

SECTION III - REVIEW OF WATER PROBLEMS

8. DEMANDS ON WATER RESOURCES

a. General. The demands on water resources, as related to the present and future economy of the basin area, were reviewed. The short- and long-term needs in the basin include flood control; recreation; domestic, municipal, and industrial water supply; water quality control; and fish and wildlife conservation.

b. Flooding. Major Meramec River floods have occurred on the average of about once every 6 years. However, portions of the bottomlands have experienced flooding almost annually. Approximately 129,400 acres of land are subject to flooding. The towns of Fenton, Times Beach, Valley Park, Pacific, Glencoe, and Cedar Hill have experienced flooding in the past. Recurrence of the 1915 record flood under present-day conditions would cause approximately \$8,000,000 in damages. Current average annual flood damages are estimated at about \$2,000,000.

c. Recreation. The Meramec Basin, with its large springs, clear streams, numerous caves, and pleasant wooded slopes, is particularly attractive for recreation. The only water-based recreation facilities presently available are provided by a few private lakes and minor developments along the streams. Lakes with water-based recreational developments are urgently needed to meet the pressing demands of a growing population for outdoor recreation. Based on projected population growth and economic conditions in the zone of influence of the basin area, it is estimated that by 1970 the demand for recreation will amount to 9,500,000 visitor-days annually. Further projections show that by 2020 demands will exceed 14,000,000 visitor-days annually, and by 2070 demands will reach approximately 22,000,000 visitor-days annually.

d. Water supply. Virtually all water used in the upper basin is obtained from groundwater sources, which are available in sufficient quantity to meet all projected municipal, rural, and industrial needs to the year 2070. In the lower basin, groundwater is supplemented by withdrawals from the Meramec and Missouri Rivers. Water supply demands were furnished by the Public Health Service on a seasonal basis for three time periods- 1970, 2020, and 2070. Based on these data, supplemental water supply requirements were determined. It was found that by utilizing all available sources, the projected requirements in the lower basin can be satisfied until the year 1980, after which other sources will need to be developed. There are shown in TABLE 1 supplemental water supply requirements in the lower basin area for the study period. Derivation of these requirements is contained in ATTACHMENT 2.

TABLE 1
 Supplemental water supply requirements (m.g.d.)
 Lower Meramec Basin

Year	Summer	Spring-fall	Winter
1970	0	0	0
1995	21	17	11
2020	85	68	45
2045	213	170	113
2070	469	375	250

NOTE: Summer season includes months of June, July, August, and September; spring-fall season includes months of March, April, May, October, and November; winter season includes months of December, January, and February.

e. Water quality control. The Public Health Service furnished total water quality flow demands by reaches along the major streams for the summer, spring-fall, and winter seasons on a load center basis for the years 1970, 2020, and 2070. Using total flow demands and projected return flows, a determination was made of the stream flow requirements needed to bring the water quality to an acceptable level. It was found that the natural streams will satisfy essentially all requirements for water quality to about the year 1970. There are shown in TABLE 2 stream flow requirements for the upper and lower basin areas. Derivation of the quality control requirements is contained in ATTACHMENT 2.

f. Fish and wildlife conservation. Estimates of usage of the Meramec Basin as of 1970, under current conditions, show a total need for about 597,000 fisherman-days annually. A much larger need would be generated were it not for a general lack of access to the streams under current conditions. Reservoirs with the attendant improved stream fishery would greatly increase the demands over and above those without improvements. By 2020, demands are estimated at approximately 4,700,000 fisherman-days annually and slightly less than 6,700,000 fisherman-days annually by the year 2070. The U. S. Fish and Wildlife Service indicates that due to lack of hunting opportunity in the basin, with most of the lands currently being posted, the basin will support only about 6,570 hunterman-days annually in 1970. Demands which would be generated by reservoirs and improved stream- associated hunting are estimated at 36,000 hunterman-days annually by 2020, and slightly in excess of 52,000 hunterman-days annually by 2070.

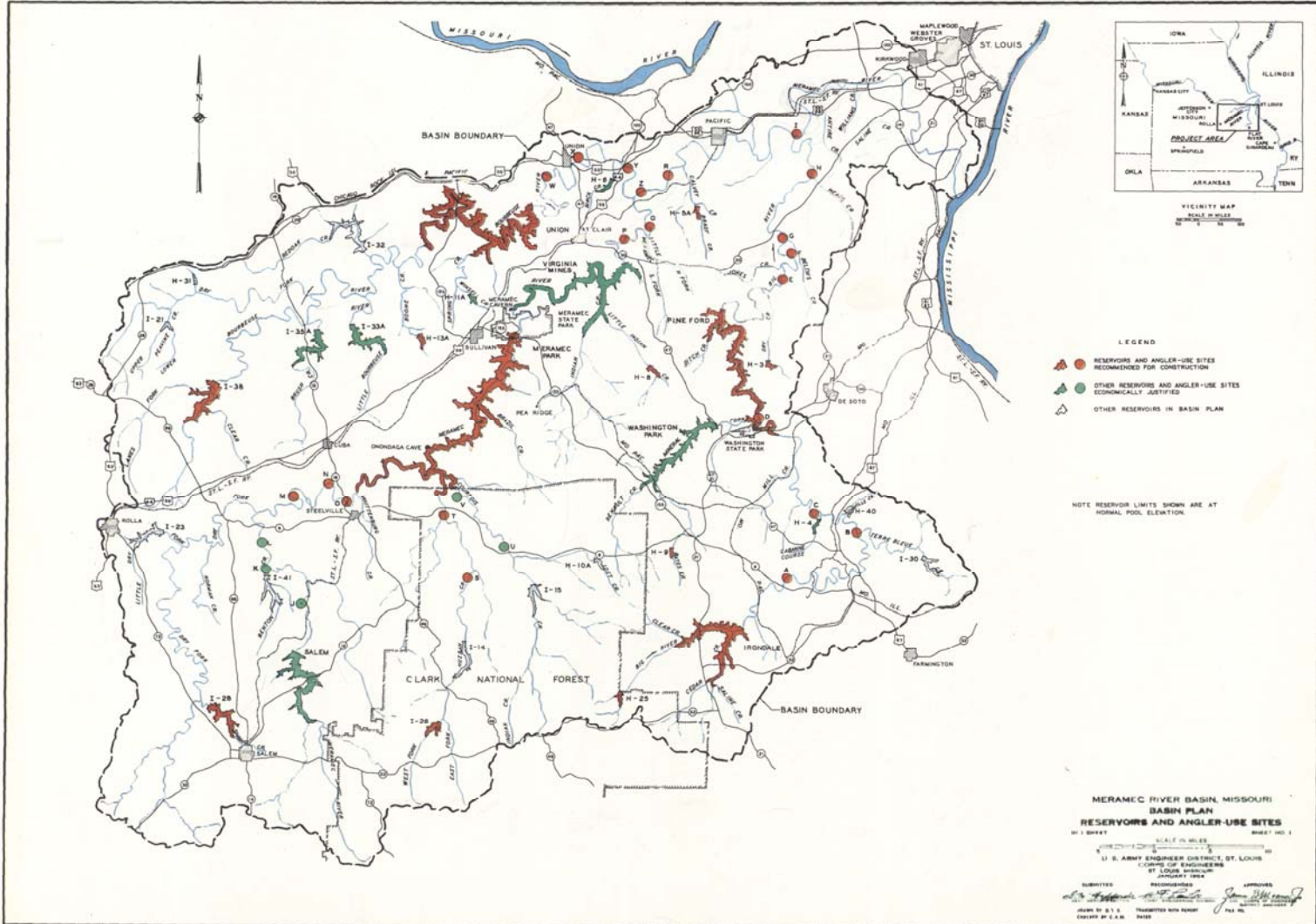
TABLE 2
Stream flow requirement for water quality control
(c.f.s.)

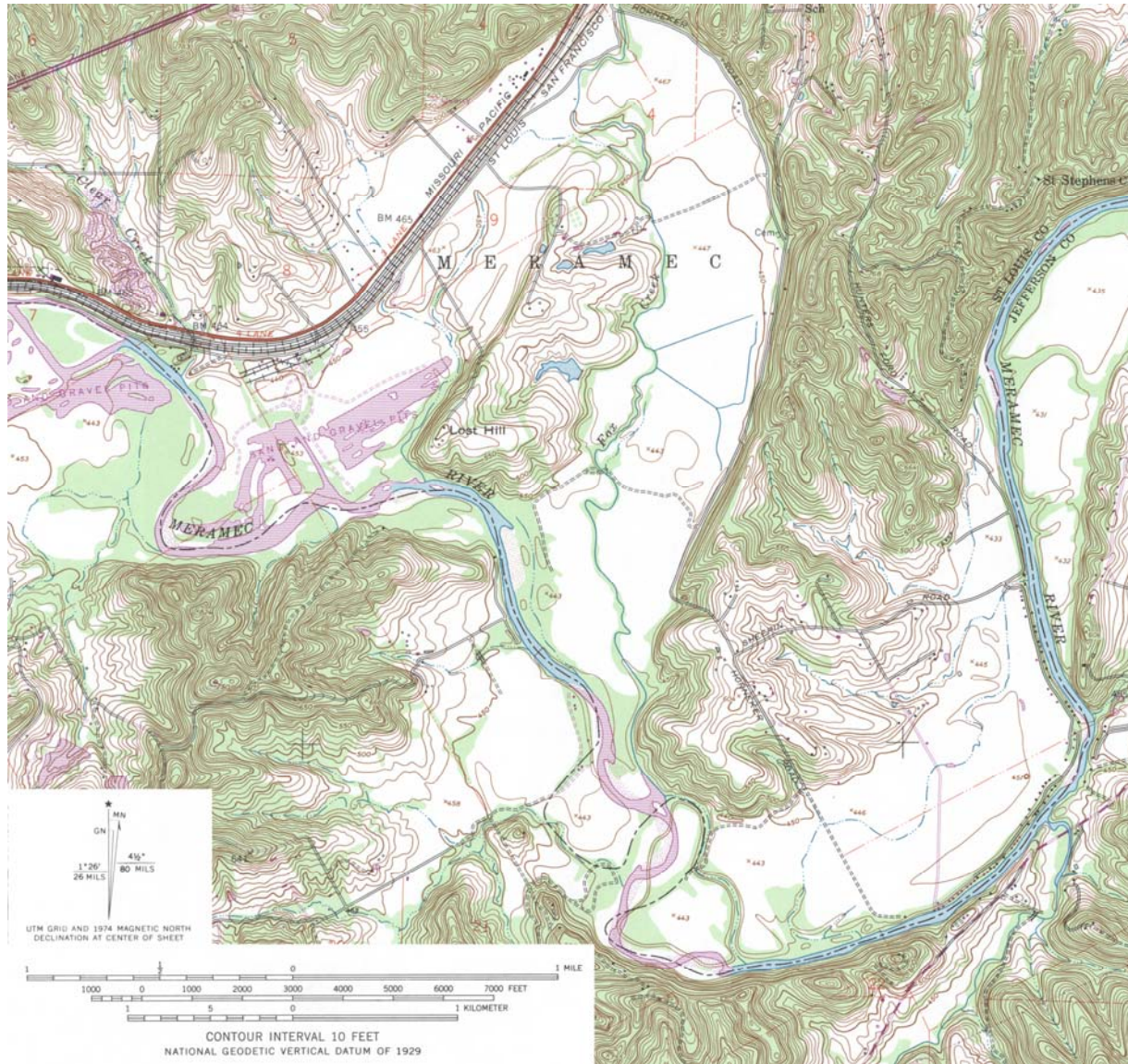
Year	Summer	Spring-fall	Winter
UPPER BASIN AREA			
Big River			
1970	53	13	3
1995	69	13	3
2020	90	14	4
2045	117	18	4
2070	147	28	6
Meramec River			
1970	19	11	5
1995	39	14	5
2020	60	19	5
2045	85	29	6
2070	121	42	8
Bourbeuse River			
1970	14	8	5
1995	32	18	8
2020	62	33	13
2045	110	53	21
2070	173	76	31
LOWER BASIN AREA			
Meramec River			
1970	135	62	8
1995	290	88	8
2020	572	155	8
2045	1,078	274	10
2070	1,881	484	18

TABLE 6

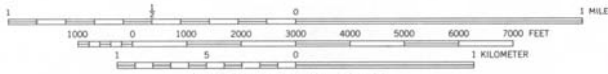
Cost estimates - reservoirs

	#2A Pine Ford	# 9 Irondale	# 17 Meramec Park	#29 Union	I-38
01. Lands and damages	\$ 6,770,000	\$ 1,740,000	\$ 12,530,000	\$ 7,030,000	\$ 820,000
02. Relocations	6,076,000	3,180,000	7,453,000	4,715,000	314,000
03. Reservoirs	335,000	230,000	1,305,000	805,000	100,000
04. Dams	8,324,000	4,770,000	11,781,000	10,081,000	2,893,000
06. Fish and wildlife facilities	11,000	10,000	10,000	11,000	3,000
08. Roads, railroads, and bridges	391,000	370,000	176,000	366,000	354,000
14. Recreational facilities	966,000	400,000	3,409,000	858,000	336,000
19. Building, grounds, and utilities	233,000	220,000	247,000	233,000	208,000
20. Permanent operating equipment	189,000	160,000	209,000	189,000	172,000
30. Engineering and design	1,795,000	1,100,000	2,325,000	1,872,000	735,000
31. Supervision and administration	1,310,000	720,000	2,055,000	1,340,000	435,000
Total cost - reservoirs	\$ 26,400,000	\$ 12,900,000	\$ 41,500,000	\$ 27,500,000	\$ 6,370,000
Grand total (5 reservoirs)	\$114,670,000				





UTM GRID AND 1974 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929