

MASTER PLAN

FOR

PROPOSED



MISTAD

NATIONAL RECREATION AREA

ERRATA

Page 6, 5th paragraph, after line 4, insert:

“road branching off of northbound Federal Highway 57. A”

Page 30, photo caption should read:

“Upstream to Amistad Dam in January 1968, Mexican side on left, U.S. side on right. Devils River entering Rio Grande in right distance.”

Page 49, 4th paragraph, line 2 should read:

“been unable to acquire the full fee title (less oil and gas) to all”

MASTER PLAN

FOR

PROPOSED

H MISTAD

NATIONAL

RECREATION

AREA

TEXAS

U.S. DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

JUNE 1968

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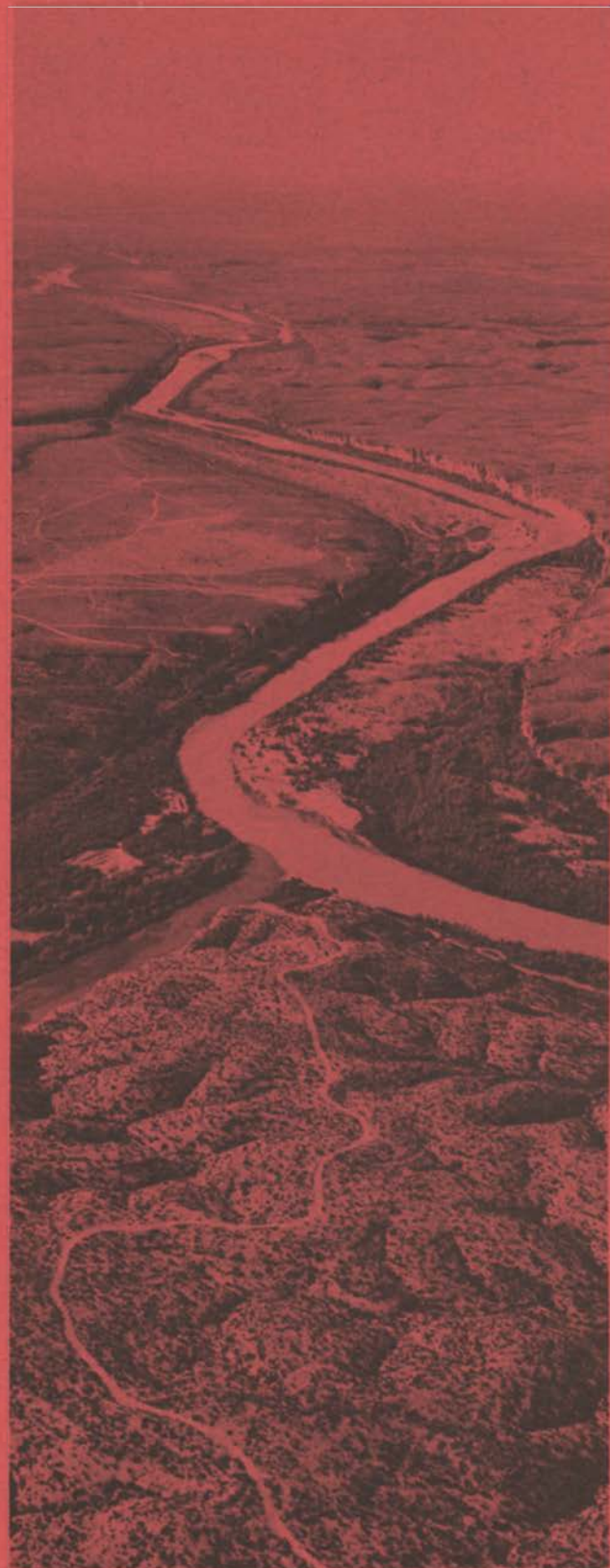
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Introduction

The Amistad Reservoir Project, now in its fifth year of construction by the International Boundary and Water Commission of the United States and Mexico, is a major impoundment on the Rio Grande in southwestern Texas and northern Coahuila. The principal direct benefits accruing from its construction will be water conservation, flood control, generation of hydroelectric energy, an increase in fishery resources, and significant opportunities for outdoor recreation.

BACKGROUND

In December 1957 the Southwest Regional Office of the National Park Service prepared a reconnaissance report on the recreation potential of the area for the United States Section of the Commission. That analysis is included as Appendix I-B in the Section's feasibility report (Senate Document 65, 86th Congress, 1st session). In 1962 it became necessary to reevaluate the recreation aspects of the project because of the greatly increased demand in the Southwest for water-oriented facilities and due to new liberalized Federal policies emphasizing the importance of recreation in multipurpose water projects.

In March 1963 the President's Recreation Advisory Council declared in its milestone Policy Circular No. 1 that greater effort must be made by Federal, State, and local governmental and private interests to fulfill adequately the steeply mounting outdoor recreation demands of the people of this country. Further, the Council stated that although the Federal Government should provide leadership and stimulus to this effort, it does not have sole or primary responsibility for providing recreation opportunities to the American people. The Council concluded that Federal programs should be augmented by a system of national recreation areas comprised of a limited number of units in regions where the recreation demand is not being met through other programs.

Interest generated by local citizens, by the International Boundary and Water Commission, and the present national emphasis on recreational areas adequate to meet present and future needs resulted in giving consideration to Federal administration of public use on the United States portion of Amistad Reservoir. Accordingly, an additional field investigation was made by a National Park Service team in April 1963 to assess the recreational and other values of the area, adjudge its significance, and gather information regarding its potential for national recreational status. The team concluded that the United States sector of the project appeared definitely of national significance and that it held promise of qualifying for national recreation area designation. The Advisory Board on National Parks, Historic Sites, Buildings, and Monuments endorsed this proposal at its November 1963 meeting.

Expanding on the earlier studies, a September 1965 revision of the report analyzed the economic impact of Amistad's recreation potential, particularly as this first-magnitude impoundment would be enhanced by accessory shoreline development. The Bureau of Outdoor Recreation subsequently found that the proposal satisfies the criteria for national recreation areas established by the Recreation Advisory Council in its Policy Circular No. 1.

The National Park Service is now administering the United States portion of the reservoir area pursuant to a Memorandum of Agreement dated November 11, 1965 between the Service and the United States Section of the International Boundary and Water Commission.

Completion of Amistad Dam is scheduled for March 1969, but impoundment of water began in May 1968.

Bills to establish the Amistad National Recreation Area were introduced in both the Senate and House of Representatives in the 89th Congress, 1st session, but received no action. Similar bills were again introduced early in the 90th Congress. To provide the required planning data, a master plan field study was conducted by the Service's Office of Resource Planning, San Francisco Planning and Service Center, in October-November 1967. The following report is the result of that study.

The purpose of the proposed Amistad National Recreation Area is to provide for the fullest public outdoor recreational use and enjoyment of the area's land and water resources, and to conserve its scenic, scientific, historic, and other values contributing to this experience.

PURPOSE

Management Category: Recreational

To achieve recreation area purposes, the National Park Service established the following objectives:

OBJECTIVES

VISITOR USE

Develop a broad range of recreational facilities and services to serve all categories of interests and economic levels of visitors.

CONSERVATION

Conserve the recreational, scenic, scientific, and historic resources of the area through sound management programs based on, and supported by, well-conceived research studies.

INFORMATION AND INTERPRETATION

Develop informational and interpretive programs which will enable the visitor to better use and enjoy the full range of the area's resources. The interpretive theme will be primarily oriented to enhancement of outdoor recreation through appreciation of related natural and historical values. Special museum and on-site treatment will be given Amistad's highly significant archeology, with the scope of collections restricted to local features and cultural materials, and limited to materials used in the interpretive program. Cooperative aspects of the international approach to water conservation, as exemplified by the Amistad Project, will also be covered.

ARCHITECTURAL THEME

The architectural theme will be guided by the special functionalism of structures needed for water-based recreation. At least the visitor center should reflect the cooperative spirit of the project's two sponsoring nations. In all buildings a respect for the stark landforms of this semiarid region should be maintained, unless striking conceptual departures can be justified. Except for greater emphasis on bright and

colorful elements for the recreational facilities, an indigenous, harmonizing style is preferred. The aboriginal peoples were not builders and thus no motif was established.

COOPERATION IN MANAGEMENT

Consistent with the recognition of outdoor recreation as the dominant resource objective, cooperate with other Federal, State, and local agencies in coordinated management of the area's other resources for such uses as are compatible with fulfilling the recreation mission.

INTERNATIONAL COOPERATION

Develop a climate of cooperation within which we shall work with appropriate authorities of the Mexican Government toward coordinating planning and operation of the reservoir and surrounding land administered by Mexico and the United States.

AQUATIC RESOURCES

Create and maintain fishery resources at levels which will provide maximum opportunities for recreational fishing.

SUMMARY

The proposed Amistad National Recreation Area comprises nearly 63,000 acres of land and water possessing outstanding potential for diversified outdoor recreation. There are no other resources in this region of such quality, capacity, and access to heavily populated centers, and Amistad has the additional attributes of international appeal and opportunity for serving the citizens of both the United States and Mexico.

Outdoor recreation is the dominant resource purpose, enhanced by distinguished archeological values of importance to science and to visitor enjoyment.

This plan provides for effective management and development of the recreation potential through a comprehensive program of facilities and services for public use and enjoyment. With primary responsibility for administering the area, the National Park Service will coordinate resource management with the functions of other concerned Federal and State agencies.

The plan requires the enactment of authorizing legislation.

The Region

With adequate development of its water-based resources, Amistad Reservoir will remedy one of the most serious outdoor recreation deficiencies in the Southwest. The Amistad Project lies in a region characterized not only by easy access from burgeoning population centers but also by a relative scarcity of outdoor recreation opportunities to serve them. Few facilities of any kind exist within 150 miles of Amistad, and though other reservoirs are found between 150 and 300 miles away, none competes with Amistad in recreational potential.

Contributing to its eminence as an outstanding new recreation asset in a region of short supply, the location of Amistad Reservoir astride the United States-Mexico border is highly significant. This very situation which gives Amistad high promise for serving the peoples of the two countries invests it with an international allure that is unique among projects of comparable scope and purpose.

Amistad Reservoir also enjoys a salutary relationship in the total land-use pattern of the region. The economic uses being obliterated by the project have a relatively low value in comparison with those to be substituted, without considering the activity that the project will stimulate on lands outside its boundaries. The net impact on the regional economy should be very beneficial.

Automobile: The Access and Regional Maps show the network of highways linking the Amistad Reservoir with the Southwest. Straddling the United States-Mexico border, the Amistad Dam on the Rio Grande is 12 miles west of the town of Del Rio, Texas. U.S. Highways 90 and 277 intersect 4 miles north of this community, providing easy automobile access from all directions in the country.

REGIONAL ANALYSIS

REGIONAL CHARACTERISTICS

ACCESS AND CIRCULATION

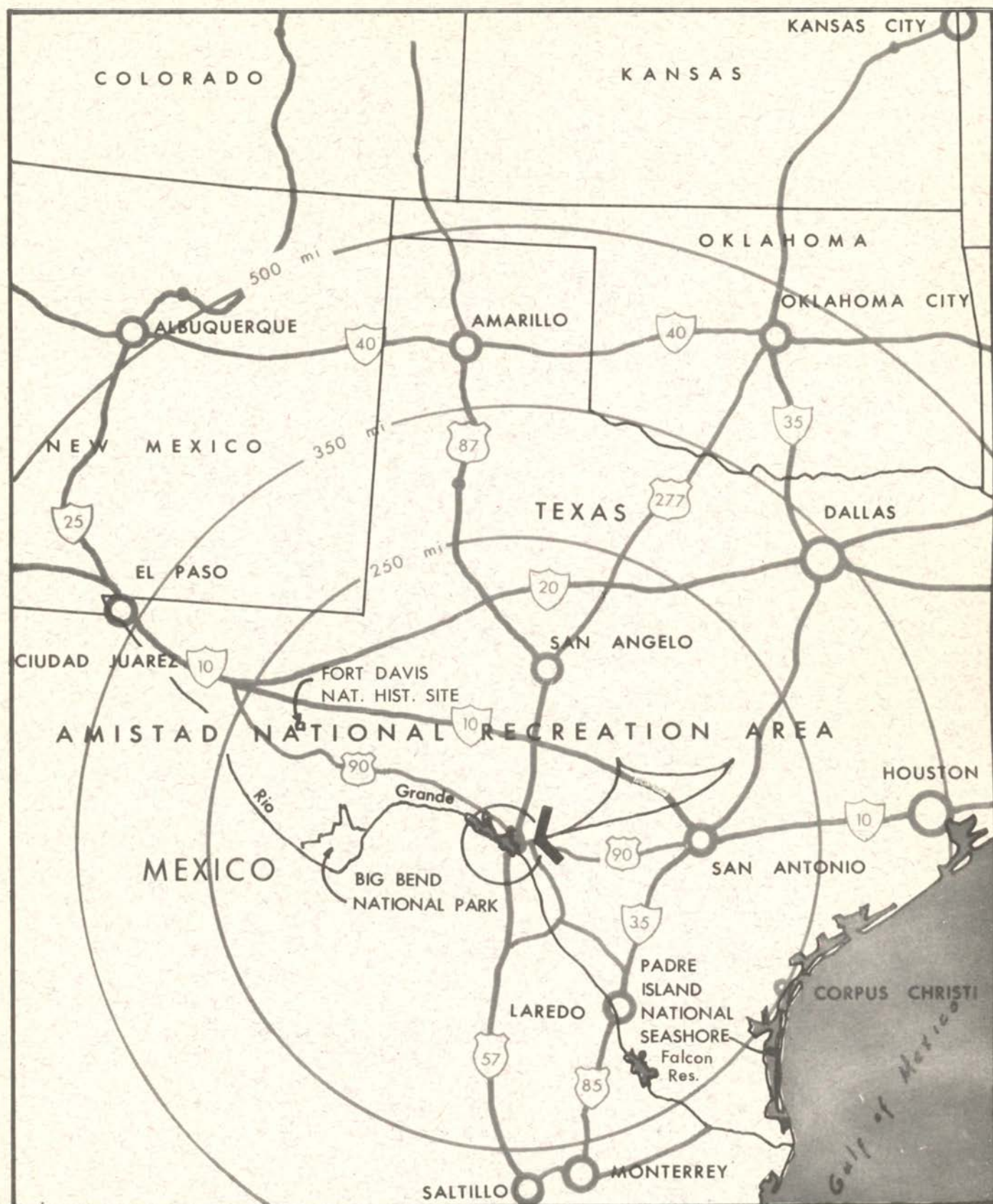
About 155 miles east of Del Rio on U.S. 90 is San Antonio, where two major interstate highways—35 and 10—intersect. With its connections with other heavily traveled routes, Interstate 35 is the principal north-south artery funneling traffic into Mexico from the United States. Within Texas it extends south from the Fort Worth-Dallas metropolitan complex, through Austin and San Antonio, to the Mexican border at Laredo. The extension of this route in Mexico, Federal Highway 85, is designated the Inter-American Highway, part of the Pan-American Highway System.

Interstate 10 connects Los Angeles on the west coast with Jacksonville, Florida on the east; San Antonio is the midpoint, flanked by El Paso and Phoenix on the west, Houston and New Orleans on the east. This transcontinental route, a heavy carrier of winter recreation traffic, skirts the Amistad area to the north at distances of 60 to 80 miles.

Paralleling this important highway, U.S. 90 is a well-traveled alternate between San Antonio and El Paso. Westward from Del Rio it soon crosses the Amistad Reservoir basin in two places and then remains close to the Rio Grande arm of the reservoir as far as Langtry, where "Judge" Roy Bean's legendary "Law West of the Pecos" saloon-courtroom still stands. From here the highway proceeds through the scenic border country until it rejoins Interstate 10 at Van Horn, Texas. En route it passes within 40 miles of the spectacular Big Bend National Park and 21 miles of Fort Davis National Historic Site, and traverses many miles of the appealing Davis Mountains region.

U.S. 277 is the principal north-south direct access to the Amistad area. Beginning at Oklahoma City, it runs south through the Texas cities of Wichita Falls, Abilene, and San Angelo, crosses Interstate 10 at Sonora, and traverses an arm of Amistad Reservoir just before joining U.S. 90 and reaching Del Rio. Both 90 and 277 bring large numbers of winter visitors through Del Rio from the colder northern climates, these travelers continuing southeast on 277 for the balmy lower Rio Grande Valley.

Del Rio is linked by an international bridge with Ciudad Acuna, its sister city immediately across the Rio Grande in Mexico. Visitors from Mexico City and much of interior Mexico can reach Ciudad Acuna directly by a newly paved longer approach is made by remaining on 57 to its terminus



ACCESS MAP

0 50 100 200 300
SCALE IN MILES

FEB. 1968

621
20,001

at Piedras Negras on the Rio Grande, and then following Federal Highway 2 northerly up the river to Acuna. The Mexican side of the dam is accessible via a new highway west out of Acuna. When the dam is completed, a road across its top will afford a loop drive between the two cities. Mexico plans eventually to extend the access road westerly on the south side of Amistad Reservoir and then generally paralleling the Rio Grande up to Juarez, possibly continuing on to the west coast at Tijuana. Hundreds of miles of such a route already exist as detached segments of Highway 2, principally along the Rio out of Juarez, and all the way from near Nogales to Tijuana.

The recreation development sites on the U.S. side will have ready access from Highways 90 and 277. The former road passes directly through the sites designated as Diablo East and Diablo West and it skirts those at Pecos River and Langtry (see General Development Plan, page). A short spur will serve the lower Rio Grande site immediately below the dam. A new access road of about 5 miles length will be needed to reach the Comstock site from the highway. U.S. 277 passes through the San Pedro site, an existing 7-mile federally owned road leads from this highway to the Rough Canyon site on the Devils River, and the Government owns right-of-way for a future connection between the highway and the Long Point site.

Airplane, Railway, and Bus: Airstrips for light plane access will be provided at Diablo West and Comstock. The 1965 FAA census of planes and pilots in Texas counted 7,971 licensed private planes—the second highest number of all the States. The count also showed 13,900 licensed pilots and 9,000 student pilots in Texas.

Del Rio has recently rebuilt and paved the 3,500-foot runway at the city-owned airport. Nationwide airline system flights do not presently stop here, but there is regularly scheduled air service between Del Rio and San Antonio by a small local firm. The Southern Pacific Railroad's Sunset Limited between Los Angeles and New Orleans provides daily passenger service to Del Rio. Adequate daily bus transportation is also available between Del Rio and all surrounding cities. Ciudad Acuna has a bus line that serves it from Mexico.

The American sector of Amistad Reservoir is wholly within Val Verde County, Texas. County population is sparse, amounting to about two persons per square mile, most of it being concentrated in the county seat of Del Rio. The 1968 issue of the Texas Almanac estimates 28,135 people in the county, 22,016 of these residing in Del Rio. A study of Del Rio in 1964 by the University of Texas Bureau of Business Research predicted a 1989 population of 33,542 for the city. The balance of the county population will remain light and will even decline because of mechanization of its ranching operations.

Population density increases markedly with distance from the reservoir area in most directions. The 1960 census showed 90,000 within a 100-mile radius of Del Rio, 2.3 million within 250 miles, and 7.7 within 350 miles (all figures for U.S. only). Three-fourths of the people in this last zone are urban dwellers, reflecting a continuing population shift away from rural areas. The zone contains 15 metropolitan centers, including those of San Antonio, the Dallas-Fort Worth complex and Houston. Houston is now rated the sixth largest city in the United States and one of the fastest growing.

From 1950 to 1960 the population of Texas increased 24.3 percent to 9,580,000 as compared to an 18.5 percent increase for the United States as a whole. The estimated count for 1966 was 10,711,000. Predictions for 1975 approach 12 million, which will rank Texas as the third most populous State. Almost no point in Texas is more than 500 miles from Amistad.

On the Mexican side of the reservoir the pattern is similar in that the urban areas have most of the people and the rural country is very sparsely settled. Within 300 miles of Ciudad Acuna are approximately 1.5 million people, with about 25,000 in the city itself. Other major cities within this zone are Monterrey with 822,000, Torreon with 213,000, Saltillo with 118,000, Nuevo Laredo with 94,000, Monclova with 75,000, and Piedras Negras with 43,000.

Amistad Reservoir will be a conspicuous exception in a large region almost totally devoid of public outdoor recreation opportunities. Following is an account of the few existing facilities.

POPULATION DATA

PARK AND RECREATION FACILITIES



Within the city limits of Del Rio are the interesting San Felipe Springs, copious source of water for the community. Around the springs is a private golf course and downstream from it is a small public park with a few picnic tables, playground, and swimming area. The city has several other small urban parks within its bounds.

Some private recreation facilities at two small hydroelectric impoundments on the Devils River north of Del Rio were formerly important in the regional picture, but these will be inundated by Amistad Reservoir and replaced by its public-use developments. At Langtry, about 60 miles west of Del Rio, is the Highway Department's historical museum in which are preserved and exhibited artifacts of the era of "Judge" Roy Bean's self-proclaimed "Law West of the Pecos." A small picnic area is provided here.

The only other tourist attractions within 100 miles of Del Rio are the Caverns of Sonora near the town of that name 90 miles to the north and Garner State Park 30 miles north of Uvalde, which is 72 miles east of Del Rio. The privately owned caverns constitute an outstanding feature which was placed on the National Registry of Natural Landmarks in 1966. The State park memorializes former Vice President John Nance Garner whose home was in Uvalde. It contains about 630 acres of recreational lands, including campgrounds, cabins, and fishing. The town of Uvalde maintains the Garner Memorial Museum in that community.

Kerrville State Park in Kerr County is about 175 miles east of Del Rio by road. This 487-acre recreational area along the Guadalupe River also provides camping and fishing. Beyond this range, outdoor recreation is centered around the cities of San Angelo and San Antonio which have numerous small reservoirs open to fishing and boating. Many of these are surrounded by private property which limits public access. The Kerrville-San Antonio area is also the threshold of central Texas' highly popular "Hill Country," a recreational region rich in spring-fed streams, caves, rolling hills, dude ranches, summer camps, and hunting places. Sizeable reservoirs are lacking in this broad zone, however.

About 270 miles downstream from Amistad is Falcon Reservoir, formed by the International Boundary and Water Commission's first dam on the Rio Grande. Completed in 1953, this project has very little public recreational use because the shoreline is almost entirely privately owned. A 572-acre State park near the dam provides some recreational facilities.

Due west of Amistad is Big Bend National Park. Although its spectacular mountain and desert scenery is a very significant resource, it does not fulfill the need for water-based recreation and is some 250 miles farther from the major population centers of Texas. Fort Davis National Historic Site is 230 miles west of Del Rio, and Padre Island National Seashore is 300 to 420 miles to the southeast.

Little is known about comparable opportunities on the Mexican side of the border, but they are believed to be of the same or greater sparsity.

SURROUNDINGS AND EXISTING USE

Amistad Reservoir lies in a region of moisture contrasts. Except along the project's three main impounded streams—the Rio Grande and the Pecos and Devils Rivers—water is extremely scarce throughout the area. Virtually all of the tributary canyons are dry and carry water only during periods of rain, yet there are several large springs within the main gorges. All those in the project area will be submerged. The most notable is the Goodenough Spring on the Rio Grande near the midpoint of the reservoir. It is one of the largest in the United States. The Devils River is almost entirely spring fed from sources in its upper reaches. Just outside the reservoir are San Felipe Springs, Del Rio's water supply.

With a generally thin soil and vegetative cover reflecting the semiarid environment of the region, the Amistad Reservoir basin is essentially an area of modest-capacity livestock production. Lands on the United States side are now used almost solely for sheep and goat grazing (Del Rio describes itself as the mohair capital of the country). Limited cattle and horse raising may be successful during times of adequate rainfall.

Relatively large ranches averaging about 10,000 acres cover the area. Their size and traditional resentment toward intruders during critical phases of livestock breeding have restricted public road access in the reservoir vicinity. Privately controlled hunting has been the only public use of these lands. In the absence of any publicly owned lands in this part of Texas, hunting is by lease arrangements with some of the ranches. The owners find the income from such sources to be a welcome supplement to earnings from ranching operations on this somewhat marginal land. White-tail deer hunting is most popular, bringing lease fees of from \$.25 to \$.50 per acre per year.

A type of use which has already been terminated by the Amistad Project was the generation of hydroelectric power at two small tandem dams on the Devils River. Their narrow reservoirs—named Lake Walk and Devils Lake respectively in the upstream direction—are both linear, confined within the limestone walls of the river canyon. They and the private recreational facilities along their shores have been acquired in their entirety and closed because all will be inundated by the Amistad Reservoir. However, both lakes will periodically re-emerge as entities when Amistad is drawn down to their respective levels—1,040 feet for Devils Lake and 1,000 feet for Lake Walk. These two small segments of the superimposed Amistad Reservoir, then, can never fall below the particular elevations cited. The lower level will rarely be reached.

Quality public stream fishing is available at a small undeveloped county park on the Devils River below Lake Walk. This has been one of the most heavily fished reaches of stream in Texas. Although this portion of the river will be inundated by Amistad Reservoir, its present use indicates the nature of the fishing to be expected in the Devils' clear spring-fed waters upstream from the impounded level within the recreation area. There is little precedent for fishing on the Rio Grande and Pecos sectors of the area because of restricted access across the private lands.

In a State renowned for oil and gas production, the Amistad region is virtually devoid of either. A few holes have been drilled, but all are dry. In spite of negative results, exploratory activity has been extensive in the past few years. Oil and gas leases held by large corporations cover most if not all of the lands bordering and underlying the reservoir. The Federal acquisition program for most of the project lands does not include the mineral estate.

With construction of the Amistad Project, the appearance of numerous private housing subdivision tracts on lands immediately outside the reservoir takeline heralds a distinct new trend. Landowners are selling or leasing the property for both permanent and vacation home development. Beneficial as this activity will be to the regional economy, management problems for the national recreation area, stemming from pressures for private access privileges to the reservoir, can be anticipated.



South across bends of Rio Grande in mid-section of reservoir, Mexico in distance. Comstock recreation site borders river in center foreground.

The Resource

The proposed Amistad National Recreation Area will be a spacious and scenic unit of land and water with a high carrying capacity for diversified water-based outdoor recreation. Basic reservoir operating commitments of the Amistad Project, though marked by rather wide, irregular fluctuations in the water level which will occasionally limit public use, will be compatible with fulfillment of its recreation mission. Its recreation opportunities are of a significance to assure both interstate and international patronage, and the total demand for use of the resources will be heavy. The investment and operational responsibility required to develop these resources on a scale commensurate with their public-benefit potential are so high as to indicate substantial Federal involvement.

Accessory resource values at Amistad will contribute materially to visitor enjoyment of its primary recreation qualities. In itself, the area's natural history is neither unique nor of great significance, but contains enough variety and interest to appreciably enhance the recreation benefits. Also, the historic chapter of man's presence in the area is of no more than regional interest, but it offers a definite bonus for the visitor who takes the time to savor it. It is the area's prehistory which constitutes the outstanding secondary resource.

RESOURCE EVALUATION

Its significance is well summarized by Graham and Davis (see Appendix):

In several respects the Diablo [Amistad] Reservoir is one of the unique archeological regions of North America. Probably no area of comparable size can boast of so rich a series of archeological and pictographic sites. In the desiccated rockshelters, in the open midden sites, and in the stratified terrace sites are preserved an unusually complete array of material remains, representing, all in all, several thousand years of human history and prehistory. For this reason alone the archeology of the area is of exceptional scientific significance. But in addition to this rich inventory . . . here exists one of the truly unique pictograph regions of the world. The magnificent galleries of superb cave murals . . . are perhaps comparable only to the famous cave paintings of Europe.

Amistad Reservoir will both destroy parts of this resource and render others more accessible for public enjoyment. Most of the great rockshelters and pictographic sites will be above maximum water level. The particular culture and the unique style of rock art represented here are not receiving protection elsewhere.

RESOURCE DESCRIPTION

RECREATION

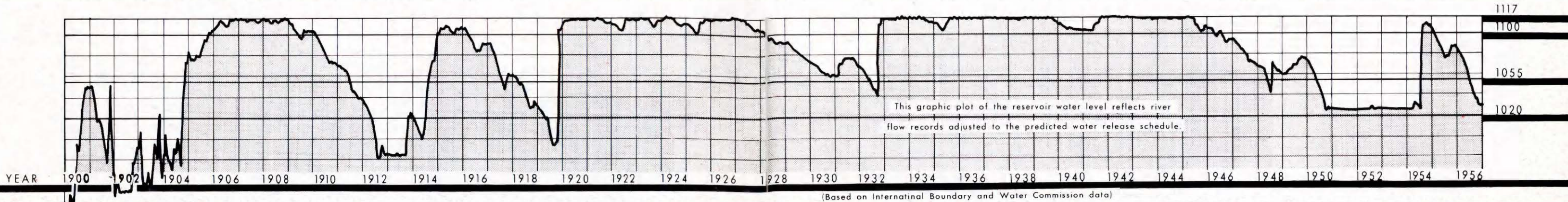
Amistad Reservoir's recreation resources will be substantial. It will be an impressively large body of water in an attractive setting. At its maximum operating-pool level elevation of 1,117 feet above sea level, the lake will extend some 74 miles up the Rio Grande, approximately 25 miles up the Devils River, and about 14 miles up the Pecos. At this level the water surface will have an area of 67,000 acres, 43,250 of them in the United States. There will be 851 shoreline miles, 547 of them in this country. During the brief periods of flood storage these dimensions will be considerably greater. Reservoir operating requirements will result in acyclic heavy drawdown, but even at levels well below 1,117 feet the lake will be large enough to provide for a full range of boating, sailing, fishing, and other water sports activities.



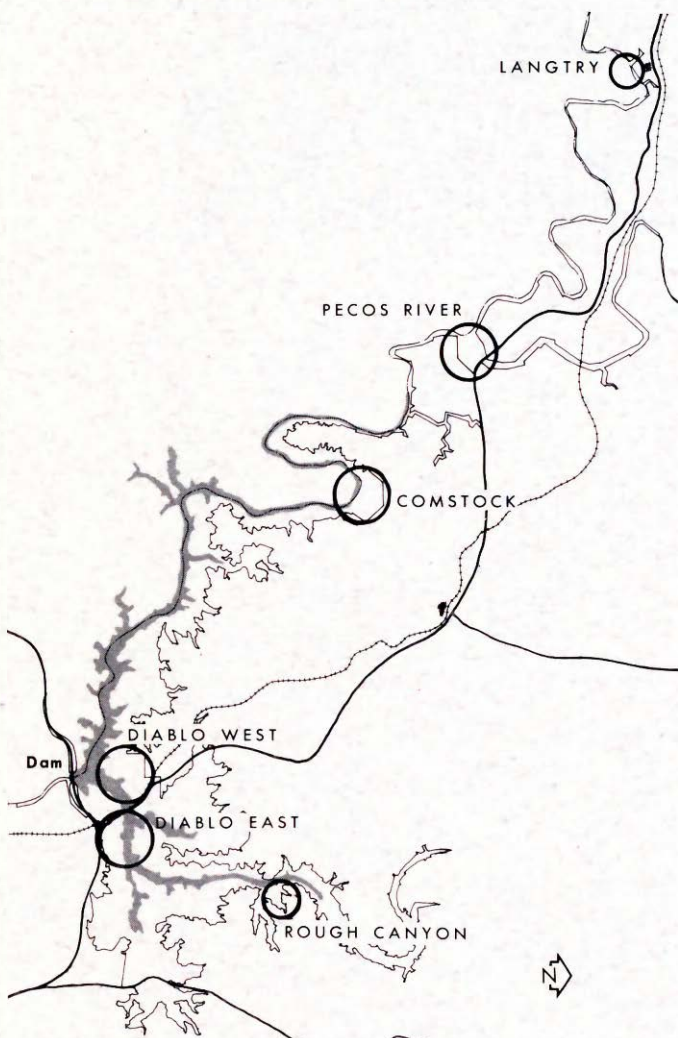
Because of erratic rainfall and streamflow in the drainage basin, and of the necessity to operate the reservoir in conjunction with Falcon Reservoir requirements downstream, it is anticipated that water-level fluctuation at Amistad will not be directly seasonal. The accompanying chart depicts what the probable continuous variation would have been if Amistad Dam had existed during the period from 1900 to 1956, based upon known streamflow data and projected future release schedules. Predictions of the actual pattern following closure of the dam can do no better than assume a repetition of this same cycle, but not necessarily from the same point of beginning. In this regard, it should be noted that both 1901 and 1904 were drought years in Texas, and the protracted initial storage buildup on the chart should not be considered representative. Under the vagaries of precipitation in this watershed from year to year, the reservoir's initial filling may as likely be spectacularly rapid as disappointingly slow. What the chart does indicate is that, while the reservoir surface will remain close to the operating elevation of 1,117 feet for years at a time, there will also be periods of several months' or years' duration when water levels will be consistently well below it. Water will not stand higher than 1,117 feet for long, since storage capacity above that elevation is allocated to flood control, and increment water will be released as rapidly as feasible to restore the operating-pool level.

Down Rio Grande to damsite (between first and second bends) before construction. Lower Rio Grande recreation site is on left bank beyond. Devils River entering from left, Mexico on right.

WATER LEVEL CHART



COMPARATIVE CHARACTERISTICS OF AMISTAD RESERVOIR AT FOUR SELECTED WATER LEVELS



• elevation 1020 • minimum ramp design

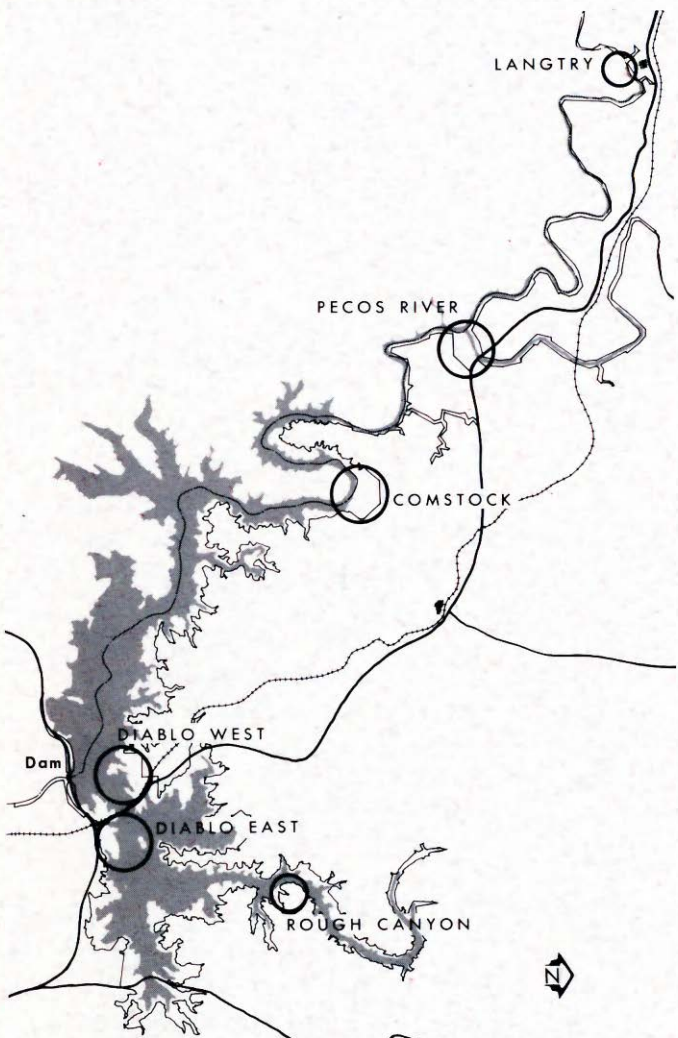
IF DAM HAD BEEN BUILT IN 1900, INITIAL BUILDUP TOWARD OPERATING LEVEL (FIRST REACHED IN 1906) WOULD HAVE TAKEN 4 YEARS 9 MONTHS TO PASS ELEVATION 1,020. DURING THIS PERIOD WATER WOULD BE TEMPORARILY ABOVE THIS LEVEL 3 TIMES FOR TOTAL OF 11 MONTHS. AFTER INITIAL BUILDUP, WATER WOULD REMAIN ABOVE 1,020 FOR 7 YEARS 9 MONTHS, THEN DROP BELOW FOR 2 YEARS, FINALLY RISE ABOVE TO STAY EXCEPT FOR A 4-MONTH PERIOD. TOTAL TIME ABOVE 1,020 AFTER INITIAL FILLING: 96%.



• elevation 1055 •

AFTER FIRST PASSING THIS ELEVATION IN 1904, RESERVOIR WOULD HAVE ALTERNATED BETWEEN THE FOLLOWING PERIODS WITH AND WITHOUT WATER AT THE 1,055-FOOT LEVEL:

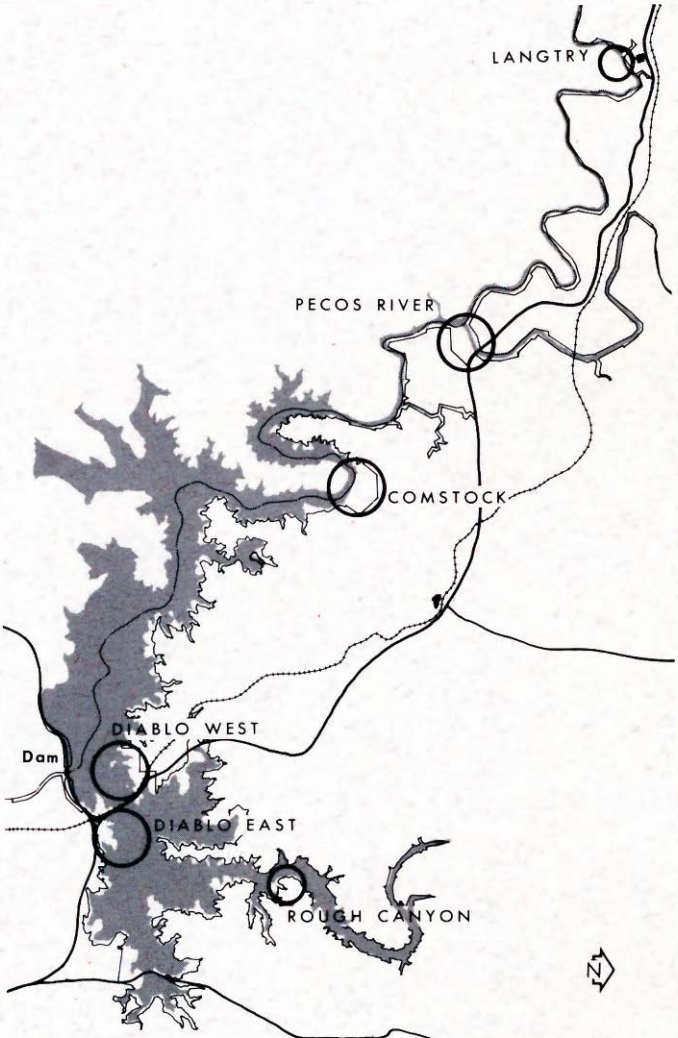
WITH WATER	WITHOUT WATER
6 YEARS 9 MONTHS	3 YEARS 1 MONTH
3 YEARS 8 MONTHS	1 YEAR 6 MONTHS
THEN AN EXTENDED PERIOD OF 30-1/2 YEARS--EXCEPT FOR TWO BRIEF BREAKS--WITH WATER AT OR ABOVE THIS LEVEL. FINALLY A 4-YEAR PERIOD WITHOUT WATER AND 2 YEARS WITH WATER.	



• elevation 1100 •

THIS IS APPROXIMATELY AVERAGE WATER LEVEL. AFTER FIRST PASSING THIS ELEVATION IN 1905, RESERVOIR WOULD HAVE ALTERNATED BETWEEN FOLLOWING PERIODS WITH AND WITHOUT WATER AT THE 1,100-FOOT LEVEL:

WITH WATER	WITHOUT WATER
4 YEARS 5 MONTHS	4 YEARS 9 MONTHS
1 YEAR 5 MONTHS	3 YEARS 6 MONTHS
8 YEARS 5 MONTHS	4 YEARS 6 MONTHS
13 YEARS 6 MONTHS	8 YEARS 4 MONTHS
7 MONTHS	



• elevation 1117 • operating pool

THIS IS MAXIMUM LEVEL OTHER THAN FOR FLOOD-CONTROL STORAGE, WHICH IS NOT SHOWN ON GRAPH BECAUSE IT WOULD BE RELEASED AS RAPIDLY AS FEASIBLE FOLLOWING INFLOW. INITIAL BUILDUP TO 1,117-FOOT LEVEL WOULD HAVE TAKEN 6 YEARS 8 MONTHS, FOLLOWED BY IRREGULAR SEQUENCE OF DRAWDOWNS AND RETURNS TO OPERATING LEVEL. WATER WOULD BE AT THIS LEVEL 8% OF TOTAL TIME, LONGEST PERIOD BEING 7 MONTHS.

It is during the occasional deep drawdowns that recreational use of the reservoir will be adversely affected and its attractiveness diminished. There will always be a sizable body of water, for even at the maximum drawdown of 130 feet below operating level the impoundment will extend up the Rio Grande about 28 miles, and water will be 90 feet deep at the dam. However, it is not feasible to extend boat ramps all the way down to this limit, and there will be periods when lake launching from the larger development sites will simply be suspended. Concession operations will be marginal there during these times, which may be as much as 2 years in duration, though not aggregating more than 4 percent of the overall cycle. It will still be possible then to launch boats into the flowing river at the proposed Langtry, Pecos River, and Lower Rio Grande sites, and the old U.S. Highway 90 at the Devils River Crossing will serve as a temporary ramp access to the main part of the reservoir. The Rough Canyon site will never be put out of business because of the guaranteed presence of water in the former Devils Lake.

Under prevailing conditions the main body of the reservoir will be a pool with a highly indented shoreline and an irregular shape with broad expanses of water. There will be an endless variety of bays and coves, some long and narrow, others with widths of several miles. Water vistas of 7 to 12 miles in a given direction will be common, and in the large basin centering on the Rio Grande-Devils River confluence there will be an almost uninterrupted reach of water over 20 miles across at highest operating level. Numerous islands will be formed at all water levels. Sharply contrasting with this part of the reservoir will be its upstream sectors along the three rivers. Here, the maximum lake level will remain below the rims of the sheer canyon walls; a totally different scenic experience will be provided in these narrow cliff-lined corridors. Within the recreation area boundaries there will almost always be stretches of free-flowing river in these canyons upstream from wherever the slack-water level of the impoundment is located at the time.

As in any reservoir, sedimentation will occur in the upper canyon reaches. It will be most pronounced on the Rio Grande because of its heavier silt load, moderate on the Pecos River, and only slight on the spring-fed Devils River. Each time the reservoir level drops from a temporary high, the Rio Grande, in particular, will expose fresh silt banks as it flushes the deposit farther downstream. These banks will

inevitably impair scenic qualities in the uppermost parts of the canyon and will require some maintenance to keep a boat-launching ramp at Langtry in operation.

The river released below Amistad Dam will be a cold, clear stream with a minimum flow of about 1,000 cubic feet per second. A two-mile stretch of the riverbank here will be included in the recreation area for public fishing access.

Lands bordering the reservoir are generally quite suitable for facilities and access to water-oriented activities and for associated land recreation, including camping, picnicking, shoreline exploration, hiking, nature study, photography, and hunting. Other than in the upper canyon reaches and the major development sites, most lands to be acquired at Amistad are below the 1144.3-foot contour and theoretically subject to flooding. However, the operational studies indicate this condition will virtually never be fully reached and most of the time reservoir level will be such that a strip of land varying in width from a few hundred feet to a mile or more will exist between the lake and the recreation area boundaries. The upper canyons will always have scenic areas above water. The many islands that will exist at various reservoir levels will lend themselves well to recreational use by boating parties.

Geology: For many miles of its course along the international boundary between Mexico and the United States, the Rio Grande flows through a vast area of desert plains and rugged mountains. Shortly after leaving the Big Bend country it swings to the east and enters the Edwards Plateau section of the Great Plains province. Here the river is consistently entrenched in a canyon of its own carving, several hundred feet deep, walled by nearly level-lying Cretaceous limestones of the Comanchean series. The area's geologic structure is that of a slightly uplifted, mildly flexured and faulted peneplane. The surface of this rather young plateau has not yet been severely dissected; broad, gently rolling segments are cut abruptly by steep-walled tributaries of the major streams. Near its border with the West Gulf Coastal Plain, the surface of the Edwards Plateau becomes more rounded. The underlying Georgetown limestone still controls the character of the landscape, but less resistant Del Rio shales and younger gravels have eroded into a softer pattern of low hills and shallow open valleys. It is in this zone of physiographic transition, characterized by bluff-lined canyons punctuating a region of gentle relief, that Amistad Reservoir will be situated.

NATURAL HISTORY

Biology: The Amistad Reservoir site is transitional between the Chihuahuan and Comanchian biotic provinces (according to Dice), or it lies at the common meeting point of the Chihuahuan, Balconian, and Tamaulipan provinces (according to Blair). The area is generally classified as chaparral country. Although the plants and animals are mostly those of the limestone uplands of the Edwards Plateau, there is an appreciable intermingling of species characteristic of the Chihuahuan Desert.

Because of the thin soils, limited rainfall, and long history of grazing use, the vegetative cover on the higher lands bordering the reservoir is sparse. The most obvious plants are catclaw, ocotillo, yucca, cenizo, lechuguilla, blackbrush, creosotebush, sotol, leatherplant, and various cactuses. Scattered low-growing trees such as mesquite, shin oak, live oak, Texas persimmon, and hackberry are found in protected locations. Prior to the introduction of cattle and, later, sheep and goats, short grasses formed a significant part of the vegetation, but now comprise only a small percentage of the flora. Along the narrow bands of deep, well-watered alluvium bordering the rivers the vegetation is lush and of a different nature. Here thick stands of cane and other tall grasses and dense growths of willow, mesquite, and tamarisk are typical. Although much of this type will be inundated, it will remain in the area below the dam and in the upper reaches of the reservoir where flooding will occur only for occasional short periods.

Interesting changes in vegetative composition can be expected along the fluctuating shoreline. In those areas not subject to flooding or grazing (recreational development sites and some of the more permanent islands which will be created), the original varied and highly interesting flora should become re-established.

The fauna is diverse. Mammals commonly found in the area are coyote, whitetail deer, collared peccary, ringtail, raccoon, skunk, jackrabbit, cottontail, rock squirrel and several other rodents. Reptiles are represented by various snakes and lizards including the poisonous diamondback and rock rattlesnakes. Common birds are the vulture, raven, quail, mourning dove, white-winged dove, sparrows, wrens, and various types of water birds including the great blue heron and several ducks. Principal fish species are channel catfish, bass, bluegill, shiner, carp, gar and crappie. Some unusual animals found or to be expected in the area include Mexican opossum, coati, ocelot, tropical indigo snake, south Texas ground snake, Texas alligator lizard, and golden-fronted woodpecker.

The Amistad Project area is also a country replete with the romance and adventure of human history—of Indian cultures dating back to 8000 B.C. and of Spanish exploration, possibly as early as A.D. 1535 when Cabeza de Vaca must have passed through this country in his wanderings among the Indians. In the vicinity are some of the huge "working ranches" of Texas, punctuated by vestiges of the early West—ghost towns and military posts. Few episodes are more appealing to the imagination than the indomitable one-man rule of "Judge" Roy Bean, self-styled dispenser of justice at his storied "Law West of the Pecos" court at Langtry during the 1880's and 1890's. The era which spawned this colorful reign was an eventful time in the development of the West, when railroads were being built to span its vast distances and a firm hand was needed to deal with lawlessness in the brawling construction camps at the "end of the track." Several of these camps were located in the Amistad vicinity.

If the Amistad area possessed no other resource attributes, it would be of exceptional public interest and scientific significance by virtue of its archeological values. Over 300 known sites representing thousands of years of human occupation exist on the U.S. side of the reservoir basin alone. These are primarily concentrated along or near the major stream canyons and their tributaries, where water was available and ideal shelter was afforded by the many natural cavities and overhangs weathered out of the massive limestone bluffs. The largest and most spectacular of the rockshelters are mainly confined to the lower Pecos River and adjacent stretches of the Rio Grande (see Archeological Base Map). Some of these openings reach dimensions of over 500 feet broad and 200 feet deep, and ceilings are often as much as 50 feet above the floors. In a different class are numerous open surface sites located on stream terraces or on the tops of the bluffs, occasionally removed some distance from the streams. Some of the terrace sites are buried in alluvium and thus have a well-preserved stratigraphy.

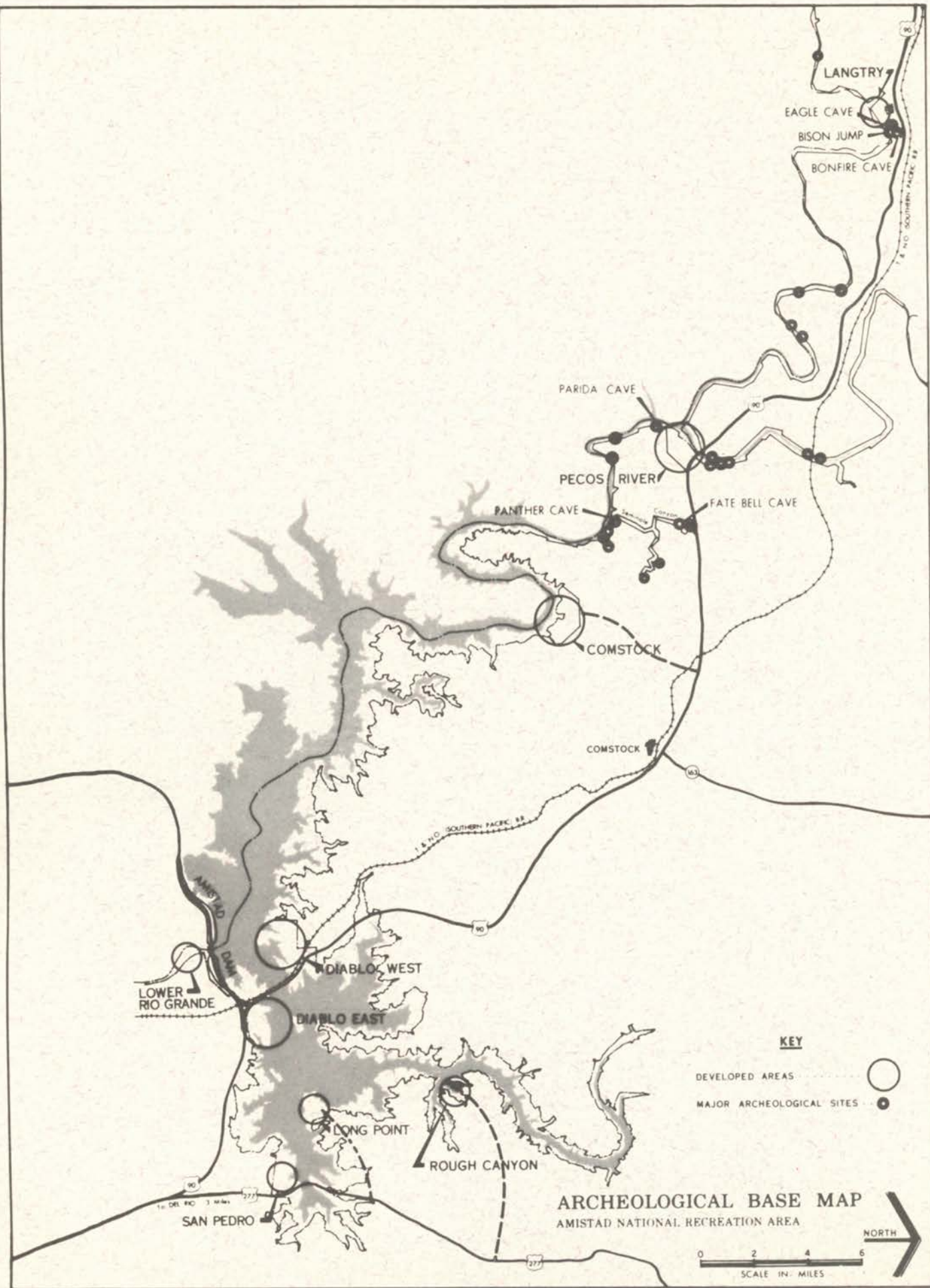


HISTORY AND ARCHEOLOGY

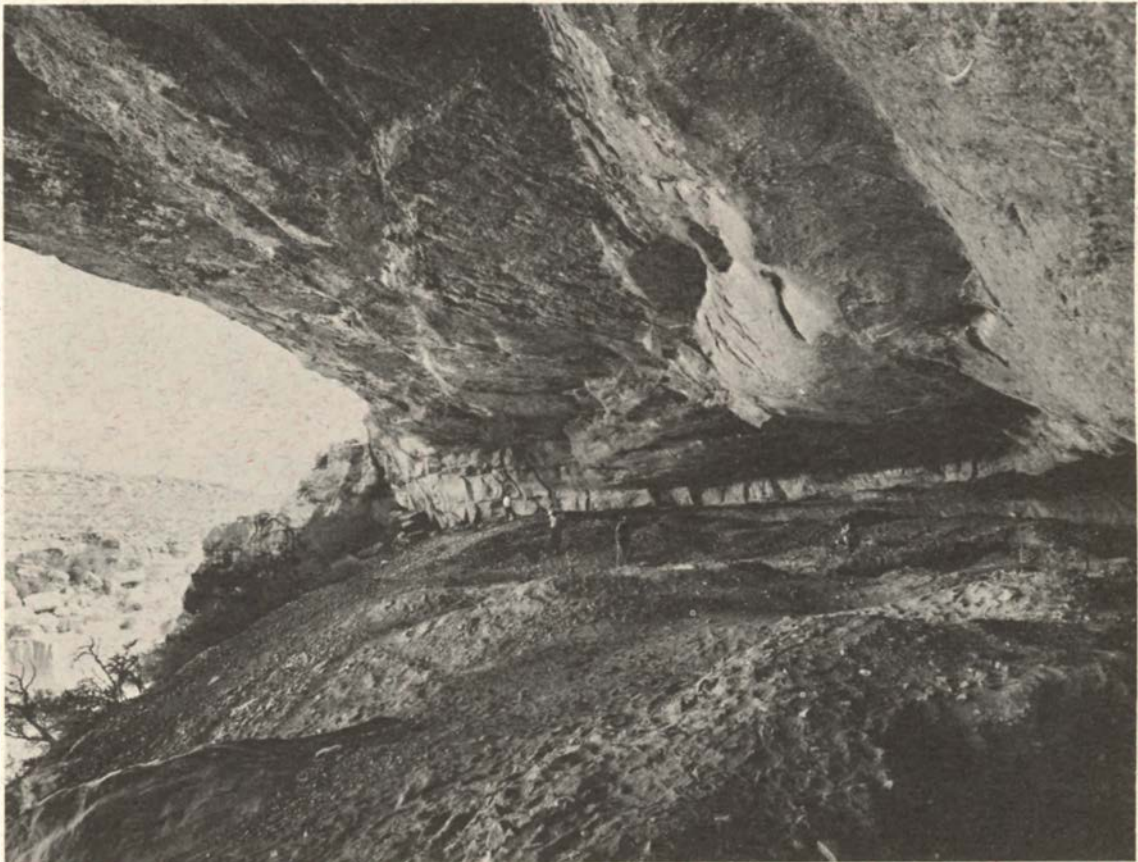


Black Cave, a large rockshelter in Big Canyon eastern tributary of Seminole Canyon.

West across Seminole Canyon to huge Fate Bell Rockshelter, one of the most important and spectacular archeological sites in region.



Cultural deposits in the extensive midden heaps—many of them deep and clearly stratified—have yielded a wealth of information concerning prehistoric man's occupancy of the region. The confirmed time span is from the big-game hunters of at least 10,000 years ago in the Paleo-Indian Stage (prior to 7000 B.C.), through the Archaic Stage (7000 B.C. to A.D. 1000) and Post-Archaic Stage (A.D. 1000 to 1600), and into the early part of the Historic Stage (A.D. 1600 on). The best known culture unit of the Archaic Stage in southwest Texas is the Pecos River Focus. The enormous Fate Bell Rockshelter in Seminole Canyon in the proposed national recreation area has been designated as the type site for this focus.



Although there appear to be no long breaks in the continuity, an intermittent occupation or use of the shelters and other sites in this region is suggested by the character of the remains, which lack the structural elements and tools normally associated with sedentary cultures. All are typical of a way of life dependent on a hunting and gathering subsistence adapted to an arid or semiarid environment.

Inside Fate Bell Rockshelter, designated as type site for Pecos River Focus of Archaic Stage. This will be of significant visitor interest and will require protection from vandalism.

Particular distinction is given this region by the extent and quality of its primitive rock art. There can be little doubt that the Amistad area is one of the major pictograph localities of the world. Panels of superbly executed pictographs, many in excellent state of preservation, are found throughout the reservoir basin in association with the overhangs and large rockshelters along the rivers. The murals in the area around the Pecos-Rio Grande confluence combine color, form, and composition in a highly developed art style which probably has few parallels in the New World. The Amistad pictographs are also notable for their abundance in a relatively small geographic area. Some of the sites also contain petroglyphs—figures pecked in the rock surface.

Panther Cave or Rockshelter near mouth of Seminole Canyon, one of the most important pictograph sites. Painting of panther is on far wall between two visitors. Site will require protection because of easy access from reservoir.



Pictographs in Panther Cave.



The vast majority of the paintings feature a polychromatic technique and depict highly stylized life-size anthropomorphic figures, naturalistic animal representations, and a variety of geometric forms. Artistic qualities of color harmony and balance, accuracy, conventionalization, and action are remarkably advanced. This style appears to be related to the Pecos River Focus and is the dominant tradition of the Amistad area. Another style which is regarded as a late intrusion is found either in separate sites or superimposed upon the earlier Pecos River Focus art. Its paintings are in red or black monochrome and are characterized by realism in the depiction of natural forms. At one site in the proposed national recreation area, pictographs of this later type include historical elements such as horses, missions, and men in European dress.

Another archeologic feature at Amistad is both fascinating and unique. At Bonfire Shelter in Mile Canyon is a bison-kill site that was used repeatedly by Paleo-Indian hunters and, after a lapse of more than 7,000 years, briefly by Indians of late Archaic times (about 650 B.C.). The site was a bison "jump"—a precipice over which the Indians drove herds of unsuspecting bison to their death and then butchered them. Although the technique was fairly standard in the northwestern Plains, no other such kill site is known within 350 miles of this solitary one at Amistad. Recent studies of this jump indicate that during its second brief period of use—perhaps lasting only one season—over 800 bison were herded over the lethal cliff in a single, extremely successful drive.

Investigations of Amistad's archeological resources began with a limited reconnaissance by the Witte Memorial Museum and the Southwest Texas Archeological Society in the early 1930's and continued sporadically in that decade with exploratory studies and excavations of a few selected sites. The University of Texas, Gila Pueblo, the Smithsonian Institution, and the West Texas Museum were among the sponsors of these early investigations. Their findings were never adequately published but they did serve to focus attention on the richness of the region's archeological remains. In so doing, they also touched off an era of vandalism and looting which has left few of these sites undisturbed.

General site and pictograph surveys were also conducted in the 1930's by several individuals, notably Forrest Kirkland for the Texas Archeological and Paleontological Society



Across Mile Canyon to site of Bonfire Rockshelter and bison jump. Prehistoric Indians killed bison by driving them over cliff just beyond talus slope and butchered them in cave behind talus. Site was inhabited intermittently for over 10,000 years.

and A. T. Jackson for the University of Texas. J. Charles Kelley carried out extensive research on the archeology of Trans-Pecos for the West Texas Historical and Scientific Society during this period and he is largely responsible for the present archeological concepts of the region. These studies are well reported in the literature.

In the 1950's, with approaching realization of plans to construct the Amistad International Dam, a sense of urgency greatly accelerated the tempo of archeological investigations. It was evident the reservoir project would inundate many of the sites, seriously impair others, and jeopardize those above maximum flood-pool level by making them much more accessible. A series of intensive studies was instituted to salvage the area's archeological data before they were irretrievably lost. The initial survey was conducted in the winter of 1958 by the Archeological Salvage Program Field Office of the National Park Service, Austin, Texas. Guided by its recommendations, a program of excavations in the U.S. sector of the reservoir basin has been continued on almost an annual basis by various personnel of the Texas Archeological Salvage Project, University of Texas, under contract with the National Park Service. Noteworthy also is a preliminary study of the region's paleoecology which was conducted in 1966 under the auspices of the National Science Foundation.

The Mexican side of the reservoir has not been neglected. In the fall of 1957 a cooperative project between authorities of the two countries was set up to conduct archeological investigations in the area to be flooded. Dr. Walter W. Taylor of the Dirección de Prehistoria, Mexican National Institute of Anthropology and History, was in charge of the work. A total of 63 sites of the types on the U.S. side were inventoried. The great majority of rockshelters were clustered in the area opposite the mouth of the Pecos River, which was also the only sector in which any appreciable vandalism was noted. Sites of all types were relatively rare on the Mexican side as compared with the American, and, strangely, only one series of the distinctive Pecos River Focus pictographs was found. There is an undoubted correlation between these disparities and the fact that most of the major springs in the region are on the U.S. side, where the cultural hearth of these aboriginal peoples was evidently centered.

Some of the more significant references on Amistad's archeology are listed in the bibliography.

FACTORS AFFECTING RESOURCES AND USE

Authority for the construction of Amistad Dam and Reservoir by the International Boundary and Water Commission was provided by the Water Treaty of 1944 between the United States and Mexico (59 Stat. 1219) and, insofar as the U.S. sector of the project is concerned, by Public Law 86-605 of July 7, 1960 (74 Stat. 360). Actual arrangements for the joint construction, operation, and maintenance of the dam and reservoir by the two Governments are based on the 1944 treaty and on pursuant minutes of the International Boundary and Water Commission. Certain provisions in these documents have a bearing on recreation planning and use and are, therefore, referenced in this master plan.

Water Treaty of 1944: Among other things the treaty established that the international boundary between the two countries—i.e., the centerline of the Rio Grande—will remain unchanged after it is obscured by the impoundment, and that public use of the reservoir surface is to be “free and common to both countries, subject to police regulation of each country in its territory.” The international boundary is also the southerly, or water-side, boundary of the proposed national recreation area.

The treaty provides that the flow of water into the reservoir be measured and credited to each country in accordance with ownership of such inflows and that each country is free, at any time, to utilize its share of water for direct beneficial use or for storage in other reservoirs. While this might imply an unfavorable outlook regarding stability of the lake for recreational use, the treaty further stipulates that storage shall be maintained at the maximum possible water level consistent with flood control, irrigation use, and power requirements. As a guide, the treaty also specifies the following “order of preference” for joint use of international waters:

1. Domestic and municipal uses
2. Agriculture and stock raising
3. Electric Power generation
4. Other industrial uses
5. Navigation
6. Fishing and hunting
7. Any other beneficial use which may be determined by the Commission.

LEGAL FACTORS



Upstream side of Amistad Dam in January 1968. Mexican half in foreground, U.S. half in background.

Public Law 86-605: In authorizing United States participation in the Amistad Project, this act refers to and, in effect, adopts the specifications described in a September 1958 report by the U.S. Section of the International Boundary and Water Commission, entitled "Rio Grande International Storage Dams Project: Proposed Diablo Dam and Reservoir." This report is a detailed feasibility study, from the standpoint of the United States, expanding on the engineering findings in the Commission's Minute No. 207, dated June 19, 1958—also cited in the above act. Among its conclusions the minute contains the first recognition by the sponsoring agency of the project's recreation opportunities. The September 1958 study treats this in depth by including, as parts of an appendix, separate reports by the Bureau of Sport Fisheries and Wildlife on the reservoir's fish and wildlife aspects and by the National Park Service on its recreation potential (the latter had actually influenced the conclusion in Minute No. 207). The citing of these documents in the legislation established the basic authority for including outdoor recreation as one of the project purposes at Amistad. As initially conceived in the feasibility studies, responsibility for administering this use was proposed for the State level.

The September 1958 report and Minute No. 207, together with related report correspondence, were published as Senate Document No. 65, 86th Congress, 1st session, dated September 9, 1959. This is a basic background reference. On October 12, 1959, the Presidents of the two countries, meeting at Camp David, Maryland, chose the name Amistad Dam (amistad is "friendship" in Spanish) to designate this proposed structure. The cover of Senate Document No. 65 was changed to reflect the new name and the project has since been known as Amistad, but the entire contents of the publication retain the old name, Diablo.

The intent of the legislation and the international agreements on which it is based is that the operation of the Amistad Project will be coordinated with that of the existing Falcon Reservoir downstream. Insofar as the U.S. share of storage waters is concerned, some of the basic operating principles outlined for Amistad are: 1) That releases of water for flood-control purposes (together with Mexican waters, as determined by the International Boundary and Water Commission) shall be at the minimum rates practicable, and, if possible, not in excess of the safe capacity of the river channel below the dam; 2) that in regard to the

generation of power, no waters will be retained solely to maintain a power head and, as a rule, the generation of power will be incidental to other releases of water, although the U.S. Section of the Commission may, when consistent with maximum feasible regulation of waters for domestic and irrigation uses, make additional releases to permit, in combination with Mexican releases, optimum generation of hydroelectric energy.

Although, by agreement between the two Sections, each country may construct its own power generating facilities, and Mexico is so proceeding, those on the U.S. side are being deferred until a future time. The penstocks, of course, are in place in the dam.

Mexico's proposed plan of operation for its share of the water stored at Amistad is believed to be based on similar principles.

A major provision of Public Law 86-605 specifies that releases of the U.S. share of waters for domestic, municipal, industrial, and irrigation purposes shall be made pursuant to order by the appropriate authority of the State of Texas. Further, in order to comply with a stipulation by the State that water available for use below Falcon Dam be not less than the amount previously available, the appropriate authority of the State shall have the exclusive responsibility for distributing additional waters stored by Amistad Dam in such a manner as will meet this stipulation.

National Park Service Administration of Recreational Use: The Act of August 7, 1946 (60 Stat. 885) provides general authority for the National Park Service to administer recreational use of areas under the jurisdiction of other Federal agencies pursuant to cooperative agreements. Such a Memorandum of Agreement between the United States Section of the International Boundary and Water Commission and the Service was executed on November 11, 1965. This agreement, approved by the Assistant Secretaries of State and Interior, provides the present basis for Service administration of public use of lands and waters in the U.S. portion of the Amistad Project.

In accordance with Article I of the agreement, the U.S. Section of the Commission will retain jurisdiction of those project lands on the American side required for the construction and operation of the dam and engineering works,

and the Service will administer all other existing and future lands acquired by the Section for project purposes. The article also specifies that, subject to treaty and statutory requirements, the Section will at all times conduct its operations with consideration for the best possible recreational use and enjoyment by the public. Towards this end, the Service is to provide the Section with information as to the optimum and minimum pool levels desirable for public use.

The article further specifies that each agency shall obtain the concurrence of the other prior to making any new development or granting any concession, lease, license, or permit which could affect the other's activities or facilities.

Article II of the agreement spells out the functions of the Service, which include the following responsibilities: Prepare plans for, finance, and construct recreational facilities in coordination with the Section and other concerned Federal, State, and local agencies; negotiate and administer private concession contracts for supplying necessary visitor services related to recreational use of the project area, and arrange with appropriate State authorities for the consumptive use of any waters related to such services; promulgate and enforce such rules and regulations as are necessary or desirable for conservation and recreation purposes; establish and maintain protective, interpretive, and other facilities and services necessary for the safe and full use and enjoyment of the area, and coordinate information activities with the Section in order to facilitate public understanding of the interrelated programs of the two agencies; administer any grazing use on project lands after consultation with the Texas Parks and Wildlife Department; cooperate with State and Federal Wildlife agencies as desirable for the conservation and protection of wildlife; ensure that no recreational use be permitted which is inconsistent with the laws of the State of Texas for the protection of fish and game and of the public health, safety, and welfare, and perform such other functions as are reasonably related to, or necessary for, Service administration of the project area.

Article III of the agreement outlines the functions of the Section, which include the following responsibilities: Construct, operate, and maintain the U.S. portion of Amistad Dam and Reservoir and appurtenant engineering works; consult with the Service concerning development or administration of recreational facilities or public information ser-

vices to be provided in the areas retained under jurisdiction of the Section; establish and enforce rules and regulations governing public access to the dam and engineering works; establish and, in cooperation with the Service, enforce limitations governing aquatic approach to the dam and appurtenant works as may be necessary either for their efficient functioning or for public safety; and cooperate with the Service to promote coordination of recreational development and administration with the construction and operation of the dam and reservoir.

Article IV provides that the memorandum shall remain in force as written unless revised or terminated by mutual agreement, or unless termination is directed by the Secretaries of State and Interior, or until enactment by the Congress of inconsistent or superseding legislation.

Jurisdiction: The National Park Service has proprietary jurisdiction over the U.S. portion of the recreation area. Because the waters will be considered navigable, the U.S. Coast Guard regulations will apply to the American side.

Acquisition of Amistad Project lands by the International Boundary and Water Commission is in compliance with Article 23 of the 1944 Water Treaty, which reads in part:

The two governments recognize the public interest attached to the works required for the execution and performance of this treaty and agree to acquire, in accordance with their respective domestic laws, any private property that may be required for the construction of the said works.

Each section of the Commission shall determine the extent and location of any private property to be acquired within its own country and shall make the necessary requests upon its government for the acquisition of such property.

Apparently the Mexican Government already owned the lands on its side of the border in the project area and there is no question of shoreline control. With minor exceptions described below, lands on the American side have been, or are in the process of being, acquired by the U. S. Section of the commission according to specific criteria. For those areas containing the dam and permanent operating structures the acquired title is in fee simple. For most other lands

LAND STATUS

in the reservoir area below the 1144.3-foot flood-pool contour, for certain recreation development sites above that contour plus an additional site below the dam, and for all islands that will be formed at any reservoir level, the estate is "fee simple, save and except oil and gas." This title reserves the oil and gas rights to the former owner but carries a restriction against exploiting them which is expressed in either of two ways, depending on the location of the lands. In its commonest form, applying to all lands below the 1144.3-foot contour in most of the reservoir basin, the covenant stipulates that the estate remaining in the former owner is

subject to a negative easement in and upon said lands to prohibit the drilling or deepening of any well for the purpose of producing oil and/or gas, provided, however, that exploration and development of oil and/or gas under said lands will be permitted by directional drilling from locations above the 1144.3-foot elevation contour boundary of said parcels.

In all other lands acquired in fee, particularly those lying above the 1144.3-foot contour whether islands or mainland, the second and more stringent type of restriction provides that

there is excluded from said mineral rights any right of the owner thereof to enter upon said parcels of land, or to mine, drill, or explore for minerals, or produce, store, or market the same from, upon, or through the surface of said parcels.

While the latter stipulation is silent regarding permission to drill directionally from exterior locations, such a right is implied.

Exceptions: In the earliest acquisitions in areas near the dam and along the Devils River, the Boundary Commission was following a policy calling for fee title on only those lands in the basin below the 1117-foot operating-pool contour, with a flowage easement on the remainder of the lands up to the 1144.3-foot contour. The latter interest is described as a

perpetual easement to overflow, flood, and submerge lands intermittently between elevation 1117 and 1144.3 and for ingress, egress, and regress for

the purpose of operation and maintenance of the Amistad Dam and Reservoir; provided that no structure for human habitation shall be constructed or maintained on said lands; and provided further that no other structures shall hereafter be constructed or maintained on said lands except as may be approved in writing by the United States Commissioner, International Boundary and Water Commission . . .

Throughout the areas covered by this easement, the Commission also acquired the overlapping negative easement pertaining to oil and gas, but only for the zone between the 1117- and 1140-foot contours. In these cases, directional drilling was permitted above the 1140-foot elevation. Below 1117 feet, the exclusion-from-entry type of restriction on oil and gas was applied, rather than the negative easement.

Upon recommendation by the National Park Service in 1963, the Commission agreed to abandon the use of the flowage easement in subsequent acquisitions by extending the fee criterion up to the 1144.3-foot contour. In addition, the Commission determined that for those flowage easements already acquired, it would attempt to secure the additional interest for fee title if the cost were reasonable. It was also at this stage that the Commission agreed to include all islands rising above the maximum water level in the program of fee-simple (save oil and gas) acquisition, and, cost permitting, to go back and secure the additional interest on those entire islands where only the flowage easement between 1117 and 1144.3 feet had already been acquired. It appears unlikely that the Commission will be completely successful in reaching these objectives, and it is anticipated there will remain some islands and mainland strips on which the Government lacks the fee title between 1117 and 1144.3 elevation, as well as some islands above 1144.3 feet on which there is no acquired interest.

Since only minimal recreational values are attached to the Rio Grande channel upstream from where the 1117-foot contour crosses it, this crossing marks the upper limit of the proposed recreation area boundary on that river. On the Pecos and Devils Rivers, the limit is the 1144.3-foot-contour turnback.

After the maximum flood-storage level had been calculated to be the 1144.3-foot contour, redesign of the project raised this to 1145.12 feet. However, no interests or restric-

tions of any kind are contemplated in the Boundary Commission's acquisition program for this additional 0.82-foot-high zone because the theoretical possibility of its being flooded is so remote.

The existing 7-mile access road leading from U.S. 277 to the proposed Rough Canyon recreational site on the Devils River was acquired in the Commission's program along with lands at that site because the road was in the same ownership. The road will remain Federally owned for public use. Also, right-of-way for an access link between the highway and the proposed Long Point site has been acquired.

In its lower reaches the Amistad Project necessitated relocation of U.S. 90 and 277 and the Southern Pacific railroad to new alignments, segments of which cross the recreation area. The Commission acquired the new rights-of-way and retained fee title to the portions within the recreation area. No relocation was required where U.S. 90 and the railroad cross the Pecos River arm of the reservoir, and there the Commission may acquire only a flowage easement within the pre-existing rights-of-way.

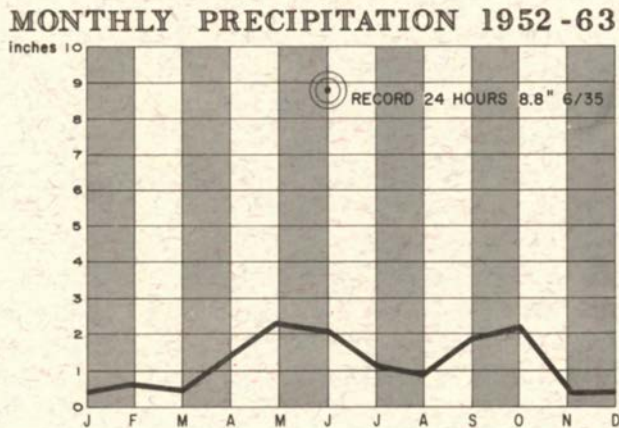
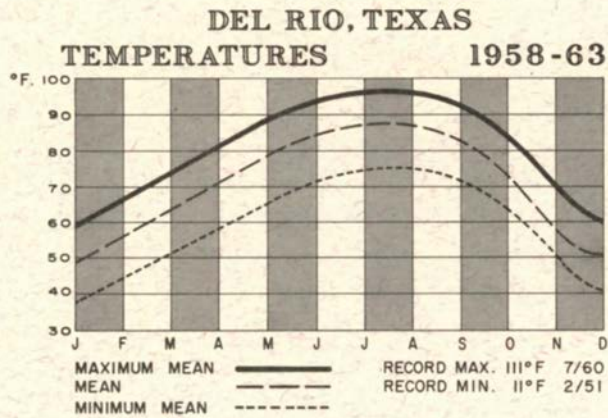
CLIMATE

The weather at Amistad Reservoir is conducive to year-round recreational use. The area has a semiarid continental-type climate, lying essentially within the diffuse transitional zone between the dry Southwest and the wetter, generally lower areas of central and southern Texas. Aridity increases northwesterly, humidity southeasterly.

Summers are hot and winters mild; the occasional snowstorms are seldom heavy enough to blanket the ground. There is little disruption, therefore, of construction or visitor-use seasons attributable solely to weather.

Attempts to categorize rainfall distribution in this region are largely academic, but records show that Del Rio has an average annual precipitation of 18.58 inches, while Langtry, 50 miles to the northwest, has 14.13 inches. The pattern is erratic and highly irregular over the years; long droughts are broken by intense storms which on occasion have brought as much as twice the yearly average rainfall in less than a week.

Winds are generally from the southeast in summer and the northwest in winter. Normally they vary in intensity from 0 to 28 miles per hour, with an average of 8.8. The higher wind speeds are usually associated with winter storms.



In spite of the relatively hot and arid climate which prevails throughout most of the year, fire conditions are not considered serious because of the general lack of sufficient vegetative fuel. However, in those areas where grazing may be terminated and which are not otherwise disturbed, fire hazard will increase as the normal vegetation density is restored.

FIRE HISTORY

Except for the steep-walled canyons of the rivers themselves, the terrain in the reservoir vicinity is a rather uniform, moderate dissection of the gently rolling Edwards Plateau. The landscape is generally low hills and shallow open valleys, and where this surface is interrupted by the canyon system the transition in topography is usually abrupt. Largely confined to a mile in width, a variable zone containing sharply incised drainage tributaries and rough slopes extends back from the canyon rims.

TERRAIN

The above characteristics impose no serious problems for most aspects of recreational site planning, as adequate tracts with relatively mild relief suitable for public-use developments are available along the shoreline. Such a relief as there is, in fact, presents a pleasant and diversified setting for recreational activities on both land and water. However, at some of the sites, the steepness and rockiness of the slopes below flood level will make construction of ramps and other marina facilities difficult.

The reservoir scene will be divided into two distinct types as a result of water level in relation to topography. The controlling condition lies in the fact that the land elevations gradually decrease toward the downstream parts of the reservoir. Thus, impounded water there will generally overtop the canyon rims and extend out over the gentler slopes of the basin for distances up to 3 miles; in marked contrast, water at the same levels in the upstream reaches of the reservoir will always be confined within the steep canyon walls. In terms of visual impressions, the main body of the reservoir—occupying roughly the eastern half of its longitudinal limits—will consist of broad expanses of open water with long unobstructed vistas between the land and water surfaces. Clearly distinguished from this scenic province will be the narrow fiordlike ribbons of the reservoir in the western half, where the canyon rims lie above maximum water level.

Elevations within the recreation area boundaries range from 900 feet above sea level at the foot of the dam to 1,400 in the proposed development site above the Pecos-Rio Grande confluence. Some of the bordering hills in the western part of the basin exceed 1,600 feet. The average break of the surface at the canyon rims in that sector varies from 1,200 to 1,300 feet.

SOILS

Except in the river bottoms and tributary canyons, much of which will be flooded by the reservoir, the soil mantle in this vicinity is generally quite thin and stony, with large areas of exposed limestone bedrock. Most of the soils are calcareous and are classified in the Rough Stony Land group of the Ector series. Higher in the profile are Del Rio clays which are found in narrow zones along most of the length of the reservoir. At several places in the downstream

parts of the lake this formation will be subject to inundation, and where this occurs slumping of the overlying material can be anticipated. Such sites should be avoided in development planning. After several years of exposure to the fluctuating reservoir waters, the fallen rocky material may act as natural riprapping and more or less stabilize the banks.

The present pattern of land use in the Amistad vicinity is described in the section on Surroundings and Existing Use. Creation of the reservoir will locally affect these resource activities in various degrees ranging from complete elimination to mere modification, while wholly new types of use will appear as a result of the project. The obvious innovation is the water impoundment itself, although it has a precedent in the two small reservoirs on the Devils River—Lake Walk and Devils Lake. The entire operation of the Central Power and Light Company on this river, consisting of hydroelectric works at the two lakes and a steam plant below them, all subject to inundation, was terminated during the early stages of land acquisition for the Amistad project.

For the most part the effect on other pre-existing uses will simply be their exclusion from areas actually flooded or required for public purposes; their continuance elsewhere in the recreation area under controlled conditions is considered compatible with the dominant resource management purpose of outdoor recreation.

Grazing: Lands in this vicinity have been used almost exclusively for sheep and goat grazing. To the extent that grazing will not be detrimental to public or project use or impair archeological values, it will continue to be allowed under regulation in the national recreation area if the adjoining landowners desire it. This policy conforms to the existing Memorandum of Agreement between the U.S. Section of the International Boundary and Water Commission and the National Park Service relating to recreation administration by the latter (which agreement, incidentally, specifies that the Texas Parks and Wildlife Department will be consulted concerning grazing activities). In accordance with policy established by the Section, preference in granting a grazing lease or permit on a particular tract of land will be given to the former owner, who will also be allowed to retain his existing stock-control fences which extend into

RESOURCE USE

NON-RECREATIONAL

the reservoir. Provision for reasonable access of the stock to the water is contemplated in this procedure. In general, the only lands where grazing will be excluded are those containing administrative and recreation developments, other places of heavy visitor use, islands, and the archeological sites. As a practical matter, there will be virtually no grazing in the canyon portions of the recreation area because of inaccessibility and lack of vegetation on the limestone walls. Elsewhere on the reservoir shorelands the quality and carrying capacity of the forage may actually be improved over their former condition as a result of intermittent flooding by the fluctuating waters.

Mining: Theoretically, adverse subsurface mining is possible in any part of the recreation area except lands containing the dam and permanent operating structures, because the basic land-acquisition criterion reserves the mineral (specifically, oil and gas) estate in private ownership. Practically, however, the question of resource-use compatibility does not arise because restrictions in the land deeds deny the former owners all rights of access to oil and gas through the surface of the acquired tracts. Any such activity must be by means of directional drilling from outside the takeline. There are presently a few exceptions to this condition where the Boundary Commission has been unable to acquire some islands, and where some island and mainland strips between the 1140- and 1144.3-foot contours lack the negative easement against drilling.

Residential: Still in its infancy but with a potential for rapid growth in the area immediately outside the project boundaries is the emerging new trend in land use—residential subdivisions. It is directly stimulated by the anticipation of an aquatic playground in the “front yard.” This inevitable private activity cannot fail to have a bearing on management of the recreation area, but so long as it does not compete for lands identified for inclusion in the area it cannot be considered incompatible with public use of the reservoir. Cooperative county zoning regulations would minimize adverse effects on such use.

RECREATIONAL

Other than changing from private to public auspices, the pre-existing limited recreational uses within the project area will be affected only as to location and capacity when the reservoir forms. None of the types will be eliminated. The

area's principal recreation resource was embodied in Lake Walk and Devils Lake, which will become incorporated in Amistad Reservoir. The facilities to be flooded out of existence there include boat docks, fishing camps, a motel-cafe-camp complex, and an Air Force recreation center. The same types of developments, with much greater total capacity, will be substituted at various sites in the national recreation area.



The stream fishing formerly enjoyed along the short stretch of the Devils River below Lake Walk will simply be shifted upstream to the segment of the river within the recreation area above Devils Lake. Depending on the reservoir level at the time, the length of free-flowing river in public ownership here will vary from 2 to 10 miles during normal storage conditions.

The acreage of hunting lands will of course be reduced by whatever amount is under water, but where there were no public lands at all before the project there will now be considerable areas available for public hunting.

The whole concept of outdoor recreation in the region takes on a new order of magnitude with the formation of Amistad Reservoir. Factors which will combine to generate heavy use here are the presence of a large body of water with substantial and scenically attractive recreation opportunities in a section of the country where resources of this caliber are rare, climatic conditions favorable for year-long use, and a location easily accessible to a large segment of the population. These qualities would be significant any-

Up Devils River to Lake Walk and Devils Lake. Both impoundments will be inundated by Amistad Reservoir but will periodically re-emerge during drawdown.



Existing Lake Walk, to be inundated by Amistad Reservoir, suggests appearance of the latter's canyon sectors.

where, but Amistad's setting on the international border—a distinctive lure that already accounts for considerable tourist travel in the area—sets this reservoir apart from the many impoundments to the north. The attraction will not be limited to visitors from the United States; it can also be expected to entice the residents of a warmer and drier area south of the border—a portion of Mexico almost completely devoid of water-associated outdoor recreation. The wide range of water- and land-based recreational activities for which Amistad is suitable are listed below. Potential total user demand is estimated to be one million visits annually by the end of the first 5 years of operation, increasing to two million by the year 2000.

Sightseeing: Probably this will always be a major activity at Amistad in terms of participant numbers—both by visitors who come primarily for other recreational purposes and by those who are there just to look. Most of the latter will not be prepared or equipped to engage in other pursuits, but many may take advantage of rental or charter facilities and services.

Sightseeing will be most rewarding by boat, but will also be enjoyed by automobile aircraft, horse, and foot. The upper canyon sections of the reservoir will have the most scenic interest, although the dam itself will be a popular attraction. Practically all U.S. visitors will want to cross the dam in order to see at least a little of Mexico. The opportunity to tour the Mexican shoreline will appeal to boaters.

Boating: Certainly this will be a major use of the Amistad Reservoir, not only as a recreational pursuit in itself but also as a means of engaging in such other activities as water skiing, skindiving, sightseeing, exploring, fishing, hunting, and secluded camping. Reasonably steady breezes and the absence of a high, wind-deflecting shoreline in the main body of the reservoir should provide attractive and relatively safe conditions for sailboating.

The Rio Grande will often have a free-flowing stretch below Langtry, its length depending on the position of the impounded water level. Even when that level reaches up into this part of the canyon, the river's current will continue to be manifest a good part of the time. During periods of proper conditions it will be possible for boats, canoes, or rafts to launch at Langtry and float the current down to a take-out point near the Pecos River confluence, a distance

of about 24 miles. At higher stages of reservoir storage, combination float-power trips will be feasible. It is in this section of the reservoir that the canyon is most tortuous, sheer walled, and scenic—qualities contributing to outstanding enjoyment of this more adventuresome type of use.

Swimming: With favorable air and water temperatures throughout most of the year, swimming will be popular at Amistad. However, because of the expected fluctuation of the reservoir level, swimming pools will be a more practical type of facility than beaches to provide for this activity. Scuba diving and snorkeling from boats or shoreline will be feasible in the reservoir itself.

Camping and Picnicking: Both of these uses should prove to be exceptionally popular, not only by visitors basing here for active recreational participation but also—in this region of little water—by those who just enjoy looking at and being near bodies of water. In addition to heavy utilization of camping and picnicking facilities at formally developed sites, considerable use can be expected at primitive places along the reservoir shoreline and on islands.

Permanent camping and related recreational facilities for organized groups would be appropriate at Amistad under either special-use permit or concession operation.

Fishing: The Bureau of Sport Fisheries and Wildlife has indicated that fishing in Amistad Reservoir for largemouth bass, white bass, and white crappie will be excellent for the first few years of operation and channel catfish will provide good fishing for many years. With adequate management it is anticipated that fishing quality can be maintained at a high level indefinitely. Construction of the project will greatly enhance ecological conditions of the Rio Grande below the dam, and consequently, stream fishing in this reach is expected to improve considerably; moreover, access to several miles of streambank in the upper reaches of all three of the impounded rivers will be improved. Fishing in the reservoir itself will be enhanced by the construction of floating fishing docks. The Bureau estimates 100,000 man-days of fishing use annually for the entire recreation area.

Hunting: Although only a limited amount of land above operating-pool level will be in the recreation area, experience at other reservoirs indicates that it is on these lands that a great percentage of the wildlife will concentrate. As a

result, hunting at Amistad should be an important recreational activity. Whitetail deer, mourning dove, and waterfowl will be the major species sought, and collared peccary, rabbits, and quail to a lesser degree.

Most of the lands outside the Federal boundaries will continue to be subject to private hunting on a lease or fee basis, probably on an expanded scale as the demand increases. Generally, these lands must be crossed—if approach is from the outside—in order to reach the portions of the recreation area where hunting can be permitted, which will be those areas containing no developments and, therefore, no public access roads either. Thus, much of the hunting use in the recreation area will depend upon the private arrangements on adjacent lands. As a rule, hunting originating from within the boundaries will require the use of boats to gain access to the shorelands.

It is in the interests of both the Government and the adjacent landowners to at least mark and post the entire recreation area boundary.

Shoreline Use: Hunting, streambank fishing, primitive camping and picnicking, exploring, and sightseeing have been mentioned as types of land-associated recreation complementing the aquatic activities. Other quality uses for which Amistad's varied zone above the fluctuating water level will provide excellent opportunities are hiking, horseback riding, rock climbing, photography, nature and archeological study, or just relaxation and the enjoyment of solitude. Important to this spectrum of recreational activities are the impressive upper canyon topography, the innumerable tributary canyons and coves, and the various islands which will be isolated by the lake.

Amistad's predominant Georgetown limestone formation contains abundant marine fossils which are continually being exposed through weathering and may thus be regarded as a renewable resource, though of course not technically so. Loose pieces of rock containing the fossils may appeal to visitors as souvenirs. Individual collecting of such rocks, but not quarrying, for purely private use and enjoyment, as distinguished from that done for scientific and educational purposes normally covered by permit, should be allowed under regulations specifying localities and conditions which will preclude loss of possible scientific or interpretive values.

Other Outdoor Recreation: In addition to campgrounds, picnic areas, and swimming pools, other appropriate uses associated with permanent facilities on sites above the maximum flood level, and favored by Amistad's climate, include such sports as golf, tennis, softball, shuffleboard, target or trap shooting, archery, and bicycling. Most of these are normally the function of concession operations.

Interpretation: In order to realize the full recreation potential of the area, the administering agency has the opportunity—as well as the obligation—to interpret the natural, historic, and manmade values of the region. At Amistad the opportunity is a significant one, particularly as regards the story of prehistoric man so prominently evidenced here.

Although most of the reservoir basin's landforms are unspectacular, it is a region of highly interesting geology, particularly in the eyes of the large percentage of visitors who will come from the relatively featureless plains country. The dominant element of the landscape is the conspicuously bedded limestone series which cannot fail to draw attention. Related to this is the noteworthy ecological story to be told in the intermingling of desert, limestone upland, and gulf coastal plant and animal species in this semiarid climate. Again, most visitors will find Amistad's flora and fauna to be quite different from those of their acquaintance and they can be expected to appreciate a modest biological review. Abundant opportunities exist to interpret these values through nature trails in the planned development sites.

The outstanding archeological resources which contribute so much to Amistad's significance are important not only to science but to the visitor's recreational enjoyment. The interpretation of these features, both on-site and through museum exhibits, will have a key place in the overall program of public services.

Even in the historic period the story of man at Amistad is a fascinating one, and many facets of it merit interpretive treatment. But no chapter is more remarkable than that dealing with the reservoir project itself. Visitors will be especially interested in this impressive engineering achievement, and the background of international friendship and cooperation which led to its development should be adequately told. In addition to the actual construction of the dam, the account should cover its purposes and its relation to other water projects and conservation needs of the two countries along their common border.



South down Seminole Canyon (foreground) to confluence with Rio Grande, Mexico in background. Panther Cave is in cliff face at left of Seminole's mouth.

The Plan

This plan translates the outstanding potential for water-associated outdoor recreation at Amistad Reservoir into requirements for effective management and development of the United States sector. Enactment of legislation by the Congress is requisite to the plan's implementation.

Public-use management will be in accordance with the policies of the National Park Service for areas in the recreation category. User fees will be collected.

The plan anticipates adequate facilities on the American side to accommodate a wide range of outdoor recreational activities, designed to meet the varied interests of all age groups. While primarily oriented to the area's aquatic resources, recreation planning envisions full provision of land-based developments for both short- and long-duration use. Taken into account are the reservoir's appealing international setting astride the Mexican border and the opportunities for complementary operations by the two countries.

Land-acquisition recommendations for the national recreation area are commensurate with the above scope of development, as well as with needs to protect the area's exceptional archeological values and to enhance visitor enjoyment of its scenic qualities.

Recreation-oriented interpretation will give primary attention to the archeological resource, with secondary emphasis on the region's geological and ecological stories, relating these to man's modern multipurpose use of the reservoir basin.

Under this plan, the optimum visitor capacity at Amistad is estimated to be 15,000 per 24-hour period.

The United States Section of the International Boundary and Water Commission has existing statutory authorization to acquire, in fee or lesser interest, approximately 57,360 acres of land for the Amistad Recreation Area, plus rights-of-way for the relocated railroad and highways traversing the reservoir basin. Of this total, some 2,424 acres are available for public-use development, being distributed among eight sites lying immediately above or outside the reservoir's maximum flood level. As far as they go, most of these tracts are considered individually adequate in size for the scale of use envisioned in this plan. Elsewhere, the 1144.3-foot flood contour, which is the basic project takeline, makes a satisfactory boundary for at least the main body of the recreation area, where the shoreline is more gently sloping and prevailing storage conditions leave a considerable width of land between the takeline and the water.

However, realization of Amistad's full recreation potential and protection of its archeological values will require additional authorization to supplement the above land limitation by about 5,110 acres. This increment has two basic components: 1,900 acres divided between three separate development areas, and 3,210 acres in an aggregate of narrow strips of land embracing scenic canyon walls and important archeological sites in the western part of the reservoir.

LAND ACQUISITION

Up Rio Grande to confluence of Pecos River, entering from right. Pecos River recreation site occupies upland on near side of confluence. Mexico on left. Amistad Reservoir here will be confined by scenic canyon walls.



Of the three areas involved in the 1,900-acre addition, two—Pecos River and Rough Canyon—are among those for which the Boundary Commission is acquiring some lands under its own authority, but in these two cases the acreage is far less than needed to accommodate planned developments (see section on Development). The third site, designated Comstock, was not identified until after the Commission's land program was authorized and is wholly supplemental to that program. For most of the additional acreage the required estate is in fee simple, although the Commission's principle of excepting oil and gas, with an exclusion of actual entry, is considered suitable. Parts of the Pecos River and Comstock sites are not directly needed for development but will serve as background buffer zones protecting esthetic aspects of visitor use; on these a scenic easement, with grazing permitted, will suffice. Following is a tabulation of acreages at the three sites under existing and proposed authorizations:

	Rough Canyon	Pecos River	Comstock
Existing IB & WC	15	10	0
Proposed NPS, fee	70	651	695
Proposed NPS, easement	<u>0</u>	<u>49</u>	<u>435</u>
Proposed NPS, total	<u>70</u>	<u>700</u>	<u>1130</u>
Site Total (above 1144.3')	85	710	1130

At a point on the Rio Grande about 10 miles below the mouth of the Pecos River, the canyon walls begin to have an elevation exceeding that of the maximum flood pool, so that upstream from this point—first on the Rio Grande and then on both rivers—there will always be exposed limestone bluffs rising directly above the reservoir. Even at highest water levels there will be cliffs ranging up to 300 feet tall in view. None of these features above the 1144.3-foot flood contour (except the 10-acre tract in the Pecos River development site, above) are included in the Boundary Commission's acquisition authority. The purpose of the pro-

posed 3,210-acre increment is, in part, to ensure scenic and developmental control of the full height of the walls, and, in addition, to encompass significant archeological sites located in the canyons and certain tributaries.

Since the lands in question are so steep, only narrow strips are needed to enclose them. The recreation area boundaries proposed to meet these objectives consist of a series of straight-line tangents which can easily be monumented on the ground, generally lying on top of the bluffs at a minimum of 100 feet back from the edge. Chief among the tributaries containing archeological values are Seminole and Mile Canyons. Here the boundaries extend far enough up each canyon to adjoin U.S. Highway 90 in order to provide controlled trail access for the public from outside the area. In the vicinity of Langtry where modest picnic facilities and boat access to the upper Rio Grande are planned, the additional strip which is justifiable for scenic rim control is also wide enough to accomodate the developments.

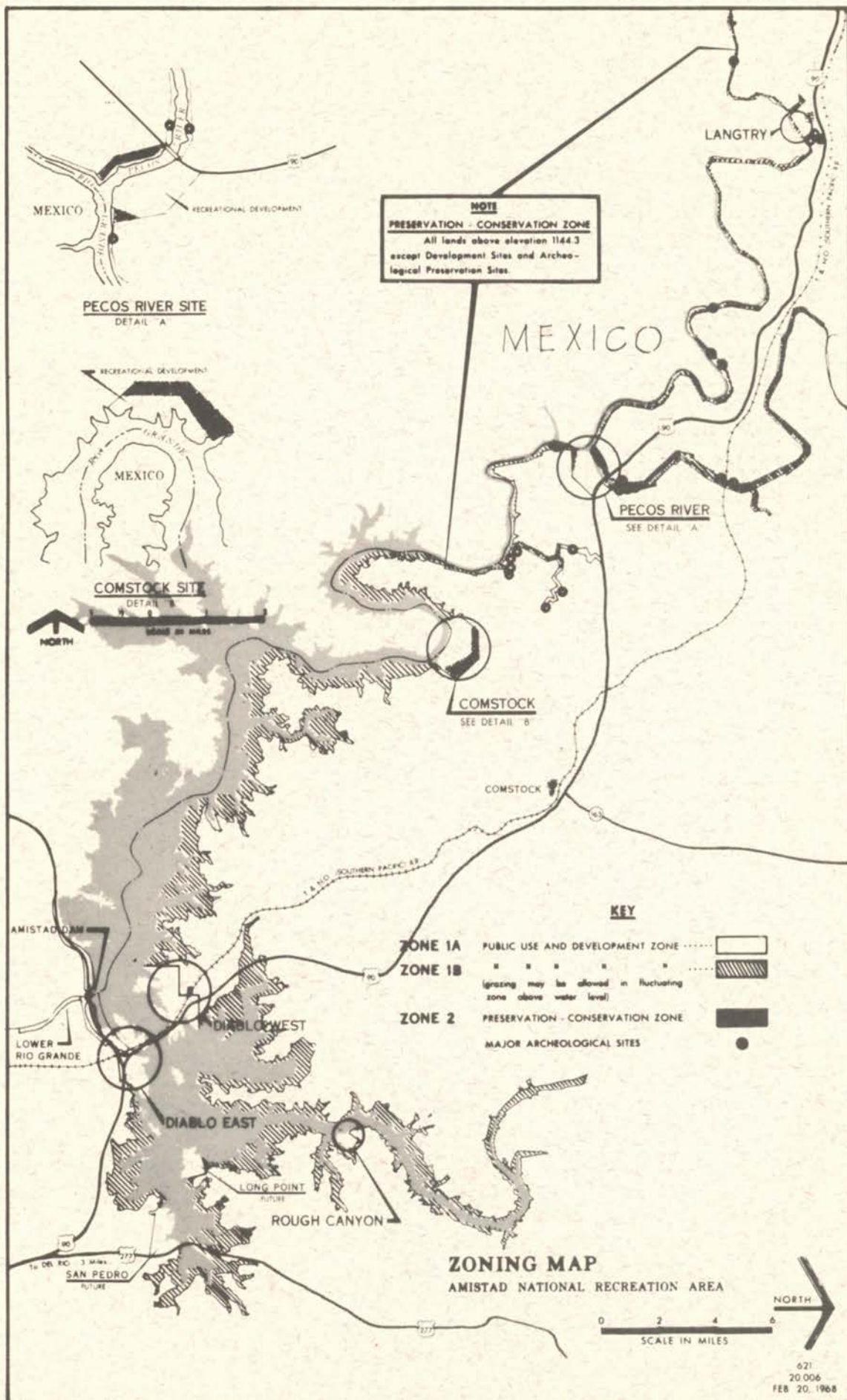
With one local exception, the required estate on the 3,210-acre acquisition is, again, fee simple, less oil and gas. A scenic easement only, with grazing permitted, will suffice for a 73-acre segment of rim country across the Pecos River canyon from, and in view of, the development site of that name.

Wherever the U.S. Section of the Boundary Commission has been able to acquire the full fee title (less oil and gas) to all islands and mainland areas within its authorized 1144.3-foot contour takeline, these interests should be perfected in Federal ownership as soon as possible.

Cooperative arrangements will be sought with Val Verde County to establish zoning regulations aimed at minimizing adverse impact on the recreation area by outside private developments.



West down San Pedro Creek toward Devils River and main body of Amistad Reservoir. U.S. 277 (now slightly relocated) at bottom. Future San Pedro recreation site in left foreground, and future Long Point site on right side of creek in middle distance.



Land Zoning: The accompanying Zoning Map facilitates understanding of the degrees of land estate or interest to be acquired in various parts of the reservoir. It recognizes only two basic zones of use: Public Use and Development, and Preservation-Conservation. The size and configuration of the area and the reservoir operating requirements are such as to allow no designation of a third zone—Private Use and Development.

The Public Use and Development Zone includes all lands subject to flooding—i.e., below 1,144.3 feet elevation—and both the developed and the archeological areas above that contour. This is further divided into two subzones: the developed and archeological areas, where grazing cannot be permitted, and the remainder of the zone, where it can. The entire zone requires the fee estate.

The Preservation-Conservation Zone includes all lands in the scenic canyon sections above 1,144.3 feet which are in neither developed nor archeological areas. However, the Pecos River and Comstock recreation sites each contain a scenic buffer segment which is open to grazing and is placed in this zone. These two tracts, together with one across the Pecos River canyon from the recreation site, require only an easement interest. All the rest of the Preservation-Conservation Zone is to be acquired in fee, which is believed appropriate in view of its negligible value for grazing and its importance in scenic control.

Detailed plans will be prepared covering protection needs for both resources and visitors. For the former, of primary concern is the safeguarding of archeological values made accessible by the reservoir. Along with the termination of grazing in areas to be developed for public use, natural vegetation on unoccupied portions, if any, will be encouraged to re-establish its original conditions of variety and density, based on knowledge gained through research. On those lands where grazing is permitted, it will be adjusted to prudent carrying capacity. All reasonable steps will be taken to control air and water pollution.

The intrusion of overhead power and telephone lines in the vicinity of public-use areas will be minimized either through burial or judicious routing. Elsewhere, shoreline developments of all kinds will be avoided except for existing stock-control fences extending into the reservoir, hiking and

RESOURCE MANAGEMENT AND VISITOR PROTECTION

riding trails, and occasional primitive campsite facilities. All islands will be entirely undeveloped. Except at the developed areas it is not intended to fence the exterior boundaries of the national recreation area unless adjacent private landowners desire it. If not fenced, the entire boundary will be otherwise marked and posted.

Visitor protection will be largely concerned with boating safety and reservoir zoning to resolve the several competing aquatic uses, such as powerboating, sailboating, water skiing, swimming, and fishing. Management of reservoir use by National Park Service personnel will involve functions of registration, equipment inspection, supervision of launching operations, patrol and rescue, maintenance of navigational aids, and information service.

Because the American sector of the reservoir will be considered navigable waters of the United States, U.S. Coast Guard regulations will be applicable. If more restrictive, State regulations or those promulgated by the International Boundary and Water Commission (both Sections) or by the National Park Service will take precedence. In any case, Coast Guard personnel are authorized to police the U.S. waters and will provide the Service as much assistance as they are able to ensure compliance with Federal safety requirements. All boats used on the reservoir from States having boat-numbering laws will be required to bear numbers issued by those States, in conformity with the Federal Boating Act of 1958. Boats of Mexican ownership will, of course, be exempt from American registration and numbering laws.

Since the Service will have only proprietary jurisdiction over lands and waters within the national recreation area, designation of a U.S. Commissioner with trial authority will be desirable.

RESEARCH

A comprehensive research plan will be developed to serve the needs of resource management, interpretation, and visitor enjoyment. Of primary importance is continuation of the archeological salvage program which has necessarily concentrated on the values to be lost or threatened through inundation. This should not be relaxed as long as the rising reservoir has not terminated the opportunity to rescue new data. In subsequent stages, the features above the impoundment level should receive further study. Paleoecological

studies will shed much light on understanding the ability of aboriginal peoples to inhabit this region for so long a period. An historical survey will also be conducted.

Of considerable importance is mission-oriented research concerned with such aspects as determination of the original composition and density of the vegetative cover before its modification by grazing, hunting and grazing compatibility and carrying capacity, fish and wildlife habitat, fish stocking, and public recreation needs and interests.

A prospectus will be prepared for interpreting Amistad's natural and human stories in the context of enhancing the recreation resource. Within this framework, primary emphasis will be placed on archeology, with secondary themes in geology, ecology, history, and the cooperative water-conservation achievement made possible by the international friendship for which Amistad is named.

The prospectus will be keyed to the full range of visitor activities discussed in the foregoing section on Resource Use, Recreational. The focal point for information and interpretation will be a visitor center located near the end of the dam west of the Diablo East development site. It is anticipated this will be an interagency facility in accordance with the Memorandum of Agreement between the Service and the U. S. Section of the International Boundary and Water Commission, which requires the Service to coordinate its information activities with those of the Section in order to facilitate public understanding of the interrelated programs of the two agencies.

The interpretive program at this building and on selected sites will present the story of prehistoric man's occupation of the Amistad area. The Whitehead Memorial Museum in Del Rio has offered its assistance in planning such interpretation in the national recreation area. The University of Texas, which has conducted the archeological salvage program for the Service, is an important source of information and materials.

A small contact station will be provided in each of the main developed areas for local information and interpretation. The one at Pecos River will emphasize archeology which centers in that area.

INTERPRETATION AND VISITOR USE

Many of the archeological sites in the upper parts of the reservoir lend themselves to treatment as exhibits-in-place. Several of the more prominent ones, particularly those featuring pictographs, will have interpretive signs. However, protection of the sites against vandalism is paramount, and many will require fencing or other direct control to preclude actual contact with the features before on-site interpretation can be instituted. With information obtained in the visitor center or contact stations, visitors will find their way individually to the sites. In most cases the only access will be by boat followed by a climb—varying with the height of the water level—up the canyonside. The development of trails to these sites is not considered necessary. Those in Seminole and Mile Canyons will be accessible either from the reservoir or by trails leading down from U.S. Highway 90 and the Langtry road.

The interpretive program will provide other self-guiding trips, both on established shoreland nature trails and through planned boat tours. The latter will offer the best opportunities to see wildlife, which is expected to concentrate near the reservoir shoreline. Personal services will include campfire programs in the amphitheaters proposed at certain developed areas, as well as conducted trips, such as to the archeological sites, when requested by school or other organized groups.

Because many of the recreation area's visitors will be from Mexico, the need for dual-language texts will be taken into account in the preparation of informational and interpretive materials and devices, and bilingual personnel will be specified for public-contact positions.

If the demand warrants it, a cooperating association should be formed for the publication and sale of interpretive literature and related items.

DEVELOPMENT

The development plan for Amistad envisions vacation and short-term use of a quality, quantity, and diversity not presently available in this part of the Southwest. Provision is made for accommodating all outdoor recreational uses associated with both the water and land resources, and for their basic supporting facilities and administrative requirements.

Developments will be dispersed between nine highly suitable sites in the recreation area. With implementation of the proposals for additional land, all sites will be adequate in size for the planned developments. Most of them are clustered in the downstream body of the reservoir within a few miles of the dam. Upstream sites are spaced at long intervals which will favor aspects of remoteness and solitude. Considerable variation in scenic types is represented by the different locations.

Access to all sites will be convenient. Five are on existing U.S. highways and two are reached by short public spurs from these highways. The Comstock and Long Point sites will eventually require new access roads constructed through cooperation with the State or county. All such roads will be maintained by Val Verde County pursuant to a cooperative agreement.

Development of the nine areas will be phased over a period of years. Not only will they enter the program individually according to increasing demand, but the earlier ones will be developed in stages related to the reservoir filling schedule, which is expected to commence in May 1968 (see Priority of Needs).

Administrative headquarters will be in the Diablo East site. The Pecos River site will contain a district headquarters and the Comstock site a ranger station or subdistrict office.

Developments to be constructed by the National Park Service include administrative, interpretive, and maintenance facilities, major circulatory roads and parking areas, airstrips at two of the sites, launching ramps, fishing docks, courtesy docks, boat sanitary dump station, navigational aids, picnic areas, amphitheaters, water storage, and trunk utility lines. If sanitation problems can be satisfactorily resolved, primitive campsites will be developed at selected shoreline locations in the more remote parts of the reservoir.

Concessioners will construct and operate not only the usual facilities for lodging, food and laundry services, docks, mechanical launching, boat servicing and dry storage, bathhouses, automobile service stations, golf courses and other outdoor sports or games, stables and horse rental, and equipment rental, but also all campgrounds, (although some will be constructed in the Government's initial program),

organized group camps, and swimming pools. The last type of facility will be in lieu of federally developed beaches, which are impractical in this reservoir's conditions of fluctuation.

The development of concessions will be in accordance with the provision of the Concessions Policy Act of October 9, 1965.

The Laughlin Air Force Base near Del Rio has applied for a site on the reservoir on which to construct a recreational center for its personnel to replace one to be inundated at Lake Walk. A portion of the Diablo East site west of the railroad tracks is suitable for this purpose under special-use permit.

A proposal has been advanced to erect an imaginative towerlike structure housing various visitor facilities in the reservoir vicinity. If found feasible, it would be appropriate and compatible with the overall development scheme to permit use of part of the Diablo East site for this purpose. The project would, in fact, contain many of the types of facilities envisioned for this site, obviating such developments elsewhere in Diablo East.

Most developments must be constructed on ground above the theoretical maximum flood elevation of 1,145.12 feet. Some that could withstand temporary flooding, such as parking areas and picnic or campground tables and fireplaces, could be installed within a few feet above the operating-pool level of 1,117 feet. Elevation of 1,020 is selected as the minimum design level for recreational facilities, such as the foot of the launching ramps, as operational studies indicate the reservoir will be drawn lower only 4 percent of the time.

The Mexican authorities are believed to be planning similar developments for their side of the reservoir.

DIABLO EAST

Adjacent to the intersection of U.S. 90 and the road crossing the dam into Mexico, this site will receive the most intensive use and will require the most complete array of facilities. It will contain headquarters for both the Service



Up Devils River from Diablo East recreation site. Old U.S. 90 bridge will be dismantled. This was one of the finest stream-fishing sites in Texas. When reservoir forms, same resource will be available upstream above Devils Lake.

Down Pecos River to its confluence with Rio Grande. U.S. 90 bridge (highest in Texas) in foreground. Pecos River recreation site on left beyond bridge. Old U.S. 90 descending to former river crossing will be used as a launching facility.

North across Diablo East recreation site. Devils River crosses from right to left in middle distance. Amistad Reservoir will flood lower portion of tributary ravine in center.



and the U.S. Section of the International Boundary and Water Commission. The site is only 12 miles from Del Rio and the first to be encountered by westbound travelers through the area. It is eminently suitable for overnight accommodations, campgrounds, boat launching and dry storage, a marina, and an 18-hole golf course. Excellent vistas of the reservoir are available through 180 degrees of view. An interagency visitor center near the end of the dam will contain the area's focal point for interpretation and information.

A portion of the site is available for an Air Force recreation center under special-use permit. It would also accommodate a proposed towerlike facility for visitors if this is found to be feasible.

ROUGH CANYON

This site is remote from the main part of the reservoir but has an established recreational use on the small Devils Lake impoundment which will be inundated by Amistad. Marina and campground facilities will replace those to be lost.

Rough Canyon will be the least affected by water-level fluctuations in the main reservoir because the level here cannot fall below 1,040 feet. Boat access is available to the fine stretch of stream fishing on the Devils River above Devils Lake.

PECOS RIVER

This site borders the deep canyon of the Pecos and provides excellent views of the reservoir and suitability for visitor developments. The abandoned U.S. Highway 90 which descends to the bottom of the canyon will be used as a launching ramp. Since this is narrow and parking at lake levels is very restricted, it is proposed to utilize a concession-operated shuttle system between a parking area on the clifftops and the water level.

An existing Highway Department overlook will be incorporated into the development.

A district headquarters will be located here. The site will be the first major one encountered by eastbound travelers. Concession facilities for lodging, camping and a marina will be popular, but the location of the site so far upcanyon where there will be longer periods of minimum reservoir depth may make the operation somewhat marginal.

LANGTRY

This site, located at the historic railroad town of that name, will be the first encountered from the west. Its main function will be to provide access to the Rio Grande which will be a free-flowing stream at this point much of the time. It will be one of the first to be affected by silting, and this will have to be taken into account in keeping the launching ramp open for use. The only other facilities will be a picnic area and comfort station.

COMSTOCK

Centrally located on the reservoir, this site is ideally suited to major developments of a resort-type character because of its relative remoteness and solitude. It is the furthest of the larger sites from the highway. Its terrain is excellent for a wide range of developments, including an airstrip, golf course, marina, campgrounds, group camp, and overnight accommodations. Its launching area is one of the most protected on the reservoir.

Views from this site will be among the finest in the area, and its proximity to large water expanses in Mexico will make it very popular. It is low in priority, however, because demand for it is not expected to build until other sites become more heavily developed and used.

DIABLO WEST

This site is low in priority because of its nearness to Diablo East. It will have similar facilities, not to be constructed until those at Diablo East approach capacity use. Diablo West will have an airstrip.

LOWER RIO GRANDE

Immediately below the dam, this site will provide extremely good fishing because of the cold, clear water released from the reservoir. The flow will be fairly constant, but possible flooding by sudden releases will require placement of permanent facilities at a safe elevation. These will consist of a small boat ramp and limited parking. The abandoned railroad grade here is suitable for the latter and is expected to be above water virtually all of the time. Other facilities are not needed here because of the proximity of the Diablo East site.



South down Rio Grande from edge of Comstock recreation site. Mexico on right. Amistad Reservoir here will generally be confined by limestone cliffs.

LAND CLASSIFICATION

LAND CLASSIFICATION

For management purposes, the lands in the proposed Amistad National Recreation Area are classified as follows:

Class I – High-density Recreation:

The only area in this category is the Diablo East recreation site.

Approximately 546 acres

Class II – General Outdoor Recreation:

All of the other developed lands plus all those below the 1144.3-foot maximum flood contour.

Approximately 57,343 acres

Class III – Natural Environment:

All lands above the 1144.3-foot contour in the canyon sectors of the reservoir except the archeological preservation sites, the highway and railroad crossings of the Pecos River arm, the actual developed portion of the Pecos River recreation site, and the Langtry recreation site. Also included is the undeveloped scenic-easement portion of the Comstock recreation site.

Approximately 3,073 acres

Class IV – Outstanding Natural: None

Class V – Primitive: None

Class VI – Historic and Cultural:

The more important archeological sites in the canyon sectors of the reservoir.

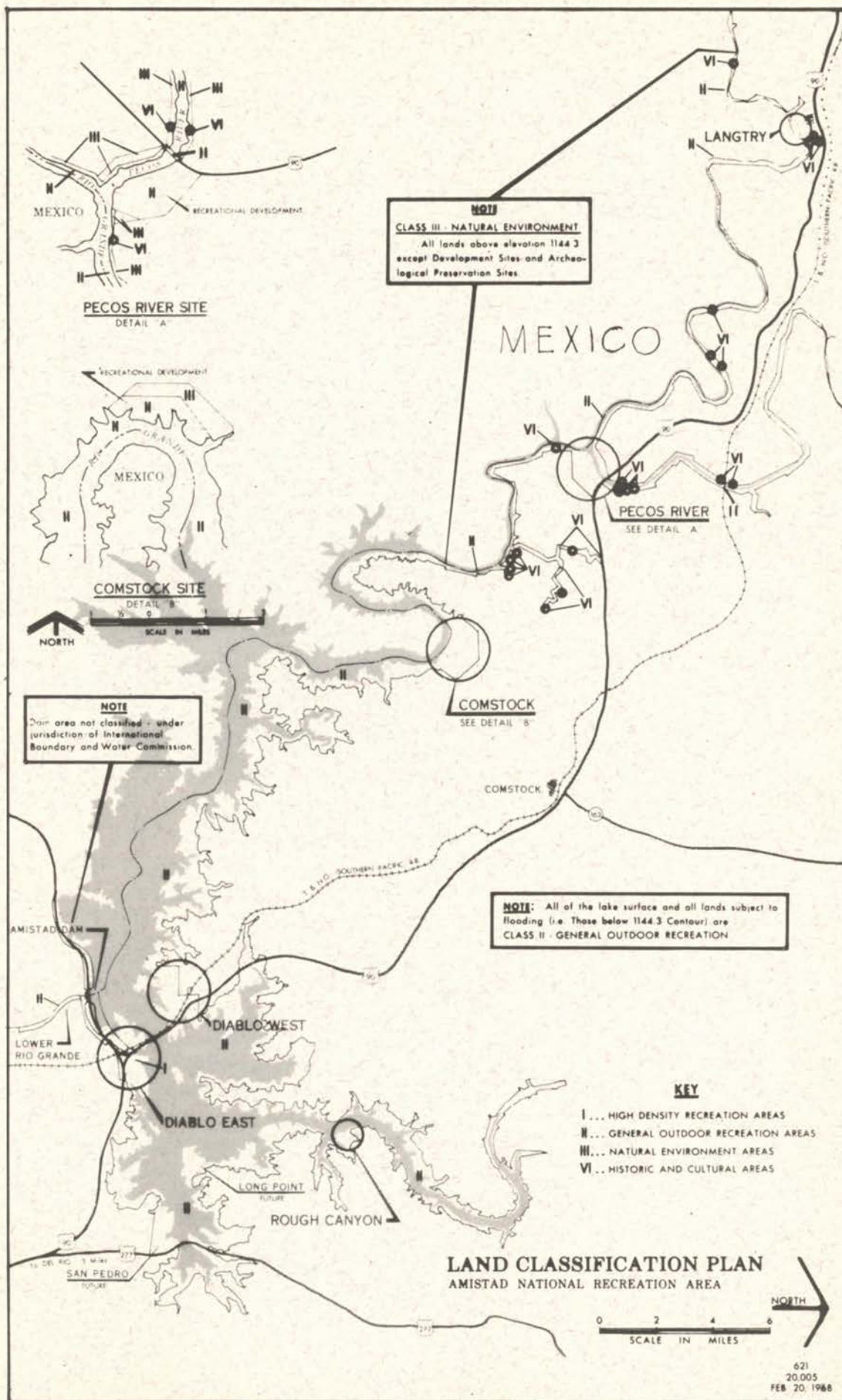
Approximately 600 acres

Not classified:

The area containing the dam and permanent operating structures reserved to the jurisdiction of the U.S. Section of the International Boundary and Water Commission.

908 acres

TOTAL 62,470 acres



COOPERATION IN MANAGEMENT

The purposes and objectives of the National Park Service at Amistad will be coordinated with those of other concerned Federal and State agencies through a Reservoir Management Plan prepared for endorsement by each agency. This will recognize primary administrative responsibility of the Service for public use of the area, with provision for other specific conforming functions by the other agencies as are desirable and agreed upon.

The present Memorandum of Agreement between the Service and the U.S. Section of the International Boundary and Water Commission is an interim one pending enactment of legislation to establish the national recreation area. However, most of its provisions, together with such arrangements as may be arrived at in cooperative agreements with agencies in the following list, will be incorporated in the Reservoir Management Plan:

Border Patrol, Immigration and Naturalization Service

Bureau of Animal and Plant Quarantine

Bureau of Customs

Bureau of Sport Fisheries and Wildlife

U. S. Coast Guard

U. S. Public Health Service

Texas Highway Department

Texas Highway Patrol

Texas Parks and Wildlife Department

Texas Public Health Service

Texas Water Commission

Val Verde County Highway Department

Val Verde County Sheriff's Office

An early agreement will be one with the Texas Parks and Wildlife Department concerning grazing and wildlife management in the recreation area. The Service, as the agency administering the area, has primary responsibility for managing the habitat—soils, water, and vegetation. The inter-related function of regulating the taking of fish and wildlife by the public is recognized as being within the authority of the State of Texas. Fishing and hunting will be encouraged to such extent as is harmonious with other aspects of the total recreation program. The Service will have authority to designate zones and periods with no hunting or fishing allowed for reasons of public safety and administration of the area. Regulations so prescribed will be issued after consultation with the Texas Parks and Wildlife Department.

Much of Amistad's recreation significance can be ascribed to its international location. Reservoir recreationists from either country will derive added enjoyment if there is opportunity to utilize the shore-based facilities of the other. To this end, coordinated operating programs are highly desirable and will be encouraged by the National Park Service. Cooperative arrangements or agreements with Mexican authorities will be handled through the respective Sections of the International Boundary and Water Commission and, when formalized, will be incorporated in the Reservoir Management Plan.



Under terms of the Memorandum of Agreement with the U.S. Section of the International Boundary and Water Commission, the National Park Service is administering the reservoir as the Amistad Recreation Area. A small staff is on the ground and minimum recreational developments at two sites are programmed. Priorities for additional action are as follows:

Legislation: In topmost priority is the enactment of legislation authorizing additional lands and developments to meet recreational needs. A related purpose of the legislation is to establish Amistad as a national recreation area, formally recognizing recreation as a dominant, rather than incidental, resource use and providing a sound and permanent basis for area management.

Land Acquisition: As soon as possible after authorization, the land-acquisition program should be implemented. If authorization is received before the U.S. Section of the

INTERNATIONAL COOPERATION

Up Rough Canyon (not to be confused with other canyon of same name on Devils River where Rough Canyon recreation site is located) from near its junction with Rio Grande. Edge of Comstock recreation site on left. This is typical of numerous tributary canyons in upper reaches of reservoir which, when flooded, will provide interesting recreation use.

PRIORITY OF NEEDS

Commission completes its own program, the two should be combined into a unified acquisition process to avoid enhancement escalation and reduce appraisal costs. In all but the Rough Canyon site, the two programs involve adjacent lands in the same ownerships.

Highest priority will be given lands needed for recreational developments and for archeological site preservation. Rough Canyon is most urgent of the recreational sites because a start on construction is programmed here, and only 15 out of a total of 85 acres needed for full development are presently in Federal ownership. It would be followed by the Pecos River, Langtry, and Comstock sites. Second priority will be given lands needed to conserve scenic values and enhance recreation.

Management: Various action plans covering the range of programs and procedures for managing and developing the area should be completed as rapidly as possible. At this stage the most important are the Resource Management, Research, and Interpretive Plans. The all-important Reservoir Management Plan, which provides for coordination of functions of other agencies in the reservoir area, will be a part of the Resource Management Plan.

Development: Physical developments should be scheduled in a manner best suited to meet existing and future recreational demands. Immediate needs are for development of the Rough Canyon site where the waters of Devils Lake are already available, and for minimum launching facilities at the Langtry, Lower Rio Grande, and Pecos River sites, where the streamflow of the Rio Grande and Pecos River makes early use possible.

Recreational needs on Amistad Reservoir itself are directly related to the future filling schedule. Diablo East, because of its location nearest the dam, is proposed as the first of the major reservoir sites to be developed. In anticipation of demand, at least minimum facilities should be completed and ready for use as soon as water is available, even though these may be of a temporary nature.

Once these initial facilities are in, it would be desirable to complete the Rough Canyon, Diablo East, and Pecos River sites before starting on the Comstock and Diablo West sites. Programming of the San Pedro and Long Point sites is dependent upon future demand.

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