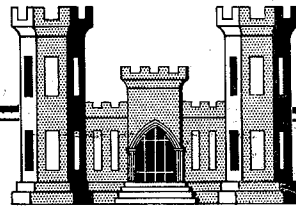


**REVISION OF
MASTER PLAN
FOR
RESOURCE MANAGEMENT**

**POOLS 11-22
9-FOOT CHANNEL NAVIGATION PROJECT**



**CHAPTER II
THE MISSISSIPPI RIVER
POOL 11**

**U. S. ARMY ENGINEER DISTRICT, ROCK ISLAND
CORPS OF ENGINEERS
ROCK ISLAND, ILLINOIS
JANUARY 1969**

NCDDP-ER (10 Apr 69) 3d Ind
SUBJECT: Revision of Master Plan for Resource Management, Upper
Mississippi River, Pools 11-22, Nine-Foot Channel
Navigation Project

DA, North Central Div., CE, Chicago, Illinois 19 Mar 70

TO: District Engineer, Rock Island

1. Forwarded for appropriate action.

2. It is noted that the requirements of comment d in the 2nd Ind have been satisfied by Chapter III (Pool 12) of the subject Master Plan.

FOR THE DIVISION ENGINEER:

1 Incl
Miss. R., Master Plan,
Chapter II, Pool 11

James W. Gilland
JAMES W. GILLAND
Colonel, Corps of Engineers
Deputy Division Engineer for
Civil Functions

ENGW-PV (10 Apr 69) 2nd Ind
SUBJECT: Revision of Master Plan for Resource Management, Upper
Mississippi River, Pools 11-22, Nine-Foot Channel
Navigation Project

DA, Office of the Chief of Engineers, Washington, D.C. 20314 6 Mar 70

TO: Division Engineer, North Central

The Master Plan is approved subject to the following.

a. Reference page VI-3, paragraph 7a, and page VIII-1, paragraph 2b. Efforts should be continued and intensified to obtain a non-Federal sponsor for the proposed Sinnippee site to provide the required public-use facilities. The proposed plan of development, together with a draft cost-sharing agreement, is to be furnished for OCE approval prior to initiation of construction.


b. Plate VI-4.3, Proposed Sinnippee Public Use Area. When the plan is prepared for this site, consideration should be given, in the interests of utility and administration, to locating all overnight use (camping) on one side of Sunfish Creek and all-day use facilities on the other side.

c. Consideration should be given to upgrading existing Corps facilities to acceptable standards. If public use now warrants, upgrading of facilities at Grant River Public Use Area should be programmed at an early date as proposed on Page VIII-3, paragraph 3f, g, h, and j. All future developments should be of the standard and quality prescribed by existing instructions.

d. Reference Chart 108 of the inclosed maps. This chart shows, at the right abutment of the lock and dam, an area titled "Proposed Lock and Dam No. 11, Public Use Area". Supplemental pages describing this public-use area and its development should be provided together with a layout plan showing the proposed development.

FOR THE CHIEF OF ENGINEERS:

2 Incl
wd


LOUIS G. FEIL
Chief, Planning Division
Civil Works

NCDPD-ER (10 April 1969) 1st Ind
SUBJECT: Revision of Master Plan for Resource Management, Upper
Mississippi River, Pools 11-22, Nine-Foot Channel
Navigation Project

DA, North Central Div., CE, Chicago, Illinois 18 November 1969

TO: Chief of Engineers, ATTN: ENGCW-PV

Chapter II, Pool 11, of the subject master plan is forwarded
recommending approval.

FOR THE DIVISION ENGINEER:

Richard H. Brownley

2 Incls (3 cys wd)

CF:
Rock Island District

RICHARD H. BROWNLEY
Colonel, Corps of Engineers
Deputy Division Engineer for
Military Functions



DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61201

ADDRESS REPLY TO
DISTRICT ENGINEER

REFER TO FILE NO.
NCRED-PB

10 April 1969

SUBJECT: Revision of Master Plan for Resource Management,
Upper Mississippi River, Pools 11-22, Nine-Foot
Channel Navigation Project

Division Engineer, North Central

1. Chapter II, Pool 11, of the subject master plan is submitted in accordance with Engineer Manual 1130-2-302.
2. This chapter of the master plan contains specific information concerning the administration and development of the resources within the pool.
3. It is recommended that chapter II of the master plan for resource management of the Mississippi River 9-foot channel navigation pools be approved.

2 Incls (6 cys)

1. Miss. R., Master Plan,
Chapter II, Pool 11
2. Miss. R., Master Plan,
Pool 11, Maps

WALTER C. GELINI
Colonel, Corps of Engineers
District Engineer

NCRED-PB

14 November 1969

SUBJECT: Revision of Master Plan for Resource Management,
Upper Mississippi River, Pools 11-22, Nine-Foot
Channel Navigation Project

Division Engineer, North Central

1. Transmitted herewith are 6 sets of revised pages c, IV-3, IV-4, V-1, V-2, VI-3, and VI-4, and plates V-2.1 and V-2.2 for Chapter II, Pool 11 of the subject Master Plan. The revisions of the chart, graph, and narrative portions of the plan are in accordance with telephone conversations with Mr. Carl Brown of your office.

2. The necessary changes will be made in the other chapters prior to submission.

1 Incl (6 sets)
Rev. pages & plates
as stated

WALTER C. GELINI
Colonel, Corps of Engineers
District Engineer

cc: District File w/o incl
Engrg Div w/o incl
~~Plan Br~~ (Environ. Res) w/o incl

REVISION OF MASTER PLAN
FOR
RESOURCE MANAGEMENT

POOLS 11-22
NINE-FOOT CHANNEL NAVIGATION PROJECT

CHAPTER II
THE MISSISSIPPI RIVER, POOL 11

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REVISION OF MASTER PLAN
FOR
RESOURCE MANAGEMENT

POOLS 11-22
NINE-FOOT CHANNEL NAVIGATION PROJECT

CHAPTER II
THE MISSISSIPPI RIVER, POOL 11

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<u>NUMBER</u>	<u>TITLE</u>
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REVISION OF MASTER PLAN
FOR
RESOURCE MANAGEMENT

POOLS 11-22
NINE-FOOT CHANNEL NAVIGATION PROJECT

CHAPTER II
THE MISSISSIPPI RIVER, POOL 11

SECTION I

INTRODUCTION

As noted in Chapter I, a Master Plan is developed to provide a sound instrument of guidance for the administration and operation of water resource projects; to assure sound resource management; and to coordinate activities with interested Federal, State, and local agencies. Pool 11, one of the series of navigation pools in the Upper Mississippi River and within the limits of the Rock Island District, is treated under such master planning requirements. Plate I-1.1 locates the pool with reference to others of the navigational system within the limits of the Rock Island District, U. S. Army Corps of Engineers.



SECTION II

DESCRIPTION OF PROJECT

1. General. Pool 11 extends upstream of lock and dam No. 11, river mile 583.0, to lock and dam No. 10, river mile 615.1 - Dubuque, Iowa, to Guttenberg, Iowa - a distance of 32.1 river miles measured along a determined sailing line. However, the jurisdiction of the Rock Island District ends at river mile 614.0, the established upstream limits of the District, which is 1.1 miles below lock and dam No. 10. The pool is bordered on the north and east shore by Grant County, Wisconsin, and on the west and south shore by parts of Dubuque and Clayton Counties, Iowa.

2. Topography and geology.

The course of the pool is through a portion of a valley of scenic hills and bluffs with a flood plain, generally flat and rather narrow, supporting small farms and extensive woodlands. In addition to 18 minor creeks, four small tributaries - the Turkey River in Iowa, the Grant River in Wisconsin, the Platte River in Wisconsin, and the Little Maquoketa River in Iowa - discharge into the pool, and, while having fast response to heavy rainfall, have no appreciable effect on short-range pool levels. Resulting silta-tion from such flows, however, can result in long-range problems to resource management. Numerous and sizeable islands are to be found in the middle and upper reaches of the pool and are generally heavily wooded. The river flows through a valley originally excavated by a much larger glacial stream. Subsequent glacial action partially filled the valley floor leaving foundation rock as much as 200 feet below the presently existing river bed. Loess, eroded from the uplands, has been combined with decayed vegetative matter and deposited on the flood plain by periodic high water throughout the centuries, providing thereby a very fertile soil. The underlying rock strata beneath pool 11 is classified as Prairie Du Chien Dolomite and is overlain by St. Peter sandstone in the immediate vicinity of the lock and dam.

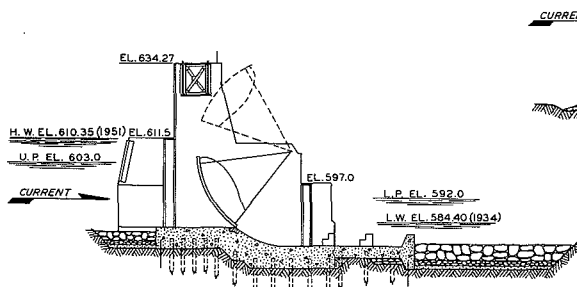
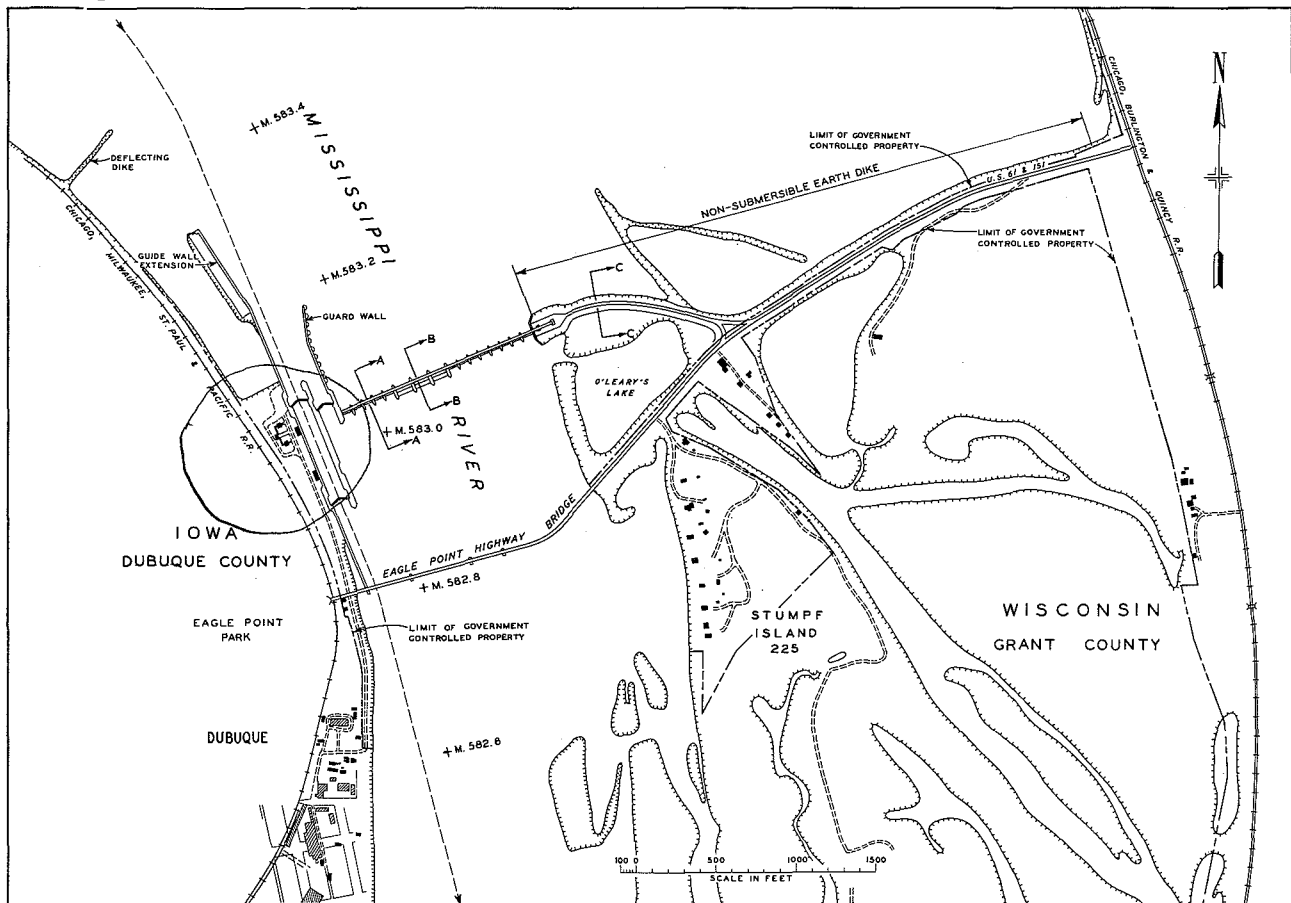
3. Lock and Dam No. 11. The existing structure, located at river mile 583.0, is the first of 12 such installations concerned with the canalization of the Upper Mississippi River

within the Rock Island District. The single 110-foot by 600-foot lock and the completed upper section of a future auxiliary lock parallel the Iowa shore near the northern limits of the city of Dubuque, Iowa.

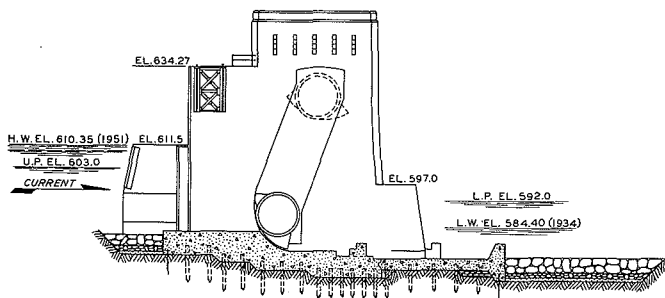
The movable section of the dam consists of 3 roller gates and 13 tainter gates which are adjusted as necessary to maintain the impounded pool. The non-overflow section of the earth-fill dam extends to the Federal Highway 61-151 embankment which, in turn, extends to high ground in Wisconsin. A plan and location of the structure is shown on plate II-2.1 and on chart No. 108 of the Upper Mississippi River navigation charts.

4. Pool 11. Extending in a generally northwesterly direction from the dam, the pool is 32.1 river miles in length, has a drainage area of 81,600 square miles, and varies from 1,000 to 8,000 feet in width under normal flow conditions. The authorized pool elevation (flat pool) is established at 603.0 feet above mean sea level (1912 Adj.). Low water of record, since the dam became operable, was recorded at elevation 591.9, or 11.1 feet below the authorized flat pool level. High water of record reached elevation 614.5, or 11.5 feet above the normal pool elevation at the dam.

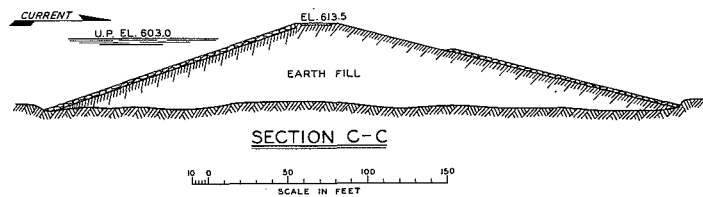
Maintenance dredging, largely in the upper reaches of the pool, has totaled 4,700,000 cubic yards of material since the pool level was established. However, disposal - to create new or enhance existing recreational sites - was not practical in the areas involved.



SECTION A-A



SECTION B-B



SECTION C-C

NOTE:

AVAILABLE DIMENSIONS OF LOCKS:
 MAIN LOCK 600' X 110'
 AUXILIARY LOCK 360' X 110' (FUTURE)
 CONTROLLING DEPTH 12.5' AT NORMAL POOL
 NORMAL LIFT 11 FEET.

REFERENCES:

1. ELEVATIONS BASED ON MEAN SEA LEVEL DATUM (1912 ADJUSTMENT).
2. RIVER MILEAGE ORIGINATES AT MOUTH OF OHIO RIVER.

**MISSISSIPPI RIVER
 RIVER AND HARBOR PROJECT
 LOCK & DAM NO. 11
 AT DUBUQUE, IOWA**
 SCALE AS SHOWN
 ROCK ISLAND DISTRICT
 30 JUNE 1962

SECTION III

POOL RESOURCES

1. General. The existing physical resources of the pool are examined on both a qualitative and quantitative basis. Present and proposed management, usage, and recommended developments are to be predicated on such factors. As noted in chapter I, paragraph 7b, page II-5, acreage figures contained herein have been calculated from Master Plan maps for recreation and general land use planning and are not to be considered accurate for legal purposes. Significant variance may exist between the acreages given and the official records maintained by the Real Estate Division of the Rock Island District Office.

2. Water. The characteristics of both a river and a shallow lake are present in pool waters which contain 19,613 surface acres at the authorized flat pool elevation. Water is of good quality with no extensive sources of municipal or industrial pollution. However, agricultural lands of the watershed present a possible source of pollutants with increasing use of insecticides and fertilizers. Approximately 15 percent, or 2,942 surface acres, are channel waters with a minimum depth of 9 feet, while 85 percent or 16,671 surface acres, are off-channel waters, vary in depth, and may present navigational hazards to recreational boating in various areas.

3. Land. The necessary land acquired for the pool project by the Corps of Engineers for the Federal Government, both shore and island real property, amounted to 9,514 acres in fee. Certain other lands were owned in fee by the Department of the Interior, a Federal agency, prior to project construction. Such land as presently remains above the flat pool elevation, as established by dam No. 11, totals 4,809 acres administered by the Corps of Engineers and 2,252 acres administered by the Bureau of Sport Fisheries and Wildlife, Department of the Interior. Of Corps of Engineers administered lands remaining above flat pool, 4,308 acres have been outgranted to the Bureau for fish and wildlife management under the provisions of the General Plan and Cooperative Agreement. Identifiable accretions to Federal lands, administered by the Corps of Engineers, amounted to 41.6 acres through 1964. Flat pool shoreline

25 - 3981 ac.

(mainland and islands) totals 312 miles with 170 miles under Corps of Engineers control; 105 miles under Bureau of Sport Fisheries and Wildlife jurisdiction; and 37 miles owned by States, Counties, or private individuals. Some 298 islands, totaling 3,976 acres, lie within the pool limits and, with the exception of 118 acres, are all under Government ownership.

Existing laws permit the granting of leases on project lands for agricultural purposes, and, while outgrants have been issued for other pools, no leases for this purpose presently exist within the limits of pool 11.

4. Vegetation. Vegetative cover on Federal lands is rather sparse in the lower reaches of the pool, but becomes extensive and dense in the upper regions. Of the 7,103 acres of Government-owned property, administered by both the Corps of Engineers and Bureau of Sport Fisheries and Wildlife, 4,262 acres, or 60 percent, are covered with dense growth while 355 acres, or 5 percent, is classified as sparse. Open tracts total 2,486 acres, or 35 percent of the total area.

Willow, cottonwood, locust, maple and red birch are to be found at the lower elevations with oak, ash, maple, walnut, cedar, hackberry, hickory, linden, and American elm on higher ground.

The timber management program of the Rock Island District, originated in 1941, allows for the select harvesting of mature growth. The period of October 1950 to February 1967 accounted for a harvest of 1,184,507 board feet of pool 11 timber sold to private interests, representing a total income to the Government of \$24,278.57. Increased annual yields, improvement of quality, and improvement of species composition are being realized from the management program.

5. Wildlife. The pool and adjacent land areas, with favorable habitat conditions, attracts and supports a wide variety of wildlife. A total of 3,381 surface acres of water and land have been designated as wildlife sanctuaries under the management of the Bureau of Sport Fisheries and Wildlife. Of the total, 1,685 acres are water areas, 768 acres are land areas originally managed by the Bureau prior to project construction, and 928 acres are land areas outgranted to the Bureau by the Corps of Engineers for management purposes.

a. Birds. As part of the "Mississippi Flyway", the water areas are host to some 19 species of ducks and 4 species of geese during migratory periods. The wood duck is resident and a common nester and mallard, blue-wing teal, coot, and hooded merganser may brood on occasion. The grebe, American egret, bittern, gull, and numerous species of shore birds and song birds are either resident or transient. The bald eagle is also a frequent visitor and will often remain as long as open water insures a food supply. Three heron rookeries are known within the pool limits.

b. Animals. Small mammals occupying the river habitat include raccoon, skunk, weasel, opossum, mink, muskrat, fox, beaver, squirrel, rabbit, and woodchuck, with badger and otter a rarity. The white-tailed deer is the only big game animal to be found in the vicinity.

The muskrat is common to abundant, but numbers vary from year to year depending largely on water elevations. Beaver, readily found in the upper reaches of the pool, are relatively numerous and have likely reached a stable concentration. The mink population is considered as stable but low in numbers. Deer, found mainly in the timbered bottomlands of tributary streams, are not numerous but have wide distribution. Squirrel and raccoon are generally abundant, but may be affected by habitat conditions and changes caused by floods, fire, and timber-harvesting activities. Populations of other small animals are considered to be stable but low in numbers.

The rattlesnakes, the timber and the Massasauga, are also known to be present, but are not often encountered. A variety of species of harmless watersnakes are relatively numerous.

6. Fish. A wide variety of both sport and commercial fish are found in pool waters. A creel census, taken among 32,408 fishermen in 1962, totaled 10,643 fish or a catch of 1.044 per man-hour of effort. Although walleye, northern, sauger, and perch were represented, the preponderance of the catch was bluegill, freshwater drum, crappie, white bass, and channel catfish with numbers of any one species varying with the season and water conditions. The commercial fishery, also affected by such conditions, indicates a catch mainly of carp, buffalo, freshwater drum, and catfish - 90 percent by weight of the total and a 12-year

averages of 434,240 pounds per year. Pool 11 is considered to have fishery habitat conditions generally superior to those to be found in the downstream reaches.

7. Recreation. Above-average potential exists for outdoor recreational pursuits although pleasure boating may be somewhat restricted in off-channel waters where hazardous areas can be encountered. Ideal hunting and fishing opportunities are present although limited because of insufficient access to water areas which, in turn, precludes camping, day-use, and other recreational activities. Vast potential is also present for the enjoyment of the sightseer, the nature lover, and the camera enthusiast.

8. Historical and Archaeological. Near the upper limits of the District in pool 11 and along the Iowa shore, a landing known as the St. Louis Woodyard once stocked large quantities of wood for steamboat fuel. The heavily-timbered ridge tops and side slopes of the valley hills insured a plentiful supply in the area.

Until 1905 Cassville Slough was the main river channel in the upper reaches of pool 11. Improvement of the Guttenberg channel, the present main stem of the river in the area, was begun in 1898 with construction of wing dams, bank protection, etc., and by dredging in 1902. In 1905 a closing dam was constructed across Cassville Slough opposite Guttenberg, Iowa, and all river traffic diverted to the present channel.

The Dennison Hotel, still in use in Cassville, Wisconsin, was erected in 1840 to house expected legislators. However, the community was unsuccessful in its efforts to be named the State Capitol.

Potosi, Wisconsin, is named for an Indian Princess, the wife of Julien Dubuque and daughter of a Chieftain of the Fox tribe. The Potosi Canal was constructed in 1880 by local interests to provide water access to and from the river. The village was also the home of General Alexander MacKenzie whose career included service as Chief of Engineers in Washington, D.C., and twice as District Engineer of the Rock Island District, Corps of Engineers.

Spechts Ferry, no longer existing, was located on the Iowa shore near presently established river mile 592.0. A break in the bluffs provided an easy passage from the upland plains to the river, and the site was used extensively by the Indians and early settlers for a river crossing.

The Little Maquoketa (known to the Indians as Maquoquetois) River originally flowed through the present site of Dubuque, Iowa, and joined the Mississippi in that area rather than the present upstream location.

Indian mounds are known to exist on the bluffs along the river within the pool limits, especially on the Wisconsin mainland. Little, if any, archaeological investigation has been pursued on these sites, which are all on private lands. Likely they may be attributed to prehistoric tribes loosely referred to as "effigy mound builders" whose works have been found along the river from St. Paul, Minnesota, to Baton Rouge, Louisiana, as well as in the Ohio River valley.

SECTION IV

FACTORS AFFECTING RESOURCE USE

1. General. As a step in the water stairway of the Upper Mississippi River, pool 11 is largely a link in the interconnected system of pools, or lakes. While some cargo is discharged, especially coal loadings, the surroundings area does not generate significant industrial or agricultural commodities for transport to other river terminals. Plate IV-2.1 graphically portrays the commercial activities of lock No. 11 over a period of nearly two decades. The high recreational potential is but partially realized because of limited access and lack of developed sites along the shores.

2. Zone of influence. The primary zone of influence is considered to cover two counties in width, or approximately 50 miles, and following each side of the river the length of the Rock Island District. The approximate total population of this zone, 1960 census, is given in chapter I; however, it is impractical to attempt to estimate population by pools since a pool may span parts of several counties. Only one urban area lies completely within and on the shores of pool 11 - Cassville, Wisconsin, with a population of 1,290 persons listed in the 1960 census. The outlying northern limits of the city of Dubuque, Iowa, also are located on the shores of pool 11 and residents make use of both pools 11 and 12 for recreational purposes.

3. Economic conditions. Except for three coal docks at or near Cassville, Wisconsin, the economy of lands bordering the pool is entirely agricultural. Cassville, the only population center on the shores of the pool, is host to large numbers of tourists, especially during the summer months. Visitor attractions are the adjacent Nelson Dewey Memorial State Park, historic Stonefield Village, and recreational fishing and camping. No industrial developments presently exist on Government-owned lands within the limits of the pool; industrial-zoned lands have been provided at river miles 612.5 - 613.8 (Iowa) but have yet to be occupied. Terrain, access, and the present duration of the navigation season are factors which likely will preclude extensive industrial development within the pool area. However, the possibility of extending the navigation season to a full 12 months of activity may influence interest.

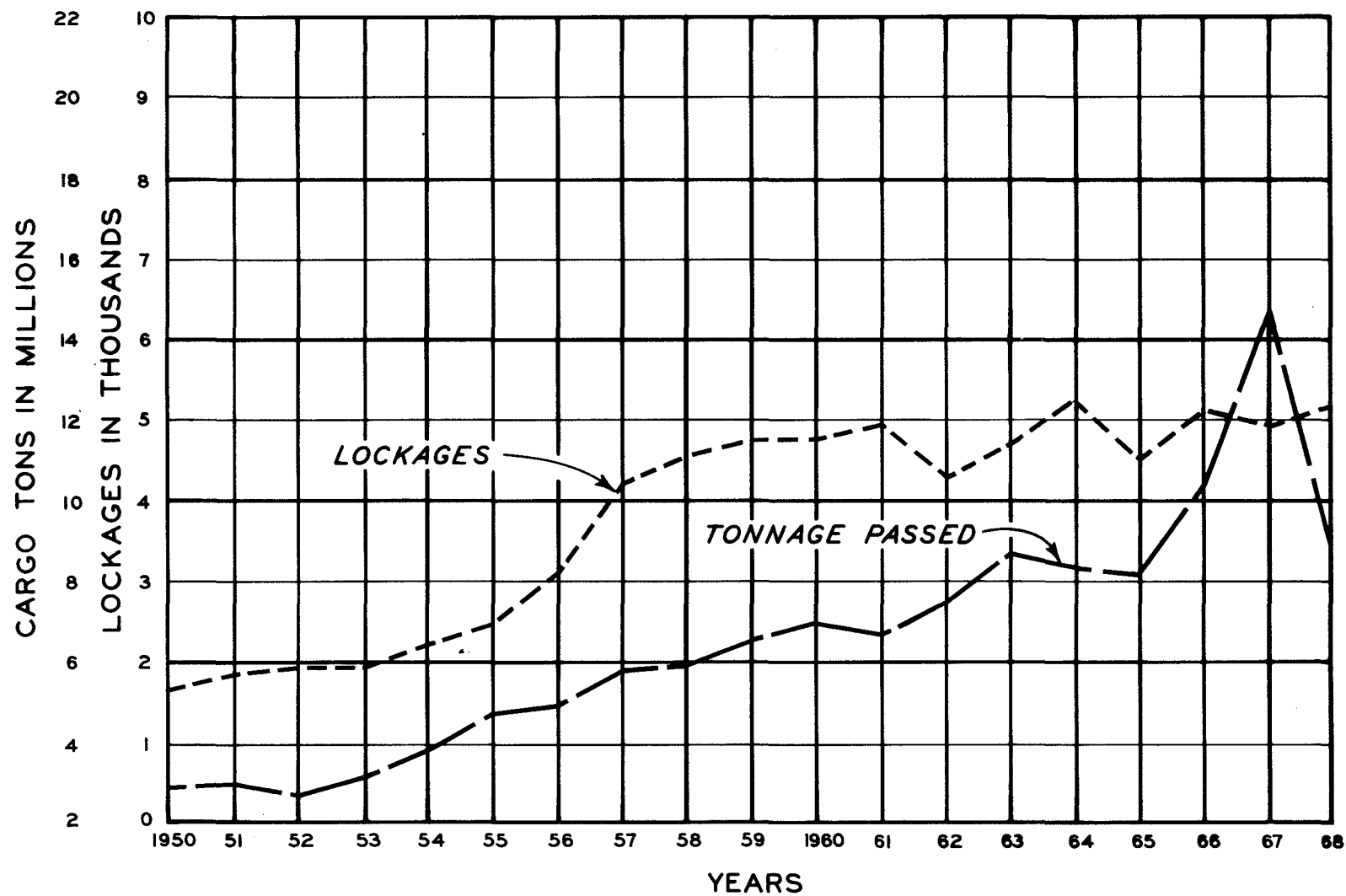
4. Accessibility. Although railroads, closely parallel each shore of the pool, passenger service is non-existent in Iowa and extremely limited in Wisconsin. Cassville, Wisconsin, offers the only accommodations on a one-a-day basis for both north- and southbound traffic. An airport, also at Cassville, Wisconsin, is available for small planes, but no scheduled airline serves the immediate area. Road access to the river exists at 9 points on the Iowa shore and at 18 in Wisconsin, but only 14 of this total lead to Government-owned lands. The Great River Road, by means of State and County construction and relocation, is expected to eventually follow the river closely from Canada to the Gulf of Mexico and offer outstanding scenic attractions. The present route in pool 11 approaches the river briefly only at Cassville and Potosi, Wisconsin. Private boats afford the only other means of recreational access to pool 11 waters; no sightseeing or excursion craft are in scheduled operation. No bridges span the river within the limits of the pool.

5. Existing recreational facilities.

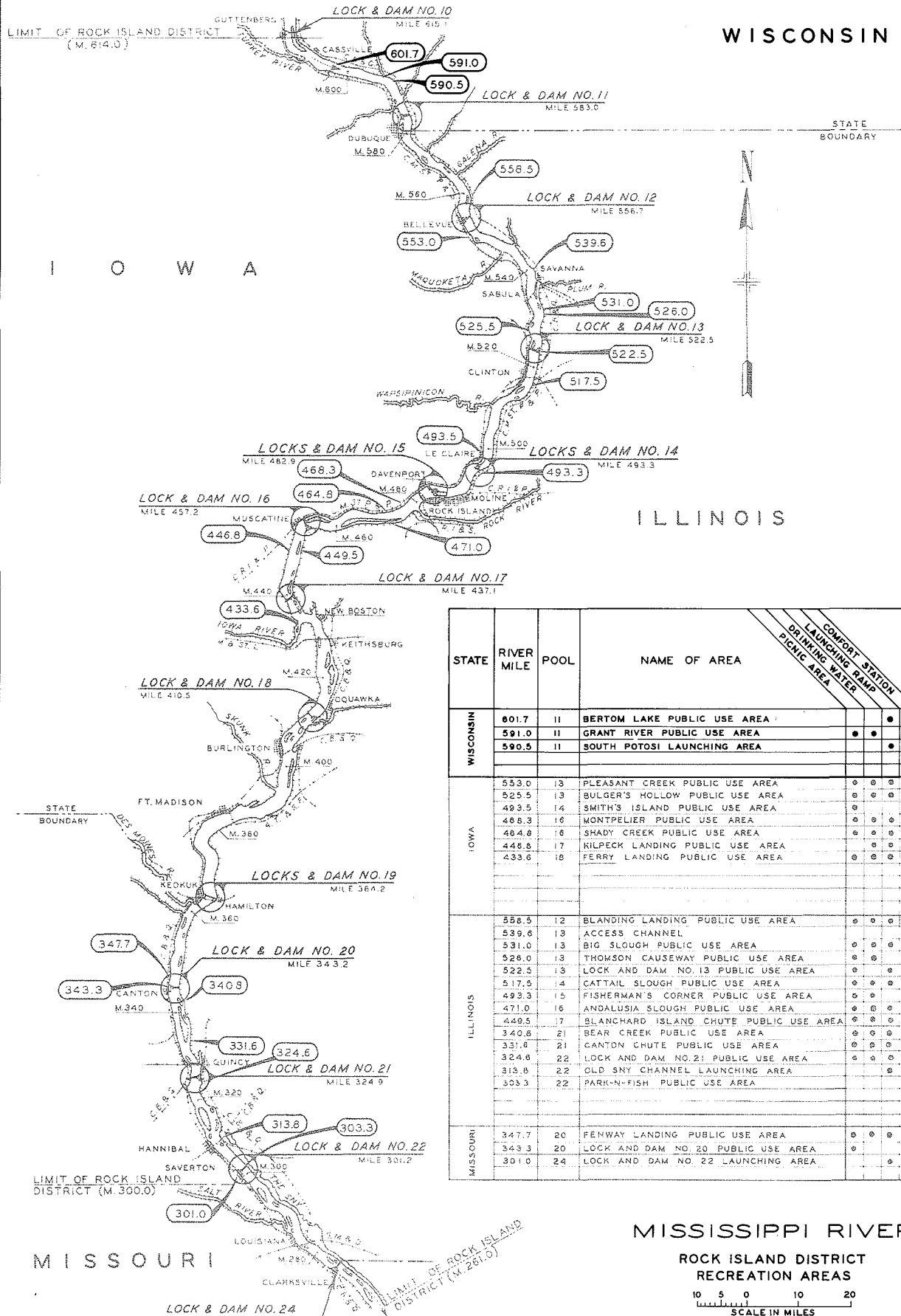
a. Of the 26 recreation areas presently established and maintained within the District limits, plate IV-2.2, three are located in pool 11 along the Wisconsin shore.

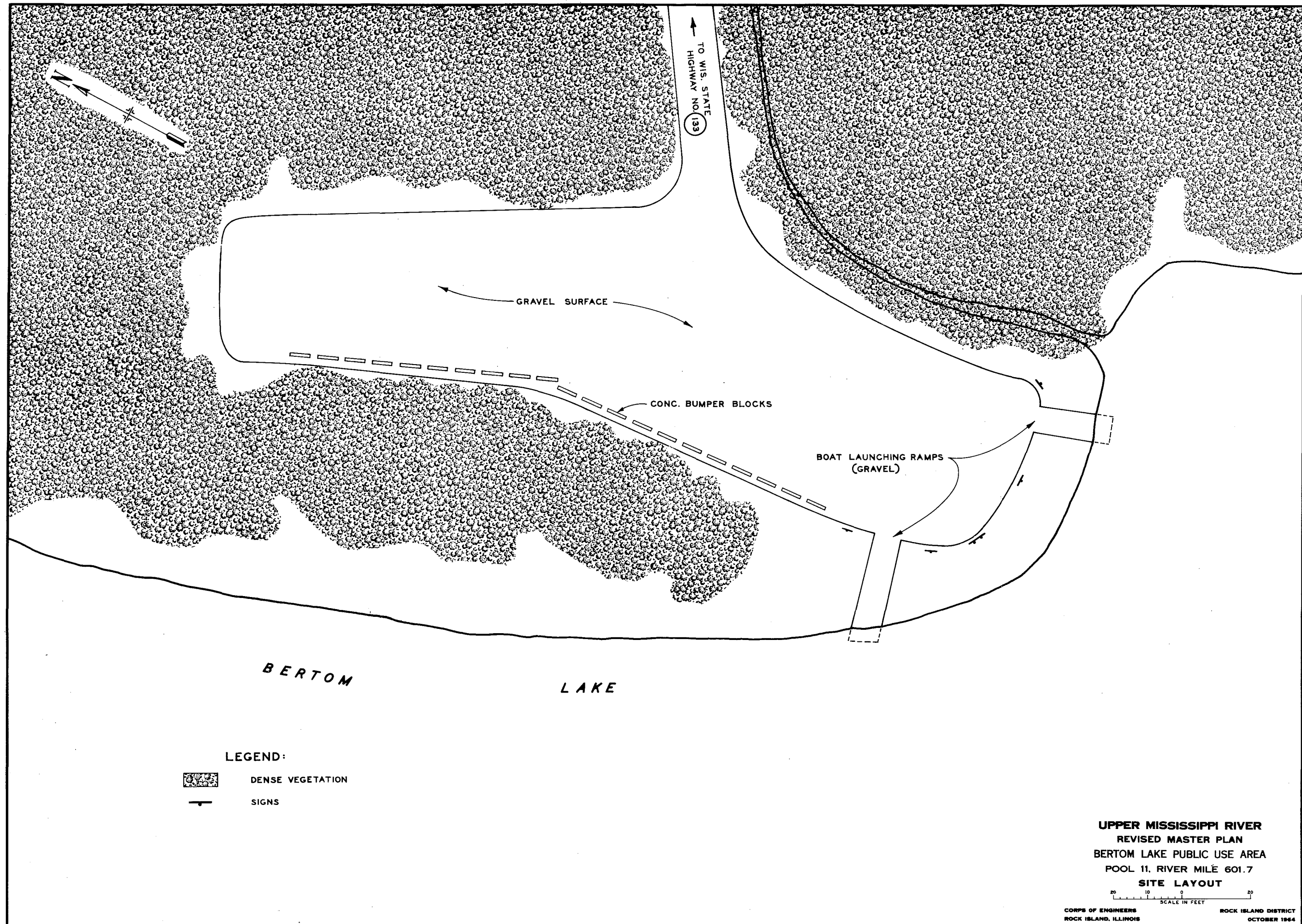
(1) Bertom Lake Public Use Area, plate IV-2.3, uppermost in the District, is located at river mile 601.6 approximately 4 river miles downstream of Cassville, Wisconsin, and some 2 miles west of State Highway 133. The 2-acre area, originally located by the Bureau of Sport Fisheries and Wildlife, is a very popular attraction for fishermen and has considerable local use. However, the land elevation is quite low and the site is unusable with any appreciable rise in water levels above those of the established flat pool. Facilities consist only of a parking area for 22 cars, a maneuvering area, and two graveled boat ramps. A narrow and low-clearance railroad underpass limits site access to passenger cars and small trucks with haul trailers.

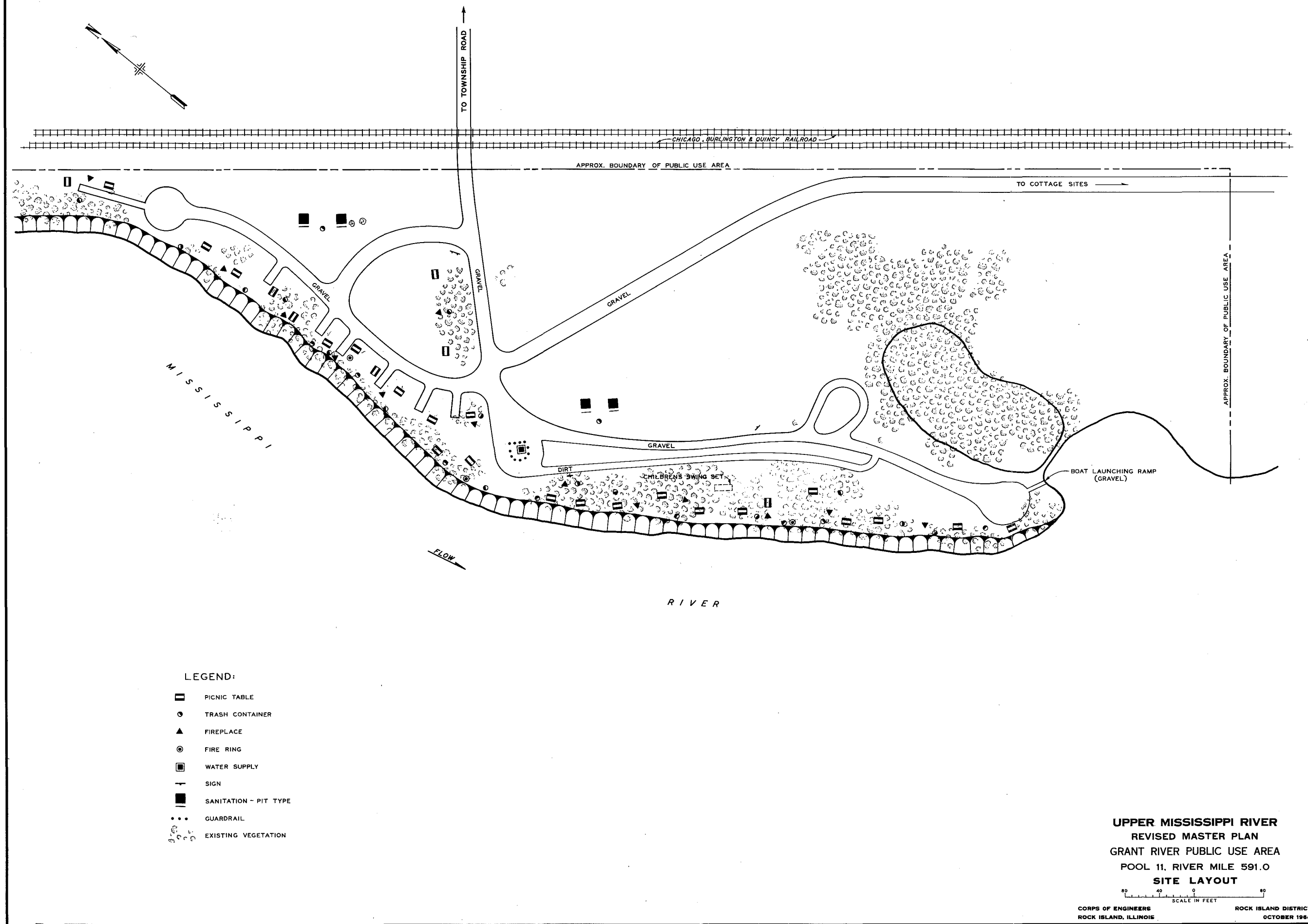
(2) Grant River Public Use Area, plate IV-2.4, a developed 9-acre tract, is located at river mile 590.7, 3 miles downstream of Potosi, Wisconsin. Facilities include 28 picnic tables, 6 camping spurs, 13 fireplaces, 3 fire rings, 25 refuse containers, a well, 4 pit-type



LOCK NO. 11







toilets, and an unimproved launching ramp. The ramp had existed as a launching site for commercial fishermen before public recreational development by the Corps of Engineers, and continues entirely in such use because of shallow water conditions and off-shore navigation hazards. The area is experiencing usage beyond capacity during the summer months and expansion possibilities are presently limited.

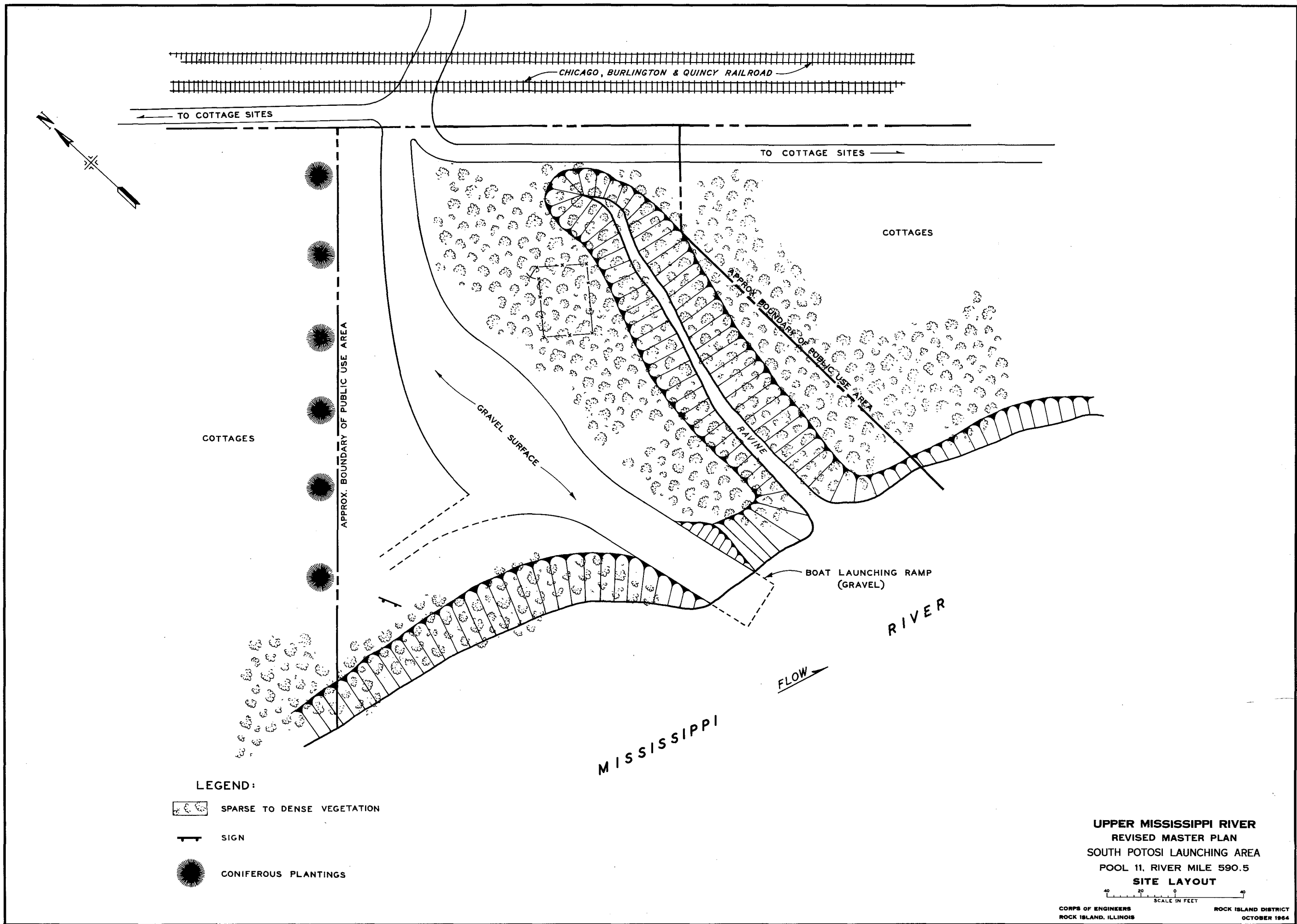
(3) South Potosi Launching Area, plate IV-4.1, a one-acre tract, is located at river mile 590.5, some two-tenths of a mile downstream of the above Grant River installation. No facilities exist other than a launching ramp and space for approximately 10 car-trailer units. The site has little use except for commercial fishermen, because of off-shore navigation hazards and shallow in-shore water conditions. Elimination of the existing cottage site leases between the Grant River and South Potosi areas would permit combining the installations and satisfy the increasing public demand for space and supporting facilities.

b. Other existing recreational sites within the pool limits are: at river mile 613.4, Wisconsin - a commercial boat dock operated by private interests on Government property; at river mile 612.2, Iowa - a commercial boat dock operated by private interests on Government property; at river mile 606.3, Wisconsin - a municipal public use area operated by the city of Cassville on city property; at river mile 605.9, Wisconsin - a commercial boat dock operated by private interests on private land; at river mile 603.6, Iowa - a commercial boat dock operated by private interests on private land; at river mile 599.9, Iowa - a commercial boat dock operated by private interests on private land; at river mile 598.6, Wisconsin - a launching site administered by Grant County on Government property; at river mile 596.5, Wisconsin - a launching site administered by Grant County and the Bureau of Sport Fisheries and Wildlife on Government property; at river mile 589.4, Iowa - a launching site administered by the Dubuque County Conservation Board on Government property; and at river mile 588.5, Wisconsin, approximately 2-1/2 miles upstream of the Mississippi River channel on the Platte River - a launching ramp administered by Grant County on county land.

c. One large park, with a wide range of facilities - the Nelson Dewey Memorial State Park - borders pool waters upstream of Cassville, Wisconsin.

6. Water quality. As indicated previously, the waters of pool 11 are considered of good quality and suitable for contact sports. Guttenberg, Iowa, and Cassville, Wisconsin, present minor potential sources of municipal pollution. It is anticipated that State anti-pollution regulations will alleviate this threat. In the extreme lower end of the pool, immediately upstream from Dubuque, Iowa, an industrial complex is developing. This may pose a future threat to that portion of the pool. A power plant is currently being planned near the mouth of the Turkey River. If this plant is constructed as a nuclear unit, future problems of thermal pollution may arise. Increased use of pesticides, fertilizers and other agricultural activities on adjacent farmland and associated tributaries offer the only other likely source of pollutants at the present time.

7. Climatic conditions. The pool area receives an average of 32 inches of precipitation per year with the growing season extending over a period of 160 days. Prevailing summer winds are from the west-southwest and from the north to northwest during the winter months. Temperatures average 70° during the summer and 20° in winter months with a mean annual temperature of 48°. Navigation, under usual conditions, is halted by ice formation in late November or the first part of December and generally resumes by late March. Ice-control methods are presently being studied towards providing a 12-month navigation season.



SECTION V

CURRENT AND ANTICIPATED RECREATIONAL USE

In terms of public recreational attendance, the pool 11 area ranks in third place among the 12 Mississippi River navigation pools within the Rock Island District of the Corps of Engineers. Visitations for 1968 were in excess of 562,000 and ranged from a low of 13,150 in February to a high of 115,357 in July. The excellent hunting opportunities and popularity of ice fishing, for which the pool is noted, are responsible for the high winter incidence.

Plate V-2.1 is a graphic presentation of the anticipated population increase and corresponding projected recreational demand within the primary zone of influence -- an area two counties in width (approximately 50 miles) extending inland on each side of the pool. The per capita use ratio, calculated on the projected 1970 population and visitations reported in the past, is expected to hold relatively constant for the immediate future. The ratio increase, following 1980, is based on an assumption of improved and additional access to pool waters.

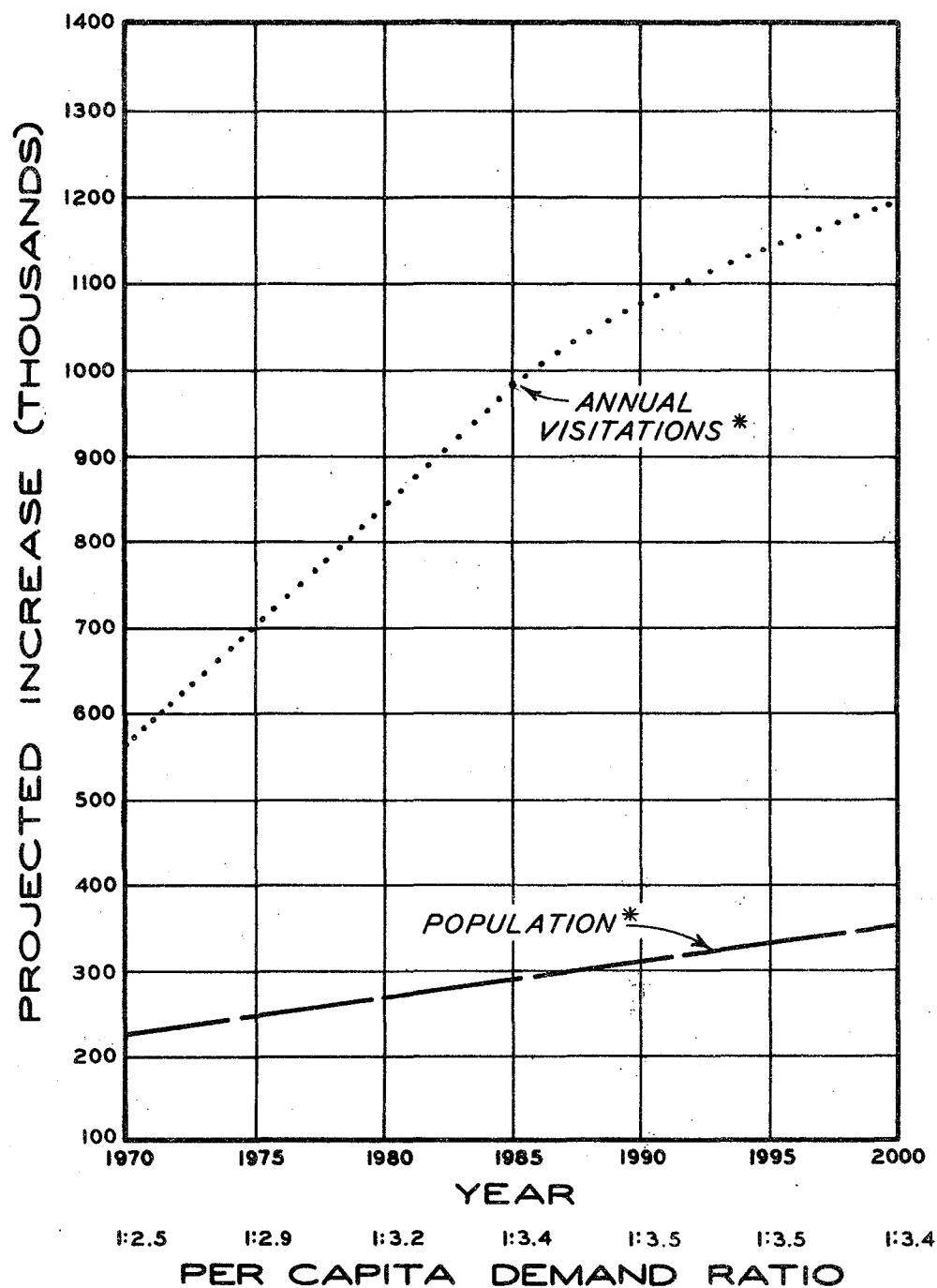
Plate V-2.2 enumerates recreational facilities developed and maintained by the Corps of Engineers and the Bureau of Sport Fisheries and Wildlife as Federal agencies, and those developed and maintained by States, Counties, municipalities, or private individuals as non-Federal agencies. Non-Federal installations are limited to those immediately adjacent to the river and may or may not be located on lands leased from the Federal Government.

Recommended Federal facilities are detailed and explained in section VI of this Master Plan and are considered necessary to keep pace with the expanding public demand for recreation facilities. New installations, however, are subject to the provisions of the Federal Water Project Recreation Act of 9 July 1965 (Public Law 89-72).

Proposed non-Federal facilities are those known to be scheduled for installation in the immediate future by State or County entities.

Total requirements for anticipated demand are based on the expected increase in population and public recreational participation. Projected facility developments, to serve

demand, are calculated from criteria established in ER 1130-2-312. On this basis it is apparent that future requirements, beyond calendar year 1980, will not be satisfied by development of all facilities currently proposed and recommended.



* PRIMARY ZONE - AREA TWO COUNTIES
IN WIDTH (APPROX. 50 MILES) EXTENDING
INLAND ON EACH SIDE OF POOL.

POOL II
MISSISSIPPI RIVER
PROJECTED
POPULATION & VISITATIONS

POOL II
1969 EXISTING AND PROPOSED FACILITY DATA

	EXISTING FEDERAL FACILITIES	EXISTING NON-FEDERAL FACILITIES	TOTAL EXISTING FACILITIES	* RECOMMENDED FEDERAL FACILITIES	** PROPOSED NON-FEDERAL FACILITIES	TOTAL PROJECTED FACILITIES	† TOTAL REQUIREMENTS FOR ANTICIPATED DEMAND			
							1970	1980	1990	2000
<u>DAY-USE</u>										
PARKING (UNITS)	0	25	25	112	46	158	141	207	266	299
PICNIC TABLES	22	27	49	89	46	135	141	207	266	299
FIREPLACES	11	12	23	44	28	72	70	103	133	149
POTABLE WATER	1	1	2	3	1	4	5	7	9	10
SHELTERS	0	1	1	3	1	4	41	61	78	88
<u>BOAT LAUNCHING</u>										
PARKING (UNITS)	32	70	102	50	15	65	140	210	270	300
RAMPS	4	9	13	3	1	4	14	21	27	30
CONCESSIONS, FUEL, ETC.	0	4	4	0	2	2	—	—	—	—
<u>SANITATION</u>										
PIT TOILETS	4	8	12	10	2	12	6	10	12	14
FLUSH TOILETS	0	0	0	0	0	0	NONE PROPOSED UNDETERMINED			
TRAILER STATIONS	0	0	0	0	0	0				
<u>CAMPING</u>										
PARKING SPURS (GRAVEL)	6	0	6	20	0	20	75	110	142	159
PICNIC TABLES	6	0	6	20	0	20	75	110	142	159
FIREPLACES	3	0	3	20	0	20	75	110	142	159

* SUBJECT TO PL 89-72. REFERENCE: PAGE VI-3

** SCHEDULED FOR COMPLETION IN 1971

† BASED ON ER 1130-2-312 CRITERIA:

- 1 PICNIC TABLE PER 4000 ANNUAL VISITORS
- 1 PARKING SPACE PER TABLE
- 1 FIREPLACE PER 2 DAY-USE PICNIC TABLES
- 1 FIREPLACE PER CAMP SPUR
- 1 SHELTER PER 225 WEEK-END DAY VISITORS
- 1 LAUNCHING RAMP PER 40,000 ANNUAL VISITORS
- 10 CAR-TRAILER PARKING SPACES PER RAMP
- 2 PIT TOILETS PER 3000 WEEK-END DAY VISITORS
- 1 CAMP SPUR PER 7500 ANNUAL VISITORS

NOTES:

- Primitive camping is permitted on Federal lands - islands, shores, and sandbars.
- No supervised river swimming areas are in operation.
- Road access to river exists at 27 locations within the 104 miles of mainland shoreline.

SECTION VI

POOL RESOURCE MANAGEMENT

1. General. In keeping with the stated purpose of a Master Plan, the various physical features of the pool, as well as plans for utilization and development of the scenic, biological, and recreational potential, require examination and analysis in depth. Orderly and controlled resource protection and development is the purpose of a management program.

2. Land use zoning. Section VI, chapter I, describes and outlines zoning classifications established to meet the criteria of a Master Plan development. Government ownership of shore lands is not extensive within the limits of pool 11; however, all islands (except for 118 acres) are owned in fee by the Federal Government and administered by either the Corps of Engineers or the Department of the Interior, Bureau of Sport Fisheries and Wildlife. Of Government-owned property, both shore lands and islands, 5,327 acres, or 75 percent has been zoned as recreational-undeveloped; 1,060 acres, or 15 percent as recreational-developed; 142 acres, or 2 percent as recreational-commercial; 355 acres, or 5 percent for existing private use; 73 acres, or 1 percent for special use; 73 acres, or 1 percent for houseboat mooring sites; and 72 acres, or 1 percent for industrial use. No quasi-private use leases have been granted within the pool limits. Of the total 7,103 acres of Government-owned lands, 4,850 acres, or 68 percent is administered by the Corps of Engineers and 2,253 acres, or 32 percent, by the Bureau of Sport Fisheries and Wildlife. Under Bureau administration, 767 acres, or 34 percent is classified as wildlife sanctuary.

3. Water zoning. Except for houseboat mooring sites, which are partially a land feature, detailed water zoning is not considered in the Master Plan. Of the total 19,612 acres of water surface at flat pool, some 2,941 acres are channel waters of a minimum 9-foot depth and suitable for craft of considerable draft such as towboats and barges. Also, 1,685 acres, or 9 percent, are included as wildlife sanctuaries administered by the Bureau of Sport Fisheries and Wildlife. Submerged wing dams and stump fields, as located on the Navigation Charts, will not generally

*Should make ref. to
land use zoning in pool map book?*

present small boat navigation hazards in the lower parts of the pool, but may in the upper reaches. No practical purpose would be served by attempting to indicate water depths in the questionable upper areas since shifting sandbars and changing currents could render such information obsolete in a short time. Explicit and definite water zoning will become a necessity, at least in certain areas, as population and water recreational use increases.

4. Timber management. *Reverse order of indemnity?* Subsection 3, Forest resource, of Section VIII, chapter I, describes and details forestry assets on Government-owned lands within the District. Each base map of the Master Plan features a transparent overlay depicting forest cover, management objectives, species association, and associated information. Management objectives for the pool resource are planned for: 2,487 acres, or 35 percent as recreational-developed; 710 acres, or 10 percent as recreational-undeveloped; 2,273 acres, or 32 percent for wildlife-waterfowl; 852 acres, or 12 percent for wildlife-upland game; 142 acres, or 2 percent for timber-sawlogs; and 639 acres, or 9 percent for timber-pulpwood. No timber-special products groups are a part of the present pool resource.

5. Wildlife management. Administration of certain lands, within the limits of the established pool, was vested in the Department of the Interior, Bureau of Sport Fisheries and Wildlife, prior to the construction of the 9-foot channel project and presently remains under such jurisdiction. In addition, other tracts acquired in fee by the Federal Government and administered by the Corps of Engineers, have subsequently been outgranted to the Bureau for fish and wildlife management. The Bureau, in turn, has outgranted certain of these lands to the bordering States for wildlife management purposes. In either situation the Corps of Engineers retains basic administration, the right of road use, and the harvesting and sale of merchantable timber.

6. Shoreline ownership. Of the 312 miles of shoreline, contained within the pool limits at the authorized water elevation, 275 miles are owned by the Federal Government and 37 miles by States, Counties, municipalities, or private individuals. Federal lands include 67 miles of mainland and 208 miles of island shoreline with 170 miles administered by the Corps of Engineers and 105 miles by the Bureau of Sport Fisheries and Wildlife.

7. Additional recreational developments.

a. Corps of Engineers. Three new sites are recommended for development within the limits of pool 11. All are considered essential to keep pace with the constantly increasing demand for outdoor recreational facilities. (Reference: plate V-2.2.)

Development of new sites, however, is subject to the provisions contained in the Federal Water Project Recreation Act of 9 July 1965 (PL 89-72) implemented by Category A, paragraph 3 of OCE multiple letter ENG CW-Y of 5 August 1965.

While the need for additional recreational areas is well recognized, responsible non-Federal entities have shown no interest in the options available under the provisions and regulations of PL 89-72.

(1) Muddy Creek Launching Area, river mile 610.7, plate VI-4.1, would include a concrete launching ramp, graveled maneuvering area, graveled parking spaces for 20 car-trailer units, and 0.4 mile of graveled access road from the limits of Government-owned property to the river. Costs for the development, as outlined, are estimated at \$31,000.

(2) Furnace Branch Public Use Area, river mile 607.3, place VI-4.2, would be located immediately upstream of Cassville, Wisconsin, and is designed to serve as both a boat-launching site and a day-use area. Camping is not considered; however, experience has shown that a limited number of campers would use the area even though specific facilities are not provided. A concrete boat-launching ramp would be constructed, a graveled maneuvering area, and graveled parking for 15 car-trailer units. A loading-unloading dock would also be considered in conjunction with the ramp. The several day-use areas are designed to provide parking for 45 cars, 35 picnic tables, 17 fireplaces, 25 trash containers, a shelter, a well, and two pit-type toilets. Circulation road requirements total 0.4 mile of gravel construction. Cost of the facility, as planned, is estimated at \$70,000.

(3) Sinnippee Public Use Area, river mile 583.3, plate VI-4.3, is to be located immediately upstream of the Highway 61-151 bridge on the Wisconsin shore, and would be especially advantageous to persons residing in or near Dubuque, Iowa, as well as Wisconsin residents. Development of the site would relieve some of the pressure being experienced by the Grant River installation, some 7 river miles upstream, which attracts many recreationists from the Dubuque area. Full facilities would be available - boat-launching, camping, and day-use accommodations. The launching site is planned for a concrete ramp, a loading-unloading dock, a graveled maneuvering area, and graveled parking spaces for 15 car-trailer units. An adjacent picnic area is to contain 10 picnic tables, 5 fireplaces, 7 trash containers, a shelter, 2 pit-type toilets, and graveled parking spaces for 12 cars. Camping facilities would consist of 20 graveled spurs, each with a picnic table and fire ring, 13 trash containers, 4 pit-type toilets, and a water supply. The day-use area of the complex, located on the downstream side of Sunfish Creek, would offer a shelter, a water supply, 44 picnic tables, 22 fireplaces, 26 trash containers, 5 graveled parking areas accommodating 55 cars, and 2 pit-type toilets. A bridge across Sunfish Creek is required along with 1.3 miles of circulation roadway. Total cost for site development is estimated at \$129,000.

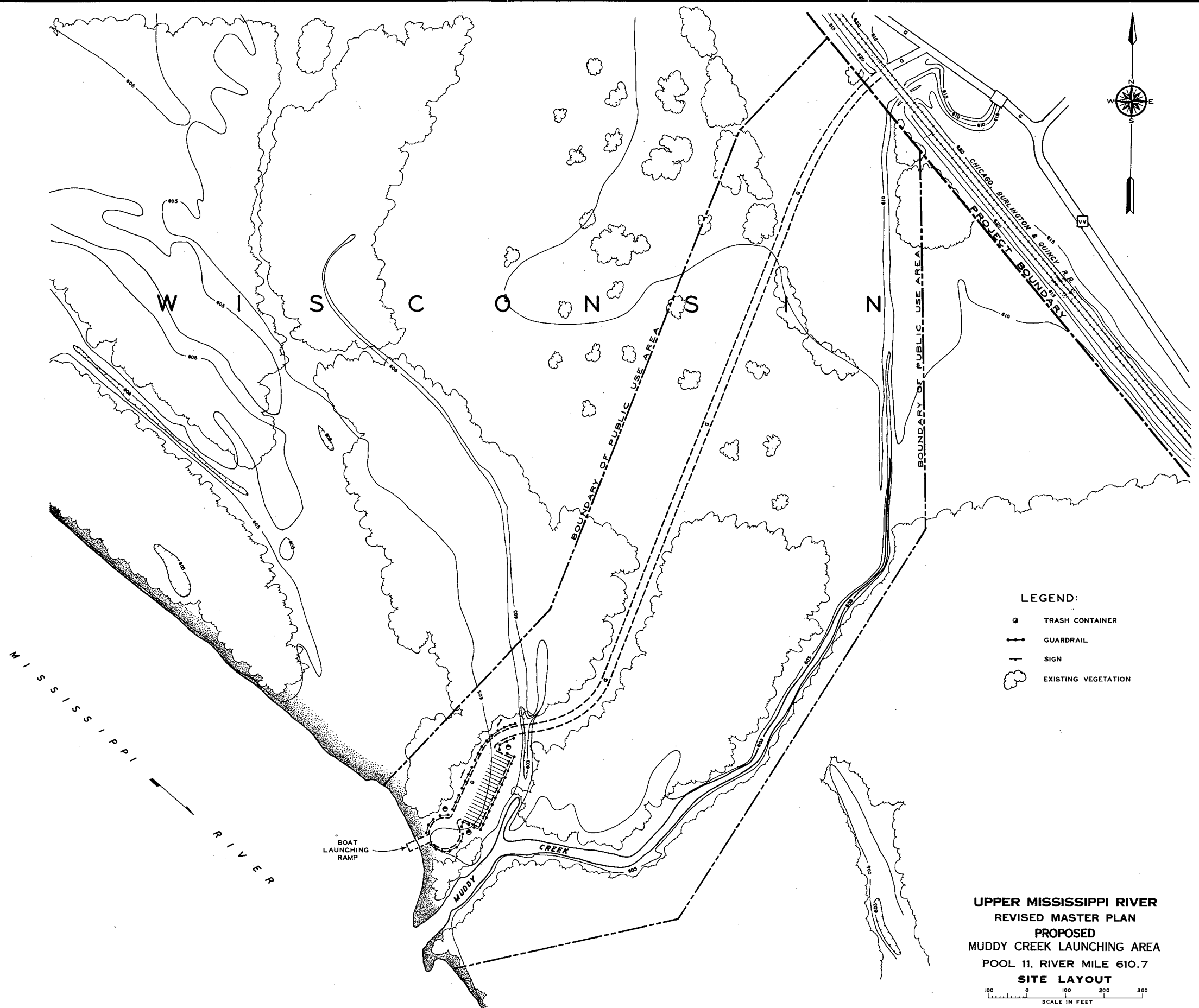
b. Bureau of Sport Fisheries and Wildlife.

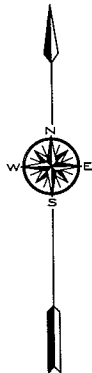
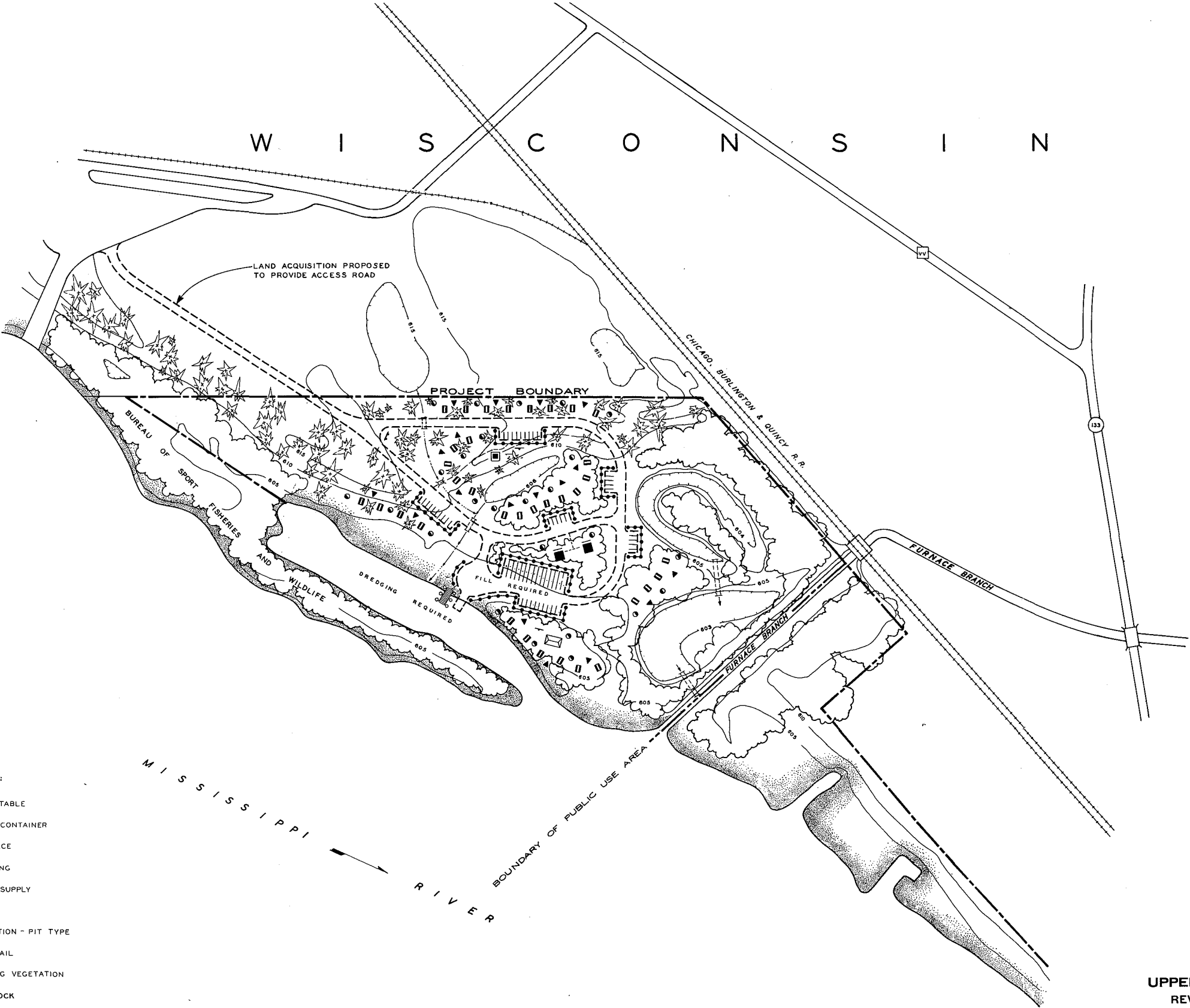
The Bureau has preliminary plans for facility development at the Muddy Creek site, 5 miles north of Cassville, Wisconsin, on the Wisconsin mainland, at an estimated cost of \$4,500. The site, and adjacent areas, have been out-granted to the Bureau for fish and wildlife management under the General Plan and Cooperative Agreement. The Corps of Engineers also has tentative plans for a development at this site as previously outlined.

c. States.

(1) Iowa. The State Conservation Commission has no present plans for new recreational developments within the pool limits and on lands administered by the Corps of Engineers.

(2) Wisconsin. The State Department of Natural Resources has no immediate plans to request use of Corps of Engineers lands for the development of recreational facilities.



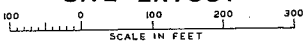


LEGEND:

- PICNIC TABLE
- TRASH CONTAINER
- FIREPLACE
- FIRE RING
- WATER SUPPLY
- SIGN
- SANITATION - PIT TYPE
- GUARDRAIL
- EXISTING VEGETATION
- BOAT DOCK
- PICNIC SHELTER

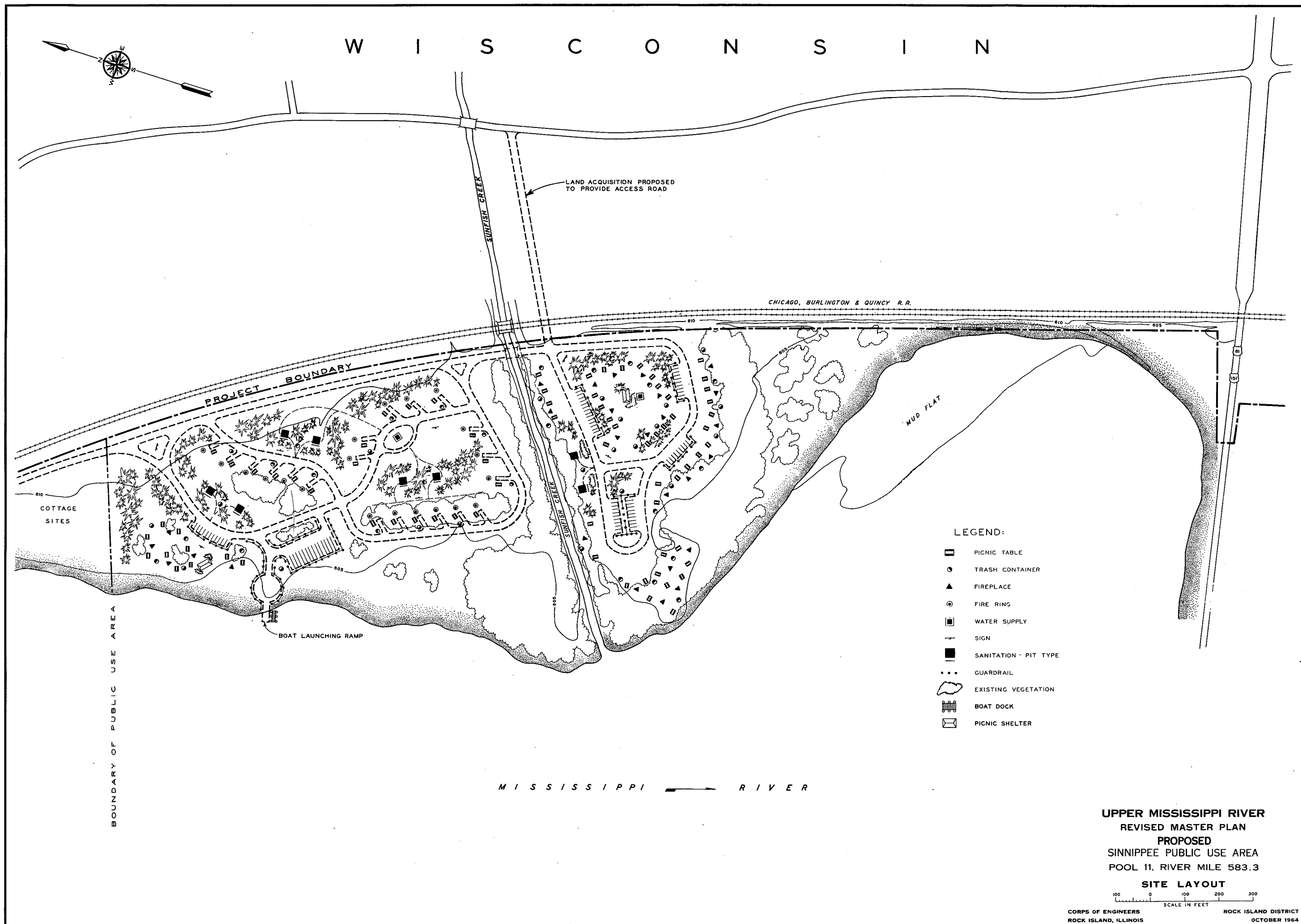
UPPER MISSISSIPPI RIVER
REVISED MASTER PLAN
PROPOSED
FURNACE BRANCH PUBLIC USE AREA
POOL 11, RIVER MILE 607.3

SITE LAYOUT



CORPS OF ENGINEERS
ROCK ISLAND, ILLINOIS

ROCK ISLAND DISTRICT
OCTOBER 1964



d. Counties.

(1) Grant (Wisconsin).

The Grant County Office of Comprehensive Planning has expressed definite interest in leasing Government-owned lands within the lower county limits for recreational purposes. However, long-range plans have not progressed to the point where definite requests can be made.

(2) Clayton (Iowa).

While the major portion of Clayton County along the Mississippi River lies within the jurisdiction of the St. Paul District, 14 miles are within the downstream limits of the Rock Island District and contain extensive areas of Government-owned lands. The Clayton County Conservation Board, however, has no immediate plans to request outgrants or leases for recreational developments.

(3) Dubuque (Iowa).

The Dubuque County Conservation Board has acquired land adjacent to Government property at Finley's Landing, river mile 596.0. A lease of Federal land is expected to be sought for use with county property for an over-all development of a marina and harbor, concession building, picnic and camp grounds, roads, parking areas, and hiking trails. Facility development is planned for three stages of construction at an estimated total cost of \$129,000 with completion programmed for 1972.

Expansion of the Mud Lake Recreational Area, river mile 589.4, presently operated by the County Conservation Board, is being considered. An additional lease of Federal lands has been requested by the Board for the development of a marina. Other improvements will consist of harbor dredging, roads, service buildings, docks, gas pumps, etc. Such additional facilities, as planned, are estimated to cost \$38,000.

*Site plan of
expanding fed.
land devel.?*

e. Local.

(1) City of Cassville, Wisconsin.

Plate VI-6.1 locates the small-boat harbor at Cassville which was authorized by the River and Harbor Act of 1962. Planning and construction is presently

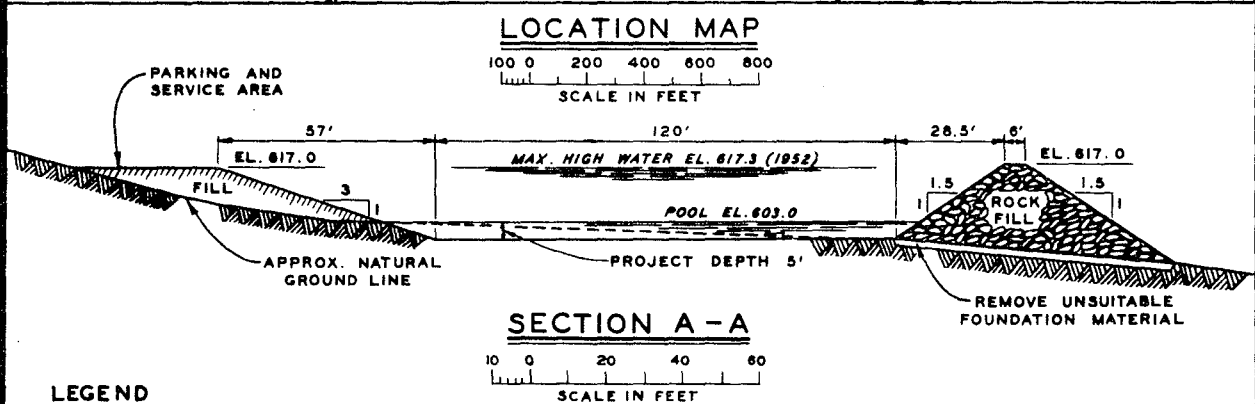
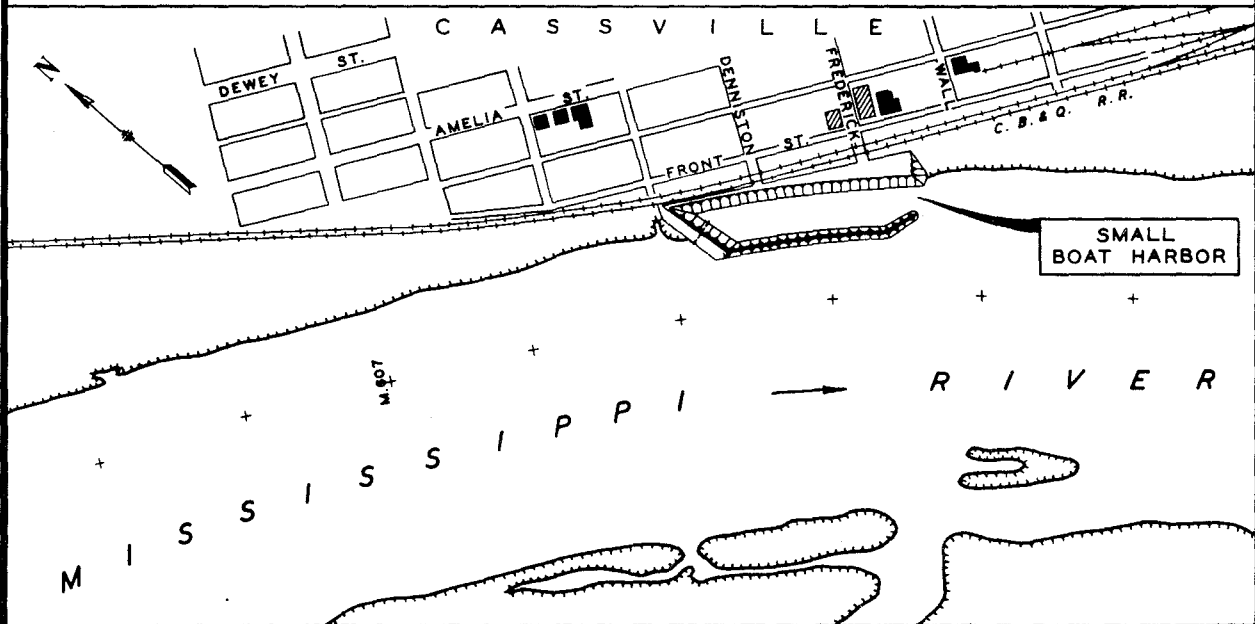
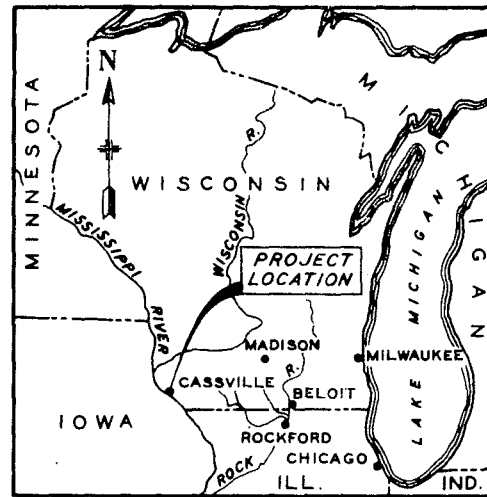
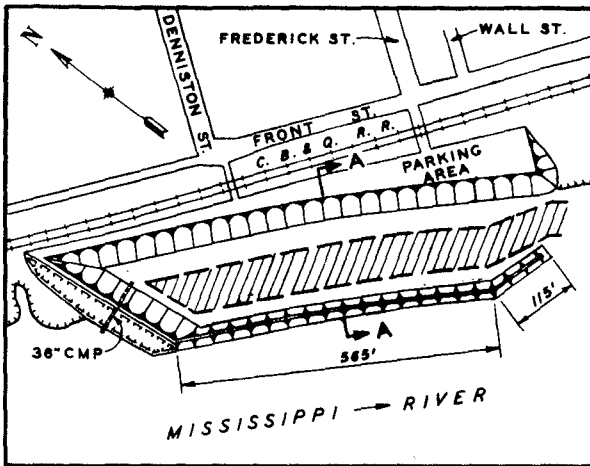
deferred because of lack of local support. The City has, however, expressed interest in relocating the facility in a natural cove which is part of the proposed Furnace Branch Public Use Area previously outlined. No other Federal lands exist in or adjacent to the city.

Should it have site plan? → (2) Village of Potosi, Wisconsin.

A launching ramp on Government land is presently maintained by the village of Potosi and two Corps of Engineers public use areas exist nearby. The remaining adjacent Federal land has but limited value for recreational development although future dredge disposal could enhance such suitability.

(3) City of Dubuque, Iowa.

No riverfront lands are owned by the Federal Government within the limits of the city nor immediately adjacent thereto, except for the area associated with the lock and dam structure.



LEGEND

DREDGING

MILEAGE ORIGINATES AT MOUTH OF OHIO RIVER

ELEVATIONS BASED ON MEAN SEA LEVEL DATUM (1912 ADJUSTMENT)

MISSISSIPPI RIVER RIVER AND HARBOR PROJECT CASSVILLE, WISCONSIN

SMALL BOAT HARBOR

SCALES AS SHOWN

ROCK ISLAND DISTRICT

30 JUNE 1963

SECTION VII

OPERATION AND MAINTENANCE

1. Manager-Ranger. The need for and suggested duties of a Manager-Ranger are outlined and explained in chapter I, Section IX, Project Administration, paragraph 2. The scope of pool 11, as regards Government-owned lands, recreation facilities, timber stands, etc., is considered to be of an extent to justify employment of personnel for this specialized position.

2. Recreation facilities maintenance. Responsibility for construction within present site limits, and maintenance of such areas, is vested in the Operations Division of the District Office which supports a field crew of 6 persons to accomplish the required work. The supervisor of the group also acts as contracting officer with private individuals who accept seasonal appointments for trash and garbage removal, grass cutting, etc. Work on the 26 Mississippi River public recreation areas within the Rock Island District continues throughout the year with occasional additional and temporary personnel employed as needed.

SECTION VIII

SUMMARY AND RECOMMENDATIONS

1. General summary. The undeveloped potential of pool 11 is largely in the category of recreational pursuits since terrain, climatic conditions, lack of urban concentrations, etc., probably preclude extensive industrial complexes. Beyond this, the unusual scenic values and the vast recreational opportunities should be preserved for the demands of an expanding population with increasing leisure time. Visitation figures attest to the popularity of the area in spite of the rather limited facilities presently existing.

2. Recommendations.

a. Serious consideration should be given to the establishment of the Manager-Ranger concept as outlined in chapter I, (Section IX), Project Administration, paragraph 2. Considerable time and effort by personnel of the District Office would be eliminated, better liaison would result with other Federal and non-Federal agencies, unauthorized use of Government land as well as vandalism would be minimized, and closer public relations established.

b. Authority for the three suggested new public use areas (Section VI, Pool Resource Management, paragraph 7) is strongly recommended to keep pace with the constantly growing recreational demand, and to relieve the overcrowding of the Grant River area, the only major installation within the pool limits. The Sinnippee site should, perhaps, have a construction priority since the locale would immediately serve an area of population concentration as well as transients enroute on nearby Federal Highway 61-151.

c. Off-channel dredging is required at all three existing public use areas - Bertom Lake, Grant River, and South Potosi. The latter two sites are especially hazardous to pleasure boating because of submerged stumps, boulders, and shallow water in the inshore areas and are presently used mainly by commercial fishermen. Siltation is the main factor at Bertom Lake, but has also had adverse effect at the other two locations.

d. Approval is recommended for the zoning established on Federal lands as shown on the transparent overlays accompanying the base charts of the Master Plan for pool 11. By order of the Chief of Engineers, private-use areas shall cease to exist after 30 November 1988 and such sites will then be reclassified as to priority and use. However, the concept of a Master Plan allows for flexibility and is subject to continual review and revision. Other areas, therefore, may be reclassified as demand and circumstances dictate prior to the blanket elimination of private-use sites. Certain of the private-use areas may also be eliminated, prior to the date indicated, should a higher priority of use become apparent.

e. Additional landscaping is required at the Grant River Public Use Area only, and will be accomplished over a period of time as opportunity and funds permit. Although Dutch Elm disease has taken a considerable toll of the American elm throughout the timber stand of the pool, no program of removal of affected trees is contemplated since costs would be prohibitive. Plantings, for purposes of forestation of open areas, is not an item of present consideration. Timber management objectives, as indicated on the overlay, should be pursued fully through the implementation of sound silvicultural practices.

3. Suggested future recreation facilities.

a. Float-marked canoe trails through the island sloughs bordering Cassville Slough with interconnecting cuts and some dredging likely to be required. Access would be from the proposed Muddy Creek Launching Area. The backwater sloughs to be reached from the Bertom Lake Launching Area would also be excellent for this form of recreation.

b. Establishment of vantage points for sightseers, artists, and camera enthusiasts of especially scenic river views. Specific points would need to be established.

c. Establishment of similar vantage points for the appreciation and photography of the spectacular fall coloring for which the Upper Mississippi Valley is noted. Specific locations would need to be established from seasonal surveys.

d. Excellent areas exist in the upper reaches of the pool for the establishment of nature and hiking trails. Outstanding vegetative specimens could be identified as an educational feature. Riding trails, also, are a possibility with private enterprise establishing stables either on or adjacent to Government property.

e. Many existing wing dams, in the upper reaches of the pool, lie just below the water surface at the flat pool elevation. Selected structures, with road access, could be raised for shore fishing accommodations. However, such construction would necessarily be subject to study and recommendation by District Hydraulic Specialists concerned with possible long-range navigation problems.

f. A parapet rock wall should be placed along the river bank at the Grant River Public Use Area as a safety measure. Permanent and anchored benches might be located along the wall and steps to the water should be provided at various locations.

g. The Grant River installation, because of usage, should have hard surfaced roads, water borne sanitation, drinking fountains, lights, and a trailer sanitation station. Hard surfacing under picnic tables would be desirable as well as fiberglass roofs over unshaded units.

h. A phone booth would be desirable at Grant River, with posted information on police, medical aid, hospital, or other emergency items. An adjacent and sealed bulletin-board type of display might feature identified samples of the flora and fauna of the area, vandalism warning, littering appeal, hunting and fishing laws, etc.


i. Both the Grant River and Bertom Lake areas might supply postage-free cards for the public to request recreation brochures, available at the District Office, and for comments and suggestions.

j. The sport of swimming is followed at Grant River, although access to the water is presently difficult. The sand beach area, although narrow, is sufficient for change houses and would need to be cleared. The existing dumped rock shore protection requires better placement.

SECTION IX
REVIEW OF PLAN


1. Real Estate Division.

Pursuant to paragraph 5b of ER 405-2-835, the Master Plan was submitted for review and the Real Estate Division concurs that the material was prepared in accordance with sound real estate acquisition, management and utilization practices.


C. E. KELLEY, Attorney
Chief, Real Estate Division

2. Operations Division.

Sections of this Master Plan, which have a direct or indirect bearing upon the operation and maintenance of the Mississippi River, have been coordinated with the Operations Division.


ROBERT E. CLEVENSTINE
Chief, Operations Division