It is hoped that 40,000 tons-per-year of fish meal will eventually enter the port (currently poultry growers are importing it from Peru).

All financing at the port has been private, with no government grants or loans, and financing expenditures were not revealed by the operators. There are no published rates for this private port; but charges are negotiated and kept in line with the nearby public port at Fort Smith. Crawford County, of which Van Buren is the county seat, has a population of 25,677 (1970) and industry centered in the towns of Van Buren, Alma (with the world's largest spinach cannery), Mountainburg, and Mulberry. However, an excellent Interstate Highway (I-40) and interchange make it about as easy to truck

any products to Fort Smith as to Van Buren, if existing or future industry need a port outlet.

Traffic handled by the Co-op to the end of June, 1972, included: 3,600 tons of inbound fertilizer, 12,000 tons of inbound steel, 30,000 tons of coal outbound to Japan, and 30,000 tons of other cargo. In addition, inbound shipments of soda ash for the glass industry have been averaging about 100 tons per week (in 600 ton barges).

The Missouri Pacific Railroad serves the port via a spur that enters through the levee gate, but it is used very little. Some lumber has come in for Co-op construction, and Frontier has moved in a limited amount of steel. Highway access (the port is about one mile from an I-540 interchange) is through the levee gate, and land transportation in and out of the port has been largely by truck.

To date, the private port, although available to outsiders on a profit-oriented basis, has not stimulated any additional economic activity in the area; but the time element has not been long enough to permit much change. The first coal shipments out of Van Buren began to move downstream for the Far East in late 1971.

No opposition to the port's opening was evident, and apparently none has developed since it began operating.

Private Docks in the Fort Smith-Van Buren Area

The Arkhola Sand and Gravel Company Dock is owned by the Arkhola Sand and Gravel Company of Fort Smith, Arkansas. The dock is located on the left bank of the Arkansas River at navigation mile 300.4, in Van Buren, Arkansas. It is 1.4 miles upstream from the Co-op Port of Van Buren. The dock consists of an earth-filled, steel-sheet-piling cell. A track-type, 4 yard hydraulic back hoe stands in this cell and unloads sand and gravel from barges into a hopper, which feeds a conveyor belt that carries the material into a large system that conveys, sizes, washes, crushes, and/or stockpiles the various products.

The company has a dredge, four 500 ton barges, two 600 ton barges, and two towboats. The dredge is rated at 450-500 tons per hour. The backhoe, which cycles very rapidly and was one of the first to be used for unloading sand and gravel barges, can unload 600 tons per hour. The dredge barge grades sand, so that incoming bargeloads need only be conveyed and stockpiled. Gravel is barged in raw and is graded and washed in the land-based plant; some of it is crushed. Stockpiled products are loaded into truck and rail cars by large front-end loaders. The only movement across the dock is of inbound graded sand and raw gravel. The port has been in operation since January, 1970, and the traffic has been as follows:

<u>Year</u>	<u>Barges</u>	<u>Tonnage</u>
1970	1,259	650,865
1971	1,210	625,639
Jan-Jul 1972	831	429,735

Some 55,000 to 60,000 tons of product can be stockpiled under the stockpiling conveyor system.

Arkholo Sand and Gravel Company also manufactures lightweight concrete blocks, brick, and ready-mix concrete; handles industrial sands; and quarries sandstone in Arkansas and limestone in Oklahoma.

Jeffrey Point Dock is located in the eastern part of Fort Smith on the right bank of the Arkansas River at navigation mile 296.2. It is owned by Mr. W. D. Jeffrey of Fort Smith. Construction has not been completed. As of July 26, 1972, the facility consisted of a single earth-filled, sheet-piling cell and was not in use. Land access is by unimproved dirt roads. This was the site recommended by the consulting engineers for a temporary leased public port for Fort Smith.

Port of Muskogee

The Port of Muskogee has not experienced quite as much growth as was expected by this time, and a 1972 decline in tonnage might be blamed on competition coming from the Port of Catoosa, the Tulsa Freight District, and the Port of Fort Smith. There are no new plant locations in the port area that have been established specifically because of the port, though there has been a lot of interest--without commitments--in the industrial park.

WillBros Terminal Company, a subsidiary of Williams Brothers Company of Tulsa, obtained a 25 year, no-cancellation contract to operate the port in the summer of 1972, after having an initial two-year contract on its operation. Inbound shipments--pipe, steel, paper and fertilizer (until the WillBros facility at Catoosa opened)--have dominated tonnages. Traffic handled in 1972--about 90 percent steel--declined from the 1971 tonnages, though the port did better financially because of income gained from transfer and storage.

The Port of Muskogee is located on the right bank on the Arkansas River at navigation mile 396.1, downstream a short distance from the mouth of the Grand Neosho River and the mouth of the Verdigris. The port lies north-northeast of downtown Muskogee, Oklahoma's first port city. The area is served by U.S. Highways 62, 64, and 99, and by the Muskogee Turnpike, which runs beside the port from Tulsa to the Webbers

Falls interchange on I-40. Missouri Pacific serves the port with rail facilities, and there are direct connections with the St. Louis-San Francisco and Missouri-Kansas-Texas Railroads.

The Port is 27 miles upstream from Webbers Falls Lock and Dam. Normal pool is at elevation 487, but water levels fluctuate considerably because of the port's upstream location in the navigation pool; the 50 year flood level is 517 feet.

The port site comprises 15 acres and the associated industrial park has 305 acres. A 250 foot wharf and 20 pipe-pile dolphins provide a 3200 foot barge fleeting and servicing frontage. The wharf is 60 feet wide, has railroad tracks, and is serviced by a 30 ton mobile crane. Adjacent to the wharf is an 18,000 square foot transit shed. The port has a combined truck-railroad scale.

An iron and steel products warehouse is under construction; two 10 ton overhead cranes in 70 foot bays will work in 36,000 square feet of covered storage area and will load and unload barges; the craneways will extend out over a barge moored at the wharf. The facility will be designed for possible upgrading to 25 ton lift capability. Also, there are two general purpose 10,000 barrel liquid storage tanks and a liquid loading-unloading pier.

A 40,000 square foot shell building suitable for manufacturing or warehousing is located in the industrial park; it was completed in 1971 and is being offered for sale or lease. In the combined port

and industrial park, there are 7,000 feet of railroad, 16,000 feet of service roads, 14,000 feet of sewer lines, and 11,500 feet of water lines.

In 1960 the City and County of Muskogee appropriated \$7,000 for a port feasibility study; the Economic Development Administration made a matching grant.

On October 12, 1961, the seven-member Muskogee City-County Port Authority was created by a resolution pursuant to Title 82, Sections 1101-1114 of Oklahoma Statutes for 1959. In order to transfer monies from the county to the Port Authority legally, the Muskogee City-County Port Trust Authority also was created.

Frederic R. Harris, Inc., of New Orleans proposed in a 1962 feasibility study that the Port of Muskogee have the following accommodations:

1. Facilities for unloading grain from trucks and rail cars, storing it, and loading it into barges. An estimated 51,000 tons was to be handled annually by 1975 and 60,000 by 1980. The land needs would be four acres initially and 10 acres by 1980.

2. A below-grade hopper for receiving coal from trucks and rail cars, a storage pile area, and a crane and wharf for loading barges. Needed land was estimated at eight acres initially, 25 acres by 1980, and 40 acres eventually.

3. A yard for sand, gravel, and crushed rock to be located across the river from the present port. Initially a storage pile (presumably

of crushed rock) was to be formed by ramping and truck dumping; a conveyor system was to be added later. Projections were for 20 acres of land in 1970 and 50 acres by 1980.

4. Petroleum storage of 30,000 barrels initially and 90,000 by 1980. Projected annual throughput was 135,000 tons by 1975 and 150,000 by 1980. The initial site was to be six acres, with expansion to 20 acres by 1980.

5. General cargo facilities were to include a 50 by 100 foot wharf (to be lengthened to 200 feet by 1980) and an 18,000 square foot transit shed (twice this area by 1980). There was to be five acres of open storage initially and 45 acres by 1980. Annual general cargo tonnage was projected at almost 210,000 tons by 1975 and 267,000 tons by 1980.

6. Miscellaneous improvements included: railroad track, truck-railroad car scale, pit and scale house, culverts, fleeting pier dolphins; catwalks for fleeting pier; grading and bank protection; and dredging.

The 1962 projected costs were \$2,036,000 for the initial phase and \$2,009,000 for the 10-year expansion. Cost estimates for the initial phase, as estimated in April, 1966, by the same consultant, had risen to \$2,499,300. The consultant's proposal for funding the latter amount was to issue \$300,000 in revenue bonds and \$700,000 in general obligation bonds, and to obtain a grant of \$1,499,300 from the Economic Development Administration. Latest capital expenditure

data available for the port show the following: land, \$36,800; construction, \$2,395,000; equipment, \$70,500; engineering and architects' fees \$223,000; interest during construction, \$30,000; contingencies, \$137,200; for a total of \$2,882,500.

Expenditures on the associated industrial park were \$937,500 for an industrial sewer line and \$2,253,000 for expansion of the waste treatment plant.

On October 19, 1965, the voters of Muskogee County approved a \$300,000 general obligation bond issue by a vote of 5,492 to 973; the money was to be used to buy land for the port and adjacent industrial park. On May 2, 1967, the voters approved, by a ratio of 17 to 1, an \$1,250,000 issue of general obligation, port authority bonds to build the initial port facilities. Federal funds for the port and industrial park amounted to \$2,024,600 with the Economic Development Administration granting \$1,858,000 and the Ozarks Regional Commission \$166,600.

Port facilities originally proposed by the consultant and not yet constructed, or under construction, are the grain storage and loading facility, the coal facility, and the sand, gravel, and crushed rock facility. Construction of a grain facility--to be scheduled for completion in time for the 1973 wheat season--has been proposed. The primary reason for these negative deviations from the original proposal has been escalation of construction costs, which has resulted in a shortage of funds. A minor reason is the choice of a larger, more

expensive general cargo wharf, which was projected at 50 by 100 feet and actually built 60 by 250 feet. The iron and steel products warehouse, being financed by revenue bonds, was not included in the original proposal.

There was considerable support for the Port of Muskogee and very little opposition to it. The 1962 Frederic Harris report, titled "Proposed Inland Waterway Dock Facilities," justified the proposed port to the community by citing likely: (1) savings in transportation costs; (2) improvements in Muskogee's competitive position; and (3) community benefits from new industry, more jobs, taxes, etc. The proposed port was also advocated on the basis that it would utilize the intended purpose of the Waterway.

Support for the port came from numerous other sources. Robert S. Kerr once told Muskogee city officials, "If you use this water wisely and well, your problems won't be to have more industry here-- the problem will be how you can get more water." (Muskogee Daily Phoenix, January 22, 1971, p. 3.) Kerr also participated in ground-breaking ceremonies on September 22, 1962. Congressmen Ed Edmondson and Carl Albert were instrumental in obtaining river and harbor appropriations for the Waterway project. Harold Scoggins, the first chairman of the Port Authority, was active during the planning stages of the port. Governors of Oklahoma supported the project because they saw it as a means of developing eastern Oklahoma and Muskogee. Finally, local banks, the Chamber of Commerce, and

local industries were in favor of the port and supported its development. The primary impetus for support was in the area of potential development for Muskogee and the surrounding region. It should also be noted that the minute of the Metro-Plan Commission (Muskogee) dated April 4, 1966, stated that the plans and requirements of the Muskogee port and industrial site were in compliance with the General Development Plan of the Muskogee Metropolitan Area.

Apparently the only initial opposition to the port came from John Barriger, president of the Missouri-Kansas-Texas Railroad, who spoke to service clubs against the port. There seems to have been no local opposition to the port development, and no significant opposition is indicated since its development.

Private Ports in the Muskogee Area

There are three private ports located in the Muskogee area. They are the Sierra Coal Corporation dock, the Frontier Terminal, and the Port of Dunkin.

The Sierra Coal Corporation dock is located on the right bank of the Arkansas River at navigation mile 365.5. It consists of a 900 foot by 150 foot slip cut into the bank at right angles to the channel. On the downstream side of the slip is a coal pile, hopper, and 300 ton-per-hour coal crushing, sizing, and loading plant. Coal comes in only by truck; the dock is 0.1 mile upstream from the U.S. Highway 64 bridge at Gore and Webbers Falls. The dock is owned and operated by the Sierra Coal Corporation of Claremore, Oklahoma. The only transfer so far has been of coal from truck to barge. The first barge was loaded on January 15, 1972; through July, 1972, some 70 barges were loaded with a total of 91,229 tons.

Frontier Terminal, owned by Frontier Steel Corporation of Muskogee, Oklahoma, is located on the right bank of the Arkansas River at navigation mile 393.3, just 2.8 miles downstream from the Port of Muskogee. As of July, 1972, the completed facility consisted of a liquid loading and unloading tower and two 8 inch liquid lines, with steam available for unloading high-viscosity liquids. A general cargo wharf was under construction on a low bluff fronting on the river. Apparently the construction consists largely of removing earth

from the bluff and pouring a concrete apron on it. A 15 ton hydraulic crane, a 50 ton crawler crane, and a 140 ton crawler crane are available.

The primary business of the company is the fabrication of steel bridges. Bridge sections are moved out by rail and by barge. Steel will be brought in over the general cargo wharf and fabricated steel shipped out. Petroleum products and benzene are loaded onto barges and molasses is unloaded; this apparently is done under contract with shippers. The Frontier Terminal began liquid operations on July 24, 1971, when they outloaded a barge of petroleum products for Sun Oil Company. The tonnage figures for Sun Oil are as follows:

<u>Year</u>	<u>Barges</u>	<u>Short Tons</u>
1971	23	28,005
Jan-Jul 1972	17	20,105

Frontier Terminal also handles inbound molasses for National Molasses Company. However, because of the competitive situation, National Molasses has requested that their tonnage figures be kept confidential.

The Port of Dunkin, also known as the Wagoner Port, is owned by the Guthrie Cotton Oil Company of Guthrie, Oklahoma. It occupies 13 acres on the left bank of the Verdigris River at navigation mile 17.5, approximately 7 1/2 miles east of Wagoner, Oklahoma. The port is 0.3 mile upstream from Oklahoma Highway 51 and is connected thereto

by a bituminous-surfaced road. Docking facilities consist of a 600 by 100 foot slip having a depth of 11 feet. The upstream side of the slip comprises a multiple-cell, sheet-piling wharf; the downstream side is sloped. These facilities permit the servicing of two barges simultaneously. Two cylindrical grain storage bins with a 500,000 bushel capacity are located near the land end of the slip. Approximately 1,000 feet of 30 inch-wide conveyor belt loads barges at the rate of 10,000 bushels per hour. Commodities are brought to the port elevator by semitrailer trucks, which are unloaded in four minutes. On October 1, 1972, the first barge load of grain sorghum left for the Continental Grain Company of New Orleans. The owner of the port expects to handle one million bushels of grain before the end of the year. The port will also be usable for transferring general cargo between barge and truck via a mobile crane.

Tulsa Port of Catoosa

Much of the construction in and around Tulsa today is being credited to the port development and its accompanying industrial park.

Revenues from the port do not meet operating costs; but the port is not operated to make money. It is expected to compete for business with other river ports and other modes of transportation, and benefits will accrue to the community from the associated industrial park.

The Tulsa Port of Catoosa, three miles east of the Tulsa city limits, is located at the head of navigation on the Verdigris River and includes a 1.3 mile dredged channel and turning basin. It is by far the largest port on the Waterway, accounting for some two-fifths of the funds spent on public ports throughout the McClellan-Kerr Arkansas River Project.

The head of navigation is at Verdigris River mile 50.3. From this point, the port's channel extends 1.3 miles into a 2,000 acre parcel of fairly level valley land, overlooked on the northwest by a line of bluffs. Normal pool elevation is 532 feet above sea level, the 2 percent flowline is about 552.5, and the 50 year flood about 572 feet. The general-cargo wharf, located at navigation mile 50.9, is at 577 feet and approximately level with adjoining land. This results in a cargo lift height of 45 feet when the pool is at normal level. A levee protects the portion of the port that lies between the channel

and a nearby nonnavigable portion of the Verdigris River.

The port channel or harbor has a bottom width of 200 feet; the turning basin is 400 by 600 feet. The entire harbor was initially dredged to 12 feet below normal pool and can be flushed by water diverted from the Verdigris into the turning basin. Dredging operations are the responsibility of the Port Authority. Soil erosion on the channel banks is currently a problem, for the banks are not suitable for growing vegetation and no provisions were made during construction to provide cover or vegetation for bank stabilization.

Planning for a port at Tulsa began in 1962, when the Tulsa Chamber of Commerce sponsored several trips to various ports in the United States and published a report. Leaders liked the concept of President's Island in Memphis, so the Port of Catoosa has a similar public port facility and associated industrial park.

The Port Authority was created in 1963 and on May 1, 1963, a contract was signed with Fell-Brusso-Burton (then Fell and Wheller) of Tulsa and Lockwood, Andrews and Newnam, Inc., of Houston to set site standards and criteria for building a port and to recommend a site. The present site was chosen in 1963 from three proposed sites and the master plan became official on March 17, 1965. Historically the Corps of Engineers had located the head of navigation below (south) of Highway 66. The Port Authority asked the Corps to move the head of navigation north of the highway closer to the recommended site, which is in Rogers County. A struggle arose between the City of Tulsa and the

County of Rogers because of Tulsa's purchasing land in Rogers County for a port. This conflict was resolved and approved by granting the County of Rogers three members (one for each county commissioner) and Tulsa six members to serve on the board of the City of Tulsa-Rogers County Port Authority.

The projected cost for the originally proposed facilities totaled \$19,997,489. It should be noted that this projected cost did not include acquisition of the land for the port and industrial park, nor acquisition of the right-of-way necessary for highways leading to the port area. The cost of total development of the port and industrial park was envisioned at \$1.2 billion.

Justification for the port centered around increased economic development in northeast Oklahoma. Port engineers expected the port to handle 5.4 million tons of cargo annually by 1975. (A figure exceeded by 1972.) It was estimated that the port would create an additional 5,000 jobs, 5,000 households, 18,250 people, 150 retail establishments, \$35,500,000 personal income, \$11,450,000 bank deposits, and \$16,550,000 retail sales. Also the port was expected to generate economic benefits throughout a surrounding 100 mile radius, particularly northwesterly of the port, future growth by developing job and industrial capabilities previously limited by transportation costs and size limitations. Finally, in 1954, economists employed by the Army Engineers predicted that freight rate savings due to the entire navigation project would amount to \$40 million annually, two-thirds of this saving applying to tonnage moving through the Tulsa Port of Catoosa.

Financing to acquire land for the port and industrial park was obtained from a \$2.5 million general obligation bond issue that was sold in September, 1965, with a 3.35 percent interest rate. Slightly over 2,000 acres were purchased--513 acres for the public port and 1,500 acres for the industrial park.

In August, 1967, Tulsa voters approved a \$17.5 million general obligation bond issue to provide funds for the port and industrial park construction. Voter turnout was the largest in Tulsa's history for any single special election issue, and the bond proposal passed by a vote of 22,687 to 13,700. Local support in favor of the bond issue came from a variety of sources. Organized labor in Tulsa encouraged a favorable vote because the port would create more jobs. Homebuilders of Greater Tulsa, Inc., loaned, free of charge, two large strategically located billboards for bond promotion. Taxi and soft drink firms gave advertising space on their vehicles. Firemen spent off-duty time handing out window cards and placing "vote yes" signs throughout Tulsa on the morning of the election. The Jaycees gave speeches in favor of the port and Jack Story, Jr., made numerous presentations to various organizations concerning the advantages of a port for Tulsa.

The only direct opposition was experienced immediately prior to the 1967 bond election. A group known as the North Tulsa County Development Association circulated a letter opposing the bond issue; however, its efforts were not successful. Also, an anti-bond issue meeting was held, but it was attended by only about 10 persons. The major objections

seemed to center on needed street repairs in the area of town in which the dissidents lived and on their generally just being mad at "city hall."

In 1968, Rogers county issued a \$1.2 million general obligation bond issue to obtain funds for the rights-of-way for roads leading into the port area. After acquisition, the State of Oklahoma constructed the roads. Several Roger County financial institutions and various civic organizations and area churches supported the port development.

In May, 1969, a trust authority was formed for the port. Named the Tulsa Port of Catoosa Facilities Authority, it enables the port to build railways and buildings, and to acquire and lease land through revenue bonds. Primary purpose of the trust was to provide rail connections to the port. Initially, it was expected that the railroads would pay to build spur lines into the port. Frisco Railroad had a 1.2 mile spur and Santa Fe slightly more than 7 miles of spur. However, the railroads did not construct the spurs and the port, itself, found it necessary to lay the track with funds obtained from the sale of revenue bonds. The railroads presently lease the trackage, with the lease monies going to retire the bonds. When the bonds are retired, the tracks will revert to the Port Authority, which will assess a nominal charge for their use.

Catoosa was formally dedicated on February 20, 1971. Currently, the following facilities, in addition to the channel area, are available:

1. Storage and loading facilities within a 513 acre terminal area around the channel and turning basin.

2. A general dry cargo wharf 720 feet in length and 54 1/2 feet high; it is of concrete construction and faced with heavy wooden timbers.
3. A transit warehouse containing 38,400 square feet (240 x 160); a customs office and port office are located on the second and third floors, respectively.
4. A 200 ton overhead rail type crane, extending over the water and wharf, which permits barge loading or unloading to either trucks or railcars.
5. A trackmobile (equipped with rail wheels and rubber-tired wheels) for switching rail cars.
6. A towboat owned by the Port Authority for moving barges within the channel.
7. Paved roads within the industrial park.
8. 8,600 feet of rail line within the port and industrial park area and rail connections with the main lines of the Frisco and Sante Fe railroads.
9. A 2 million gallon water storage reservoir.
10. A dry bulk unloading facility that is leased by WillBros Terminal Company; the conveyor system extends approximately 600 feet from the wharf to the conveyor system of WillBros, and the dry bulk wharf is located at the turning basin mouth.
11. Potable water, storm sewers, utilities, and sanitary sewer lines partially completed.
12. Five hundred acres of land cleared and graded, and 175 acres ready for lease.

As of June, 1972, there was approximately \$1.8 million remaining from the \$20 million in funds received by the two general obligation bond issues. Capital for additional improvements to the port and industrial park is available only through trust revenue bonds and the remaining \$1.8 million.

Because of increased land acquisition costs and labor costs, expectations of the original proposal were not attained. Construction was delayed on three dry cargo wharves, which in turn brought a recommendation for a smaller transit shed (reduced from 602 by 160 feet to 240 by 160 feet). The proposed grain facility is still under consideration; however, the estimated cost of \$2,612,000 for construction has been reduced to between \$900,000 and \$1,250,000, and the original preliminary design is being revised.

Labor construction costs were a problem at the port until a court settlement on May 18, 1972. Previously, construction workers on the Port of Catoosa and industrial park were paid wages according to the "construction rate" (\$4.15 per hour for a common laborer) set by the State Labor Commissioner. In mid-1971, the City of Tulsa refused to continue honoring the "construction rate" and, for all practical purposes, construction on the port and industrial park stopped. The city attempted to get a lower rate and in May, 1972, the Port Authority attorney filed a suit in Rogers County seeking a lower "utility rate," which is \$1.84 per hour for common laborers and applies to construction on roads, sewers, rail lines, etc. The city's request was upheld. The wage rate problem increased construction costs and delayed construction on rail lines and street paving within the industrial park.

On June 9, 1972, a \$573,000 EDA grant was approved for the construction of access roads and railroad spurs within the industrial park. The grant was made possible because the port is located in Rogers County,

which is eligible to receive federal funds for economic development. The grant is part of a \$955,000 development program, whose financing is broken down as follows:

EDA Grant	\$477,500	50%	\$573,000
EDA Bonus	95,500	10%	
Local Bonds (cash)	382,000	40%	<u>382,000</u>
	Total		<u>\$955,000</u>

Funds available, not including revenue bonds, for construction of the port and industrial park totaled \$22,155,000--\$21,582,000 in local bonds and \$573,000 in an EDA grant.

The first commercial shipment, 650 tons of newsprint from Calhoun, Tennessee, reached the Port of Catoosa on January 21, 1971. The first outbound shipment left the port on April 3, 1971. It was two barges from Armco Steel's plant at Sand Springs, destined for New Orleans. Traffic handled through June, 1972, is indicated in the following table:

<u>Commodity</u>	<u>1971</u>		<u>January-June 1972</u>	
	<u>Barges</u>	<u>Tonnage</u>	<u>Barges</u>	<u>Tonnage</u>
INBOUND				
Steel	108	69,695	65	40,237
Paper	13	7,643	8	5,868
Liquids	0	0	3	2,069
Fertilizer	0	0	29	36,008
Paint	1	832	0	0
Appliances	<u>1</u>	<u>96</u>	<u>0</u>	<u>0</u>
Totals	<u>123</u>	<u>78,266</u>	<u>105</u>	<u>84,182</u>

<u>Commodity</u>	1971		January-June 1972	
	<u>Barges</u>	<u>Tonnage</u>	<u>Barges</u>	<u>Tonnage</u>
OUTBOUND				
Steel	6	4,165	12	8,124
Manufacturer	13	3,323	6	1,125
Coal	0	0	58	71,960
Agricultural	<u>1</u>	<u>1,000</u>	<u>1</u>	<u>358</u>
Totals	<u>20</u>	<u>8,488</u>	<u>77</u>	<u>81,568</u>
Total Movement	<u>143</u>	<u>86,754</u>	<u>182</u>	<u>165,750</u>

The port and industrial park land actually is owned by the City of Tulsa; but, in June, 1967, the Port Authority signed a 60-year lease for its use. The lease allows the Authority to sublease the land, with the city's "rubber stamp" approval. The port is managed by a director, deputy director, and supporting personnel.

Terminal operations (loading, unloading, and storage) have been contracted to three stevedoring companies: American Transfer and Storage Company; Tuloma Rigging, Inc.; and Contractors Trucking, Rigging and Erection Company.

The stevedore companies pay the Port Authority 5¢ per ton wharfage for everything that is loaded or unloaded over the dock. The Port Authority also receives 25 percent of all charges for storage in the terminal warehouse. Wharfage fees are negotiated between the stevedore companies and the using company, based upon maximum tariffs only for items that have a heavy movement through the port. The Port Authority

also receives from railroads \$12.50 for moving each loaded rail car within the port. Other funds are received from towboat and mooring charges.

Over 30 acres of land within the industrial park have been leased and there are options on an additional 16 acres.

The first tenant in the industrial park was WillBros Terminal Company, which leases 6.5 acres of port land on the turning basin and has constructed a \$1.5 million dry bulk warehouse to store, mix, and bag dry fertilizer.

The Tulsa Port Warehouse Company and Tulsa Warehouse Company each lease a 6.97 acre tract in the industrial park and both have an option for an additional 8.23 acres. The two companies each have 120,000 square foot general storage warehouses, but these two facilities are not located on the waterfront.

Two other companies have leased industrial park land that is not on the water and contains no buildings. The Arrow Transportation Company leases 3.8 acres for outdoor storage and has an additional four acres under option. Flint Steel Corporation leases two 2.3 acre tracts for the storage of tainter gates.

Kimeo Chemicals, Inc., leases 0.92 acre on the turning basin; present facilities consist of a tank and unloading pipeline for liquid chemicals, along with barge-mooring facilities.

Western Continental, Inc., leases several acres on the turning basin. It has a wharf for unloading coal from trucks into barges and

has under construction a coal cleaning and sizing plant and a loading conveyor. It plans to stockpile a maximum of 5,000 to 10,000 tons of coal on four acres of leased land, truck coal from mines at Nowata, Oklahoma, and barge it to a power plant in Wisconsin.

One plant not located in the industrial park made the following statement in the Tulsa World on June 4, 1971: "It's the major plant built in the Tulsa Port of Catoosa area to take advantage of the water facilities." The Company is Yuba Industries, Inc., whose Heat Transfer Division has constructed a 147,000 square foot office and manufacturing complex.

The Seltzer Organization of Philadelphia plans to begin construction in early 1973 on a 550-acre industrial park located south of the Tulsa Port of Catoosa. To be known as TransPort Terminal, plans include dredging Bird Creek to a navigable depth and constructing three slips perpendicular to the creek. Industrial sites, for sale or lease, are to be located on the land between the slips. Each lot will have water frontage and will be served by a rail spur.

APPENDIX A

INTERVIEWS

- Adams, Paul. Arkansas Waterways Commission. Little Rock, Arkansas.
- Adams, Wendell. Assistant Director, Southeast Arkansas Economic Development District. Pine Bluff, Arkansas.
- Balridge, Joe. President, Worldwide Transportation Services. Little Rock, Arkansas.
- Barnes, Joy. Secretary, Public Affairs Office, Corps of Engineers, Tulsa District. Tulsa, Oklahoma.
- Berger, Don. Eastern Oklahoma Development District. Muskogee, Oklahoma.
- Biffle, Roy. Engineer, the City of Tulsa-Rogers County Port. Tulsa Port of Catoosa.
- Burrough, David L. Planning and Reports Branch, Corps of Engineers, Little Rock District. Little Rock, Arkansas.
- Burstall, William. Terminal Manager, Port of Little Rock, Atlantic and Gulf Stevedores. Little Rock, Arkansas.
- Caviness, Pat. Governor Bumpers liason with the Arkansas River Development Corp., and the Arkansas Highway Department. Little Rock, Arkansas.
- Chenoweth, I. E. Deputy Director, The City of Tulsa-Rogers County Port. Tulsa Port of Catoosa.
- Clemits, Joe. Hydraulic section, Corps of Engineers, Little Rock District, Little Rock, Arkansas.
- Cockmon, Lou. Permits Branch, Corps of Engineers, Little Rock District. Little Rock, Arkansas.
- Cummings, Charles. Assistant Director, Central Arkansas Economic Development District. Lonoke, Arkansas.

Cupp, Samuel. Operations, Corps of Engineers, Tulsa District. Tulsa, Oklahoma

Dodson, John. Finance and Risk Capital Specialist, Ozarks Regional Commission. Little Rock, Arkansas.

Esch, Henry. Mayor of Dardanelle. Dardanelle, Arkansas.

Finefield, William K. Chief, Real Estate Division, Corps of Engineers, Little Rock District. Little Rock, Arkansas.

Fontaine, Jim. West Central Arkansas Planning and Development District, Dardanelle Office. Dardanelle, Arkansas.

Frevert, Samuel. Sam Fervert and Associates, Inc., Former Executive Director of the City of Tulsa-Rogers County Port Authority. Tulsa, Oklahoma.

Fulenwider, Don. Director, West Central Arkansas Planning and Development District. Hot Springs, Arkansas.

Gieringer, Wallace A. Executive Director, Pine Bluff-Jefferson County Port Authority, and President, Jefferson County Industrial Foundation. Pine Bluff, Arkansas.

Godwin, Lin. Assistant Director, Western Arkansas Planning and Development District, Inc. Fort Smith, Arkansas.

Grieves, W. O. The City of Tulsa-Rogers County Port. Tulsa Port of Catoosa.

Hamman, W. L. Owner, Muskogee Transfer and Storage, and Present Chairman of Muskogee City - County Port Authority. Muskogee, Oklahoma.

Hardin, Lon. Director, Western Arkansas Planning and Development District, Inc. Fort Smith, Arkansas.

Hiebert, Gail. General Manager, Frontier Steel at Muskogee. Muskogee, Oklahoma.

Hill, Bill. Executive Director, Kiamichi Economic Development District of Oklahoma. Wilburton, Oklahoma.

Hogue, Larry. Navigation Branch, Corps of Engineers, Little Rock District. Little Rock, Arkansas.

Holmes, Art L. Planning Director, Southeast Arkansas Regional Planning Commission. Pine Bluff, Arkansas.

Hoppe, Gordon. Assistant Director, Northeast Counties of Oklahoma Economic Development District. Vinita, Oklahoma.

Horn, Mary. Secretary, Muskogee EDA. Muskogee, Oklahoma.

Howell, Joseph E. Reporter, Tulsa Tribune. Tulsa, Oklahoma.

Ivens, Harold. Owner-Manager, Hunts Department Store, and Chairman of Muskogee City - County Port Authority during the development phase. Muskogee, Oklahoma.

Jones, Ronald N. Owner-Operator, Jones-Kerby Port of North Little Rock. North Little Rock, Arkansas.

Kennan, Robert. Owner; Keenan's Port of Dardanelle. Dardanelle, Arkansas.

Kennan, Robert, Jr. Owner, Keenan's Port of Dardanelle. Dardanelle, Arkansas.

Keheley, Cliff. City Administrator. Fort Smith, Arkansas.

Land, William, Jr. District Supervisor, Interstate Commerce Commission. Little Rock, Arkansas.

Latture, J. Paul. Executive Director, Fort Smith Chamber of Commerce. Fort Smith, Arkansas.

McCoy, Jim. Corps of Engineers, Tulsa District, Tulsa, Oklahoma.

McEldon, Kay. Assistant to Pat Caviness. Little Rock, Arkansas.

McGrew, Phyllis. Public Affairs Office, Corps of Engineers, Little Rock District. Little Rock, Arkansas.

Martin, Phillip A. Director of Transportation, Arkansas Industrial Development Commission. Little Rock, Arkansas.

Mauney, Ross. Executive Director, Little Rock Port Authority. Little Rock, Arkansas.

Pardue, Herman. Frontier Steel. Van Buren, Arkansas.

Parker, Douglas. Chairman, Fort Smith Municipal Port Authority. Fort Smith, Arkansas.

Porter, Bob. Project Director, Kiamichi Economic Development District of Oklahoma. Wilburton, Oklahoma.

Rader, Max L. Terminal Manager, WillBros Terminal Co., Port of Muskogee.
Muskogee, Oklahoma.

Roebuck, Dan. Director, Arkansas Industrial Development Commission.
Little Rock, Arkansas.

Shell, Buck. Manager, Port of Fort Smith. Fort Smith, Arkansas.

Smith, Dr. Robert T. Port Authority, City of Clarksville, Clarksville,
Arkansas.

Sparlin, John A. Chief, Project Evaluation Section, Corps of Engineers,
Tulsa District. Tulsa, Oklahoma.

Starch, George. Corps of Engineers, Tulsa District. Tulsa, Oklahoma.

Stone, John L. Managing Editor, Muskogee Daily Phoenix. Muskogee,
Oklahoma.

Stone, Samuel. Attorney for the City of Tulsa-Rogers County Port
Authority, Tulsa City Attorney's Office. Tulsa Port of Catoosa.

Taylor, Jeta. Arkansas Basin Association. Ozark, Arkansas.

Ward, Gari. Manager, Russellville Chamber of Commerce. Russellville,
Arkansas.

Watkins, L. B. Executive Director, Eastern Oklahoma Development District.
Muskogee, Oklahoma.

White, Jack. Manager, Co-op of Arkansas and Oklahoma. Van Buren,
Arkansas.

Willis, Milton. Judge, Crawford County (handles inquiries on Van Buren
Industrial Park). Van Buren, Arkansas.

Worley, Bob. Manager, Fort Smith Freight Bureau. Fort Smith, Arkansas.

APPENDIX B

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APPENDIX C

COMMENTS OF THE GOVERNORS OF ARKANSAS AND
OKLAHOMA ON THE REPORT OF THE
ARKANSAS RIVER SURVEY BOARD

Comments of the Governor of Arkansas

State of Arkansas
Office of the Governor
Little Rock, September 29, 1945

Lt. Gen. Eugene E. Reybold
Chief of Engineers, War Department
Washington, D. C.

Dear General Reybold: I am in receipt of copy of proposed report on survey of the Arkansas River and tributaries, together with the reports of the Board of Engineers for Rivers and Harbors, the Arkansas River Survey Board, the division engineer and your report to the Secretary of War together with your letter of September 20, 1945, to me.

I am thoroughly in accord with recommendations made by you as Chief of Engineers to the Secretary of War dated September 20, and am hopeful that the Secretary of War will approve your recommendation contained therein, in connection with this important project.

I agree fully that very careful consideration should be given to the route to be used between Little Rock and the Mississippi River as indicated in paragraph No. 4 of your report. It is assumed that in the selection of this route, full and careful consideration will be given to the merits of the respective alternate routes.

As Governor of the State of Arkansas, and individually, I take this opportunity of expressing my appreciation for the intensive study of this project that has been made by the Corps of Engineers under your direction.

With best personal regards, I am
Very truly yours,

Ben Laney, Governor

Comments of the Governor of Oklahoma

State of Oklahoma
Office of the Governor
Oklahoma City, Okla., September 25, 1945

Lt. General Eugene Reybold
Chief of Engineers, United States Army
Washington, D. C.

Dear General Reybold: I am in receipt of your letter of September 20, 1945, and the attached survey report on the comprehensive development of the Arkansas River for flood control, navigation, hydroelectric power, and for other purposes.

Acting for the State of Oklahoma and in compliance with the requirements of Public Law 534 of the Seventy-eight Congress, second session, I am pleased to approve the plans submitted for the comprehensive development of the Arkansas River in this State, subject, as you also recommend, to such modification as later study may find desirable.

The engineering and economic record of this report is complete and voluminous. I quite agree with your opinion that public benefits, especially from navigation, will greatly exceed the estimates of the report.

I congratulate you upon the part you have played in developing this program and thank you for expediting its approval. It indicates a most worth-while development of the Arkansas Basin and forecasts prosperity and happiness for our people. I am unable to find words with which to express my commendation for your able and progressive leadership before and during the war in originating and developing this program which we expect to name the "Reybold Plan."

After your retirement, I hope that you will come this way many times. You have many friends and admirers here in the great Southwest and especially Oklahoma who look forward with pleasure to seeing you and having the benefit of your vigorous thought, association, and leadership.

Sincerely yours,

Robt. S. Kerr

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report documents the port development response of the Arkansas-Oklahoma region to the development of the McClellan-Kerr Arkansas-Verdigris Waterway. Since the initiative for port development comes from state and local levels, the strategy and plans which evolve present significant clues about potential impacts from the region's perspective. The report surveys seven major port areas and thirteen individual ports. Data is presented on physical attributes of the ports, public and private investment and financing, and management arrangements.		

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