State of California

THE RESOURCES AGENCY

Department of Water Resources

BULLETIN No. 117-7

SAN LUIS RESERVOIR AND FOREBAY RECREATION DEVELOPMENT PLAN

MAY 1965

HUGO FISHER
Administrator
The Resources Agency

EDMUND G. BROWN
Governor
State of California

WILLIAM E. WARNE
Director
Department of Water Resources

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STATE OF CALIFORNIA—RESOURCES AGENCY WILLIAM E. WARNE,

DEPARTMENT OF WATER RESOURCES
P. O. BOX 388
SACRAMENTO

March 24, 1965

Honorable Edmund G. Brown, Governor,
and Members of the Legislature
of the State of California
State Capitol
Sacramento, California

Gentlemen:

Transmitted herewith is a copy of Bulletin No. 117-7, "San Luis Reservoir and Forebay Recreation Development Plan". This report has been prepared under the authority of Section 345 of the State Water Code.

Authorization for construction, operation, and maintenance of San Luis Reservoir and Forebay is contained in Section 11260 of the Water Code. These joint federal-state facilities are being constructed for irrigation, power generation, municipal, industrial, and recreation purposes. They are located in western Merced County. Construction started in February of 1963 and is scheduled for completion in October of 1967. Construction of recreation facilities will be ready to accommodate the initial recreation use in the spring of 1968.

This report presents land-use and development plans for the full realization of the recreation potential of the reservoirs. Initial onshore facilities are described in detail and recommendation is made for the appropriation of funds needed for their construction.

The Department, in cooperation with the Department of Fish and Game, is presently preparing a fish and wildlife supplement to this report which will be transmitted to you in June.

Sincerely yours,

William E. Warne

Director

Enclosure

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

EDMUND G. BROWN, Governor
HUGO FISHER, Administrator, The Resources Agency
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- - - -

SAN JOAQUIN VALLEY BRANCH

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CALIFORNIA WATER COMMISSION

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- - - - - - O - - - - - -

WILLIAM M. CARAH
Executive Secretary

ORVILLE ABBOTT
Engineer

* *

CHAPTER I. INTRODUCTION

The State Water Facilities will provide many opportunities for water-associated recreation. Past experience has shown the tremendous drawing power that bodies of water possess for the general public. The state population is increasing rapidly, and the public demand for outdoor recreation is increasing at a rate even faster than that of the population. Recognizing the urgency of the problem, and seeing the economy of including recreation as construction proceeds on water development projects, the Legislature provided the necessary legislative authorization to enable state agencies to include recreation in water projects. The Davis-Dolwig Act (Water Code Sections 11900-11925) authorizes the Department of Parks and Recreation to construct and operate the recreation facilities at state water projects and directs that the recreation facilities be ready and available for public use when the water project is completed. The San Luis Reservoir and Forebay are scheduled to be completed in 1967.

This report describes the recreation area, presents dam and reservoir statistics, indicates predicted recreation demand, enumerates recreation facilities and estimated capital costs by decades, delineates recreation areas and extent of initial recreation development, and presents estimated costs of operation and maintenance.

Purpose of the Report

The purpose of this report is: (1) to present to the State Legislature a plan for development of the recreation

features of San Luis Reservoir and Forebay and (2) to provide information supporting budget requests for General Fund appropriations to construct the initial recreation facilities.

Legislative Authorization

San Luis Reservoir and Forebay are major units of the State Water Project. Authorization for construction, operation, and maintenance of the project is contained in Section 11260 of the California Water Code. The projects will be constructed to provide water for irrigation, power generation, municipal and industrial, and recreation uses.

Department of Water Resources Recreation Planning Responsibility

Section 345 of the Water Code specifies that the Department of Water Resources shall plan recreation development associated with state-constructed water projects and acquire sufficient lands to implement the development of recreation facilities.

Appropriate portions of Sections 11900 through 11925 specify that planning by the Department of Water Resources for recreation and for preservation and enhancement of fish and wildlife shall be accomplished cooperatively with the Departments of Natural Resources and Fish and Game, and with all appropriate federal and local agencies. The duties and responsibilities of the Department of Natural Resources under these statutes were assumed by the Department of Parks and Recreation following reorganization of the state government. The responsibility for planning by the Department of Water Resources is to be carried --

> "...through the advance planning stage, including, but not limited to the development of data on benefits and costs, recreation land use planning, and the acquisition of land."

The Water Code further specifies that:

> "The Department of Natural Resources is authorized to design, construct, operate, and maintain public recreation facilities at state water projects."

Also that:

> "The Department of Natural Resources shall make every effort to fulfill its responsibilities under this section by entering into contracts with the United States, local public agencies, or other entities, to the end that maximum development of the recreational potential of state water projects shall be realized."

Recreation facilities are to be constructed and are to be operational upon completion of the project (Water Code Section 11900).

Water Code Section 11917 states, in part:

> "The Department of Fish and Game shall manage fish and wildlife resources at state water projects,..."

Section 11913 of the Water Code specifies that the Department of Water Resources shall include in its 1962-63 budget, and succeeding fiscal-year budgets, requests for appropriations from the General Fund of the funds necessary for enhancement of fish and wildlife and for recreation in conjunction with State Water Facilities.

Pursuant to this legislative directive, the Department of Water Resources has established procedures for incorporating recreation plans in planning for other project purposes. At

present, the Department of Water Resources' responsibilities involve three steps. The Department shall:

1. Plan recreation developments to promote the full recreation potential of each State Water Facility and acquire the land necessary to implement these recreation plans.

2. Submit to the Legislature for each of the facilities a report which summarizes the recreation plan, estimates the funds required for recreation development, and recommends that funds be appropriated for construction of the initial onshore recreation facilities.

3. After construction of facilities, insure that subsequent uses of reservoir waters and adjacent lands for recreation do not impair or defeat other project purposes.

The Department of Water Resources has completed Step 1 for San Luis Reservoir and Forebay. This report constitutes Step 2.

It will be a future and continuing responsibility of the Department of Water Resources to monitor recreation uses of the reservoir waters and lands within the State's jurisdiction to assure that other project purposes are not impaired.

CHAPTER II. SAN LUIS RECREATION COORDINATING COMMITTEE

The San Luis Recreation Coordinating Committee was formed in October 1960 as an advisory group on recreation planning matters concerning San Luis Reservoir and Forebay. At an early date the need became evident for close cooperation and coordination between numerous federal, state, and local agencies regarding recreation planning at San Luis. Consequently, at a preliminary meeting the various concerned agencies decided that the Department of Water Resources should accomplish the recreation planning and should furnish the chairman of the group.

The recreation planners[1/] of the Department of Water Resources have, under the guidance of the committee, ascertained what recreation lands would be needed and have completed and submitted a report recommending the purchase of these lands. Furthermore, the amount and type of recreation facilities required and their locations have been studied by the committee, and this report is the culmination of the conclusions reached on recreation development.

The close cooperation and coordination made possible by this committee has facilitated the recreation planning program in connection with San Luis Reservoir and Forebay. The members of this committee are as follows:

1/ The recreation planners of the Department of Water Resources were transferred to the Division of Beaches and Parks, Department of Parks and Recreation on July 1, 1963, in accordance with Resources Agency Order No. 7, dated June 4, 1963. The work has been carried on from July 1, 1963, by contract between the Department of Water Resources and the Department of Parks and Recreation.

Name	Agency
Emory O'Banion	Merced County Board of Supervisors
Everett A. Pesonen	U. S. Bureau of Reclamation
C. R. Shepard	U. S. Fish and Wildlife Service
Vaughn Bishop	National Park Service
Henry B. Wolfsen	Land owner, Merced County
Lawrence H. Cloyd	State Department of Fish and Game
James P. Tryner	State Division of Beaches and Parks
John P. Bunker	California Water Commission
David E. Pelgen, Chairman	State Department of Water Resources

(Fred L. Jones is ex-officio member representing the office of the Administrator, The Resources Agency)

CHAPTER III. RECREATION AREA

Location

San Luis Reservoir and Forebay are located on the western periphery of the San Joaquin Valley in Merced County near Los Banos, California, as shown on Plate 1.

History and Archaeology

Don Jose Maria Mijia and Don Juan Perez Pacheco were granted the 49,000-acre Rancho San Luis Gonzaga on October 3, 1843. The spot chosen by Don Juan for his homestead was located near the ancient water hole of San Luis Creek on the site of an Indian village which had existed long before the coming of the Mission fathers. The spring attracted herds of antelope which came to drink; it also refreshed traveling tribes of Indians who rested there on annual journeys over Pacheco Pass. Later came the Spanish explorers and ranchers, the stagecoach drivers of the Butterfield Stage Line, and, finally, the motorists of today.

An old adobe fort, a visible remnant of the Old West which may have been built before 1835, has been moved from near the axis of San Luis Dam to higher ground by the resident descendant of the original Mexican land grantees.

Excavations were made at the site of a prehistoric Indian village and burial ground in the dam construction area near San Luis Creek. These excavations at the damsite were made under the direction of an archeologist from the Division of Beaches and Parks who operated under contract to the

Department of Water Resources. The information obtained from one hundred human burials and the foundations of two houses was recorded. Beads and ornaments, which are estimated to be between 1,000 and 1,500 years old, were found at the site.

Pleistocene faunal remains that could be of tremendous significance were found in the upstream foundation trench of San Luis Dam. An apparent ancient firehearth, cracked animal bones, and what seems to be a polished tool made from the long bone of a large animal were found in the sediment at a depth of 85 feet. If these are proven to be from the hand of early man, they constitute one of the most significant finds in the New World. Other important finds were a mammoth, horse, camel, and possibly elk and bison, all at least 10,000 years old.

Topography

In general appearance, the reservoir area consists of rounded hills which change from brown to green for a brief period in the spring. The hills are dissected by minor drainages that have in times past carried the winter rains into the San Joaquin Valley. Some of these drainage basins have broadened out into minor valleys, which then open out into the San Joaquin Valley. It is in one of these valleys, called the San Luis Creek Valley, where San Luis Reservoir is located. The Forebay lies farther east in the San Joaquin Valley below the main dam.

Cover

The vegetative cover of the greater part of the two reservoir areas is composed of annual grasses and herbs.

Occasional small stands of oaks and cottonwoods appear along benches and water courses; but most of these scattered stands will be removed and the area inundated, leaving the higher, grass-covered slopes for recreation development. This points up the necessity for the tree planting program which is now under way at the prime recreation sites.

Climate

Among the many factors that influence the recreation use and enjoyment of an area is climate; therefore, climate must be considered if a proper evaluation of potential use is to be made. The San Luis region has the typical San Joaquin Valley climate pattern, with summer temperatures in the 90's, and with cool winters. The annual mean maximum temperature is 77° and the mean minimum is 47°, ranging from a mean minimum of 35° in January, to a mean maximum of 98° in July. The average annual rainfall recorded at Los Banos is 8.64 inches, 90 percent of which falls from November through April.

One element of local climate which must be considered in recreation plans is the occurrence of strong winds as the marine air moves into the interior valley during the spring and summer. Such winds can have a significant effect on the safety of participants in boating and other recreation activities.

The long season of clear, warm days in the Los Banos area enhances the recreation potentialities of San Luis Reservoir and Forebay. These large lakes constructed in a previously

barren segment of California, coupled with the sunny climate, will produce many days of outdoor enjoyment.

Access

Near two major highways, the San Luis Reservoir and Forebay will have ample access. In fact, the main reservoir site was bisected by Highway 152, which was relocated along the northern boundary of San Luis Reservoir. The West Side Freeway (Interstate Highway 5), which is scheduled for completion shortly after the filling of San Luis Reservoir, will be a major artery between Southern California and Northern California. The West Side Freeway will carry an estimated traffic load in 1975 of over 9,000,000 cars annually, passing only two miles from the forebay. According to the Division of Highways, over 2,000,000 cars passed through Pacheco Pass (Highway 152) in 1960; thus it is evident that many million people will pass through or by the project area. A great many of them may be expected to use the recreation facilities.

Local Economy

The reservoir site itself has been used primarily for livestock grazing and dry-farming of grain from the first settlement to the present day. The Los Banos area has subsisted basically on irrigated agriculture, while agricultural service industries make up the bulk of the remaining enterprises. Although Los Banos has grown in population from 2,214 in 1940, to 3,060 in 1950, and to 5,163 in 1960, its growth will

undoubtedly be accelerated by the presence of San Luis Reservoir and Forebay. Leading crops in the area are alfalfa, grapes, tomatoes, cotton, beans, sugar beets, deciduous fruits, and nuts. Others such as olives, melons and truck crops are also grown. The production of alfalfa and pasturage is an adjunct to the livestock industry, which includes the raising of both beef and dairy cattle.

The dominant industrial activity is found in food-processing, including the packing, canning, and freezing of fruits, vegetables, meats, and dairy and poultry products.

Other industries in the valley area include wine-making and the manufacture of farm equipment, concrete pipe, fertilizer, agricultural chemicals, animal feeds, sheet metal products, and fiber boxes and containers.

Fire Hazard

The recreation areas will be surrounded by dry annual grasses for most of the year; therefore, firebreaks should be provided and other fire precautions should be observed. The Division of Forestry has a fire-prevention station on Highway 152, six miles east of the forebay which is in an advantageous location should fire-fighting services be required at the recreation areas. Administrative personnel at the recreation areas should be familiar with fire-fighting techniques and should be supplied with equipment to protect the facilities from fire.

Present Recreation Use of the Area

Except for infrequent hunting of deer and upland game, there is no significant recreation use of the area at the present.

CHAPTER IV. DAM AND RESERVOIR STATISTICS

San Luis Reservoir is being constructed to store and regulate water pumped from the Sacramento-San Joaquin Delta for use in service areas in the San Joaquin Valley and Southern California. Diversion of water from north to south will be accomplished through a series of new facilities, consisting of dams, reservoirs, pumping plants, and canals. (See Table 1, "San Luis Reservoir and Forebay Statistical Data of the Principal Features".)

The operation of the San Luis facilities depends on the use of wintertime surplus water which will be conveyed from the Sacramento-San Joaquin Delta by the California Aqueduct and the existing federal Delta-Mendota Canal. The California Aqueduct will be constructed parallel to the Delta-Mendota Canal from the Delta to San Luis Forebay.

Water will be lifted at the Delta by the State's Delta Pumping Plant and transported in the California Aqueduct to San Luis Forebay. At the same time the existing Delta-Mendota Canal will convey water south to a point in the vicinity of the San Luis Forebay where the Forebay Pumping Plant will lift a portion of this water into the Forebay. The San Luis Forebay will therefore receive water from two aqueduct systems and will illustrate the dual nature of this joint venture between the state and federal governments. Water from the forebay can either be pumped

TABLE 1

SAN LUIS RESERVOIR AND FOREBAY
STATISTICAL DATA OF THE PRINCIPAL FEATURES

San Luis Dam and Reservoir

Type of dam	Earthfill
Volume of fill in dam	75,000,000 cubic yards
Height above streambed	320 feet
Maximum water surface elevation under normal operation	544 feet above sea level
Minimum water surface elevation	326 feet above sea level
Crest length	18,500 feet
Reservoir area (maximum)	13,000 acres
Reservoir area (minimum)	3,700 acres
Reservoir storage capacity	2,100,000 acre-feet

San Luis Forebay

Type of dam	Earthfill dike
Height of dike	70 feet
Crest length	13,500 feet
Maximum water surface elevation under normal operation	225 feet above sea level
Minimum water surface elevation	217 feet above sea level
Forebay area	2,000 acres
Reservoir capacity	57,500 acre-feet

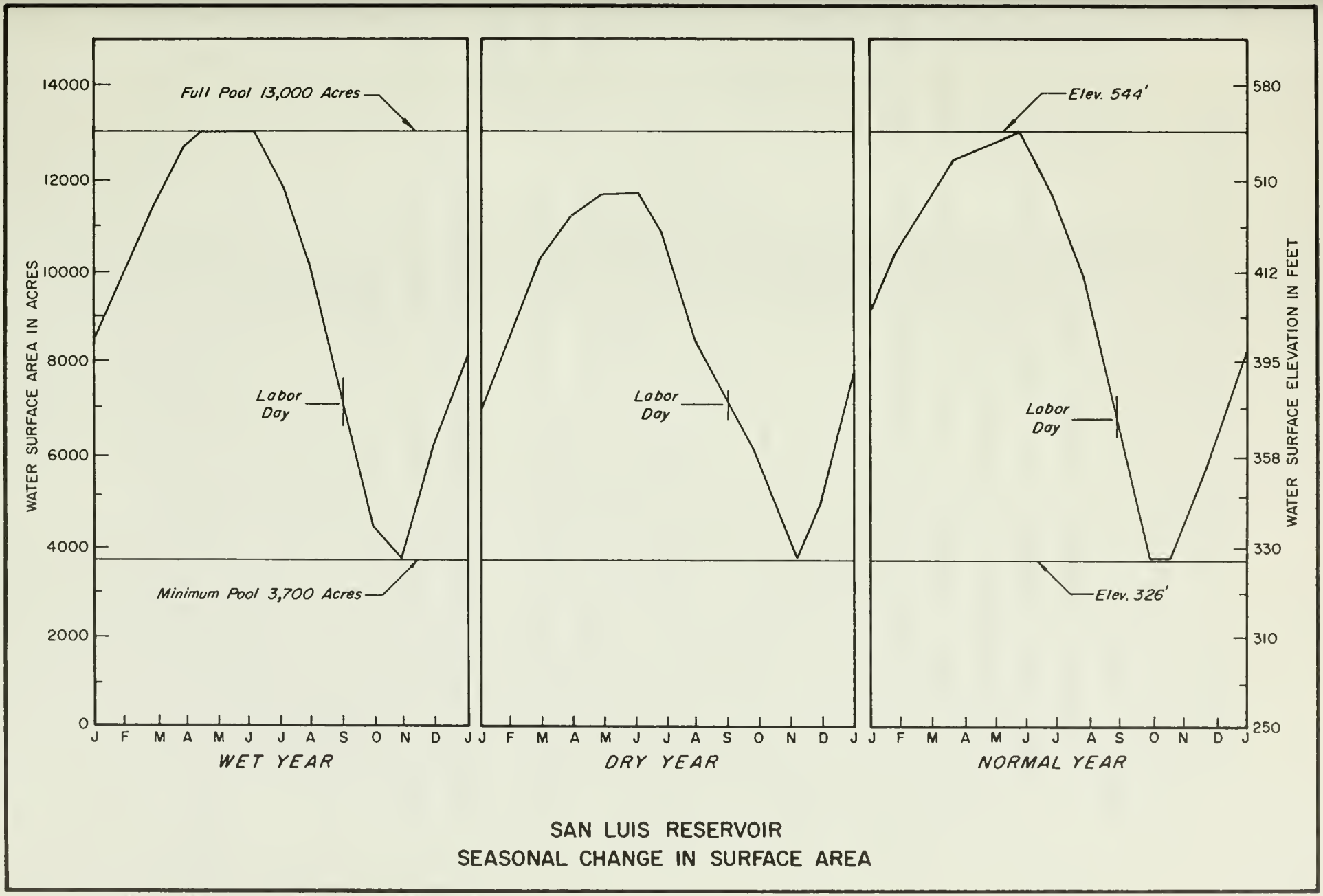
by reversible pump-turbine prime movers into San Luis Reservoir for storage or conveyed southward in the California Aqueduct for use in federal or state service areas. Water stored in San Luis Reservoir will subsequently be released back to the forebay, utilizing the generating capability of the motor-generators to produce power. From the forebay the water will flow by gravity through a checkgate into the California Aqueduct for distribution to state and federal service areas.

An operational characteristic that has a significant effect on recreation use of an area is the water surface fluctuation or drawdown. The San Luis Reservoir will have a large annual drawdown when water demand reaches its maximum some 20 years after completion of construction. This maximum drawdown will be 218 feet vertically and will cause a corresponding horizontal displacement of the shoreline, dependent on the slope of the lake bottom. On a 20-percent slope, for example, the shoreline would move over a thousand feet. The reservoir is of great size, however, and even at minimum elevation will cover 3,700 acres compared to Lake Millerton's 4,900 acres at maximum area. The minimum elevation at San Luis Reservoir will not be reached each year until the greater part of the recreation season has passed.

The forebay will afford an additional area of 2,000 acres, itself an appreciable body of water. Fortunately, for recreation, the present operational plans call for a modest fluctuation, dependent on electrical generation considerations.

Inasmuch as a full reservoir is more attractive to recreationists than one that is drawn down, it is anticipated that the forebay will be used more than the main reservoir on an annual basis, whereas the main reservoir will be more attractive early in the recreation season.

Although San Luis Reservoir has no dependency on direct streamflow, it is dependent on water supply conditions in the Sacramento-San Joaquin Delta; accordingly, the graph presented in Figure 1, "San Luis Reservoir Seasonal Change in Surface Area", illustrates possible fluctuation that could occur in San Luis Reservoir during wet, normal, or dry years.



SAN LUIS RESERVOIR
SEASONAL CHANGE IN SURFACE AREA

FIGURE 1

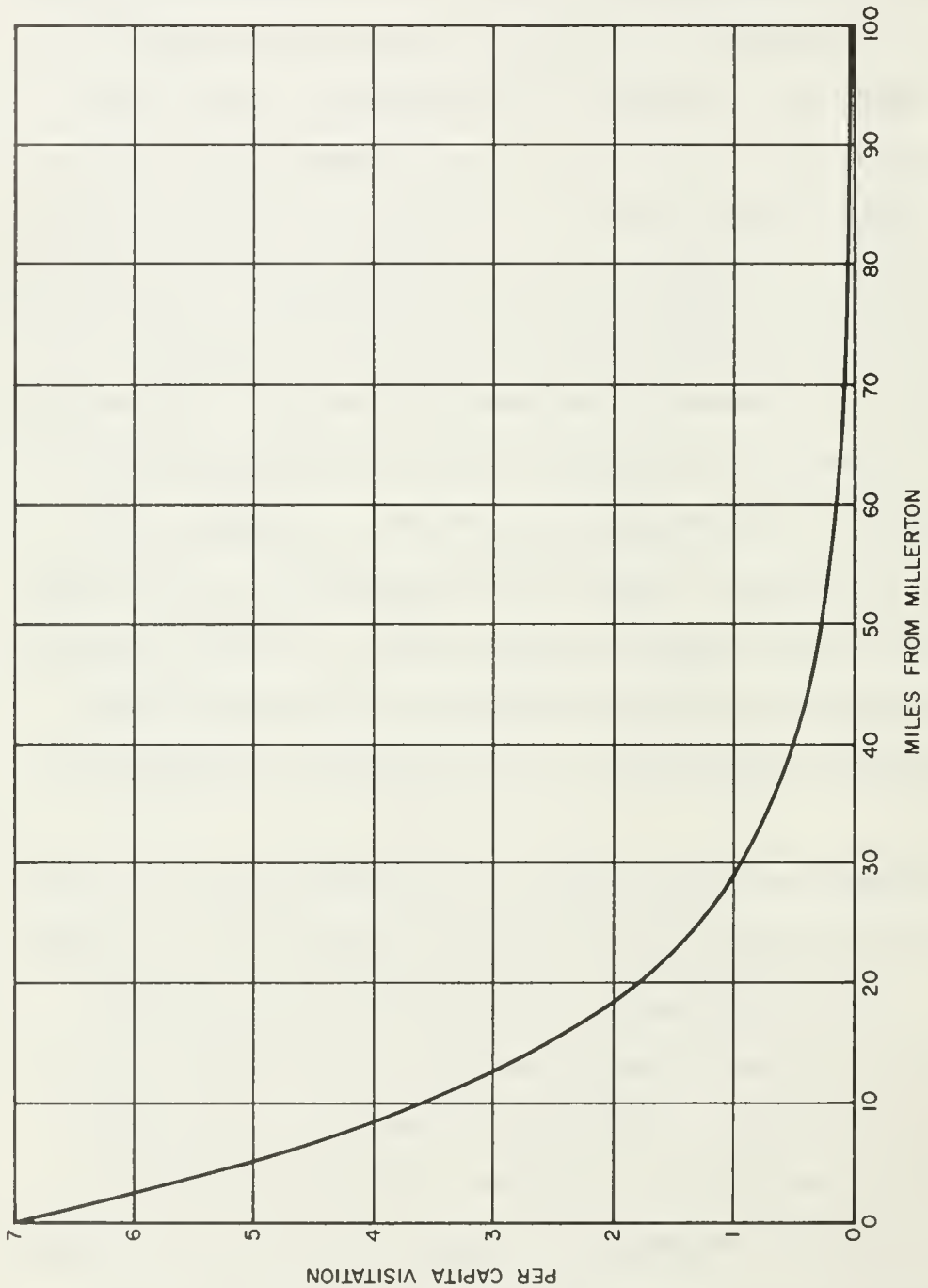
DEPARTMENT OF WATER RESOURCES SAN JOAQUIN VALLEY BRANCH 1965

CHAPTER V. RECREATION USE STATISTICS AND FORECASTS

San Luis Reservoir and Forebay, now under construction, are scheduled to be completed in 1967. To determine the type and quantity of recreation facilities needed at the area requires that estimates be made of the recreation demand that will probably occur at the reservoir and forebay when they are completed. Several known methods of computing future demands were analyzed and the "Comparable Reservoir Method" was selected. This method uses experience gained at existing reservoirs for predicting what will occur at proposed reservoirs. For example, a comparable reservoir is selected which has characteristics similar to those of the proposed reservoir. Although some factors may be different, others may compensate for the differences so that a valid comparison can be made. In this case the comparable reservoir selected was Millerton Lake which lies across the valley from San Luis in the foothills northeast of Fresno.

Information on the amount of recreation use and the origin of recreationists at Millerton was gained from a survey at the lake. The population in concentric rings around the reservoir was determined from census data. With these data a regression curve (Figure 2, "Millerton Reservoir Per Capita Visitation Origin-Distance") was drawn, which indicated the decline in per capita attendance at Millerton with the increasing distance traveled by the recreationist. This same smoothed

FIGURE 2



MILLERTON RESERVOIR
PER CAPITA VISITATION ORIGIN-DISTANCE
1958

DEPARTMENT OF WATER RESOURCES SAN JOAQUIN VALLEY BRANCH 1965

regression curve was used for the population surrounding the San Luis Reservoir area. The per capita rate was increased through time at a rate extrapolated from past records of the rate of increase of recreation use at state recreation areas. The increase and the per capita rate are shown in Table 2, "San Luis Reservoir and Forebay Projected Recreation Use per Capita Originating at Selected Distances for 1960-2020". From Table 2, the number representing the recreation use per capita, within a given mileage zone and for a given year, was multiplied by the population figure (appearing in Table 3) for the same mileage zone and year. The product of these two values is given in Table 3 and appears as the projected recreation use for the respective mileage zone and year. The number of visitor-days for each decade from 1960 through 2020 was then calculated and is listed below.

Year	1960	1970	1980	1990	2000	2010	2020
Visitor-days (in thousands)	310	537	863	1,398	2,072	2,956	4,058

TABLE 2

SAN LUIS RESERVOIR AND FOREBAY PROJECTED RECREATION USE
PER CAPITA ORIGINATING AT SELECTED DISTANCES
FOR 1960-2020

Mile Zone	Increment per Decade	- Year - 1960	1970	1980	1990	2000	2010	2020
0-10	1.375	4.999	6.374	7.749	9.124	10.499	11.874	13.249
11-20	.6991	2.542	3.241	3.940	4.639	5.338	6.038	6.737
21-30	.3556	1.293	1.649	2.004	2.360	2.715	3.071	3.427
31-40	.1808	.6573	.8381	1.019	1.200	1.381	1.561	1.742
41-50	.09193	.3343	.4262	.5182	.6101	.7020	.7940	.8859
51-60	.04675	.1700	.2168	.2635	.3103	.3570	.4038	.4505
61-70	.02377	.08644	.1102	.1340	.1578	.1815	.2053	.2291
71-80	.01209	.04395	.05604	.06813	.08022	.09231	.1044	.1165
81-90	.006146	.02235	.02850	.03464	.04079	.04693	.05308	.05923
91-100	.003127	.01137	.01450	.01762	.02075	.02388	.02701	.03013
100 +	.002055	.007471	.009526	.01158	.01364	.01570	.01775	.01980

TABLE 3

SAN LUIS RESERVOIR AND FOREBAY
PROJECTED RECREATION USE
For 1960-2020

	1960			1970		
Zone	P/C	Population	Use	P/C	Population	Use
0-10	4.999	300	1,500	6.374	387	2,500
11-20	2.542	10,710	27,200	3.241	13,846	44,900
21-30	1.293	11,471	14,800	1.649	14,889	24,600
31-40	.6573	25,965	17,100	.8381	33,862	28,400
41-50	.3343	87,181	29,100	.4262	114,655	48,900
51-60	.1700	222,925	37,900	.2168	298,222	64,700
61-70	.08644	646,371	55,900	.1102	931,569	102,700
71-80	.04395	134,234	6,000	.05604	185,071	10,400
81-90	.02235	585,237	13,100	.02850	784,804	22,400
91-100	.01137	522,460	6,000	.01450	698,230	10,200
100 +	.007471	13,580,000	101,400	.009526	18,600,000	177,300
		Rounded	310,000		Rounded	537,000

	1980			1990		
0-10	7.749	511	4,000	9.124	858	7,900
11-20	3.940	18,321	72,200	4.639	30,385	141,000
21-30	2.004	19,911	39,900	2.360	31,237	73,700
31-40	1.019	45,690	46,500	1.200	71,642	86,000
41-50	.5182	152,670	79,100	.6101	224,311	136,900
51-60	.2635	414,566	109,200	.3103	604,451	187,600
61-70	.1340	1,249,606	167,400	.1578	1,611,524	254,300
71-80	.06813	262,370	17,800	.08022	375,864	30,200
81-90	.03464	1,067,695	37,000	.04079	1,516,299	61,800
91-100	.01762	905,194	10,900	.02075	1,166,291	23,100
100 +	.01158	24,100,000	279,000	.01364	29,000,000	395,500
		Rounded	863,000		Rounded	1,398,000

TABLE 3 (Continued)

SAN LUIS RESERVOIR AND FOREBAY
PROJECTED RECREATION USE
For 1960-2020

Zone	2000 P/C	2000 Population	2000 Use	2010 P/C	2010 Population	2010 Use
0-10	10.449	1,218	12,700	11.874	1,778	21,100
11-20	5.338	42,883	228,900	6.038	62,969	374,700
21-30	2.715	43,086	117,000	3.071	59,797	183,600
31-40	1.381	97,535	134,700	1.561	131,548	205,300
41-50	.7020	305,899	214,700	.7940	411,854	327,000
51-60	.3570	802,033	286,300	.4038	1,030,046	415,900
61-70	.1815	1,983,993	360,000	.2053	2,381,607	488,900
71-80	.09231	492,115	45,400	.1044	611,747	63,800
81-90	.04693	1,901,431	89,200	.05308	2,286,627	121,300
91-100	.92388	1,408,629	33,600	.02701	1,643,968	44,400
100 +	.01570	35,000,000	549,500	.01775	40,000,000	710,000
		Rounded	2,072,000		Rounded	2,956,000

Zone	2020 P/C	2020 Population	2020 Use
0-10	13.249	2,418	32,000
11-20	6.737	83,953	565,500
21-30	3.427	78,610	269,800
31-40	1.742	169,146	294,600
41-50	.8859	531,469	470,800
51-60	.4505	1,269,832	572,000
61-70	.2291	2,799,171	641,200
71-80	.1165	731,554	85,200
81-90	.05923	2,692,949	159,500
91-100	.03013	1,879,887	56,600
100 +	.01980	46,000,000	910,800
		Rounded	4,058,000

CHAPTER VI. THE RECREATION PLAN

Land Use

Plate 2 indicates the lands at the San Luis complex which, because of their recreation potential, have been selected for recreation development to satisfy initial and future recreation demands. Portions of these lands will be required for initial development, leaving the larger part for later development. These lands were chosen because of their moderate slopes and favorable position in relation to access roads and to the water surface of the reservoir.

Section 11919 of the Water Code defines public recreation facilities at state water projects as recreational areas. Section 11910.5 of the Water Code lists the types of recreation that may be developed at these areas: camping, picnicking, fishing, hunting, water contact sports, boating, sight-seeing, and such other recreational pursuits usually associated with the outdoors. All of these activities will be made possible at San Luis Reservoir.

Recreation planning at San Luis Reservoir was guided by legislative directives, policies of all departments involved insofar as possible, and good park practices as based on experience at other areas.

Acquisition

The land acquisition boundary line is shown on Plate 2. The land parcels within this acquisition line are being acquired from private landowners. There are no public

lands involved in the transactions. Under the provisions of the agreement between the United States of America and the Department of Water Resources for the San Luis Unit, the State will convey to the United States title to lands acquired for the joint-use facilities. Lands acquired for recreation and fish and wildlife purposes will be retained by the State.

Initial Recreation Development

The number and estimated costs of initial recreation facilities recommended for installation at San Luis Reservoir and Forebay are presented in Table 4, "San Luis Reservoir and Forebay Estimated Capital Costs of Initial Recreation Facilities".

The extent of the initial recreation development is dictated by the predicted demand of the first decade of operation. The Davis-Dolwig Act requires that facilities be installed to meet the initial recreation demand, which by policy determination of the Department of Water Resources is considered to be that of the first decade. Recreation facilities to accommodate 765,000 visitor-days of use per year are being planned in the initial development. These initial facilities consist of one recreation development area at the main reservoir called the Basalt area, and one area at the forebay called the San Luis Creek area.

The Basalt area, shown on Plate 3, would occupy a total area of 925 acres near the right abutment of San Luis Dam. The area would provide for camping, picnicking, swimming, and boating, as well as concession facilities and an overlook. The Basalt area is the recreation area closest to Highway 152 on

TABLE 4

SAN LUIS RESERVOIR AND FOREBAY
ESTIMATED CAPITAL COSTS OF INITIAL
RECREATION FACILITIES
(in thousands of dollars)

Facilities	San Luis Reservoir Unit	San Luis Reservoir Cost	Forebay Unit	Forebay Cost	
Picnic sites	100	275	300	825	
Camp sites	80	240	-	-	
Group area	-	-	1	125	
Boat ramp	1	623	1	25	
Boat parking (acres)	3	15	2	10	
Beach (acres)	1	10	2	20	
Access Road (miles)	4	320	1	80	
		1,483		1,085	
			Sub-total		$2,568
			Water supply system		600
			Sewage disposal system		300
					$3,468
25% Final design, cont., and Sup.					867
15% Contingencies (unforeseen complications)					520
					$4,855

the south shore of the reservoir. Of the proposed recreation areas, the Basalt area will also be closest to the edge of the water at minimum pool. Its location thus minimizes the costs of providing access. The annual capacity of the area is 306,000 visitor-days.

The San Luis Creek area, as shown on Plate 4, would occupy a total area of 822 acres on the western shore of the forebay. The area would provide for picnicking, swimming, group activities, and boating and would include concession facilities. It could accommodate 459,000 visitor-days of use annually. Present operational plans envision the forebay with a maximum vertical fluctuation of about eight feet in contrast to the 218 feet for the main reservoir. This will make the forebay more suitable for year-round recreation. Accordingly, the bulk of the day-use facilities will be concentrated at the forebay.

The concession facilities mentioned above in conjunction with the initial development will depend on finding a suitable operator or operators. The concessions would probably consist of marinas with facilities to dock boats and dispense fuel, fishing tackle, and bait, similar to operations at Millerton Lake.

Future Recreation Development

The areas planned for future development are shown on Plate 2. The areas should be developed as the additional demand materializes. The recreation developments and costs are

shown in Table 5, "San Luis Reservoir and Forebay Estimated Costs of Recreation Facilities by Decade". The unit costs of picnic sites and camp sites include tables, stoves, cleared areas, parking, pro rata share of internal circulatory roads, power supply, trail system, barriers, signs, sanitary facilities, water distribution systems, and check station; i.e., everything within the unit area. These costs are based on actual costs encountered in construction of recreation facilities.

Continued emphasis on day-use at the forebay and on day-use and camping at the main reservoir, should be taken into consideration in future plans. The predicted demand for the fiftieth year after completion exceeds 3,700,000 visitor-days for the San Luis Reservoir and Forebay recreation areas. The area of land in the state acquisition program is sufficient to support this recreation use.

The concession areas on the western shore of the main reservoir are set aside for future development and will also depend on the availability of a suitable operator or operators. Possible developments on these areas could be restaurants and motels.

TABLE 5

SAN LUIS RESERVOIR AND FOREBAY ESTIMATED COSTS
OF RECREATION FACILITIES BY DECADE
(in thousands of dollars)

Decade		Picnic Sites	Camp Sites	Boat Ramp	Boat Parking (acres)	Beach (acres)	Access Road (miles)	Water Supply	Sewer System	Group Area	Sub-Total	Overhead 40%	Total
1	Unit	400	80	2	5	3	5	1	1	1			
	Cost	1,100	240	648	25	30	400	600	300	125	$ 3,468	$ 1,387	$ 4,855
2	Unit	250	50		4	2	1						
	Cost	688	150		20	20	80				978	391	1,369
3	Unit	410	80	2	6	4	1	1	1				
	Cost	1,128	240	625	30	40	80	300	150		2,593	1,038	3,631
4	Unit	510	90		7	4	1						
	Cost	1,403	270		35	40	80				1,828	731	2,559
5	Unit	670	130		9	5	1						
	Cost	1,843	390		45	50	80				2,408	963	3,371

CHAPTER VII. RECREATION OPERATION PLAN

The Davis-Dolwig Act stipulates that the responsibility for operating recreation areas at state water projects resides with the Department of Parks and Recreation. That department is encouraged, when possible and in the public interest, to contract with local public agencies to discharge this responsibility.

The Department of Fish and Game is responsible for managing the project's fisheries and wildlife resources. Fishing will be allowed at the reservoir in accordance with state laws and regulations and subject to modification by the requirements of public health and safety and the operation of the dams and reservoirs. The San Luis area is classified as a State Recreation Area; therefore, hunting is a distinct possibility and the waterfowl concentrations in the Los Banos area could provide waterfowl hunting on the reservoir. This possibility should certainly be investigated for feasibility in conjunction with recreation area operations.

For the proper operation of a large recreation area such as San Luis Reservoir and Forebay, a permanent crew will be required with additional seasonal help during the summer. In addition, a large variety of equipment will be required, including land vehicles, patrol boats, and maintenance tools. Year-round maintenance and repair will be necessary. Visitors will have to be checked in and out, and their safety and welfare will have to be maintained. All of this will have to be coordinated with reservoir operation.

Costs of operation and maintenance and those of replacement are shown by decade in Table 6, "San Luis Reservoir and Forebay Summary of Estimated Recreation Costs by Decade". The predicted use in visitor-days for each decade, computed by the method and from the figures previously shown, is also included in the table. Operation and maintenance costs are computed by applying comparable costs at existing state recreation areas to the conditions expected to prevail at San Luis Reservoir and Forebay. The operations and maintenance costs are computed at 30 cents per visitor-day, which should cover the associated costs, including overhead; and replacement costs are calculated at 3.5 percent of the capital costs, excluding overhead.

TABLE 6

SAN LUIS RESERVOIR AND FOREBAY
SUMMARY OF ESTIMATED RECREATION COSTS
BY DECADE
(In thousands of dollars)

Decade	Year	Visitor Days	Capital Outlay	Operation Maintenance	Replacement
1	1967-76	6,170	$4,855	$ 1,851	$ 1,210
2	1977-86	10,020	1,369	3,006	1,550
3	1987-96	15,540	3,631	4,662	2,458
4	1997-2006	22,810	2,559	6,843	3,098
5	2007-16	32,090	3,371	9,627	3,938

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CHAPTER VIII. SUMMARY AND RECOMMENDATION

Summary

At last, for the dry west side, the San Luis Reservoir and Forebay with a combined water surface of 15,000 acres will furnish abundant opportunity for the local people, and the people of the entire State, to enjoy water-associated outdoor recreation. This report presents a recreation development program, the estimated cost of providing the initial recreation facilities, and recommends the appropriation of money for their construction.

The San Luis Division of the California Aqueduct is a joint venture of the state and federal governments. The U. S. Bureau of Reclamation is the constructing agency and the California State Department of Water Resources will be the operating agency. The costs of construction are shared: 55 percent is paid by the State and 45 percent is paid by the United States, per Agreement No. 14-06-200-9755 between the two agencies executed December 30, 1961. A similar agreement between the Department and the United States Bureau of Reclamation is expected which will divide the costs of initial onshore recreation facilities in the same manner.

Recommendation

It is recommended that initial onshore recreation facilities be developed to provide for the initial recreation use of San Luis Reservoir and Forebay. The cost of initial development is estimated to be $4,855,000. The enabling

legislation for this appropriation is contained in the Davis-Dolwig Act, codified in Water Section 11900-11925. It is further recommended that the Legislature appropriate $4,855,000 from the General Fund and that the State be reimbursed by the federal government the extent agreed to by the state and federal governments.

APPENDIX A

COMMENTS OF OTHER AGENCIES

State of California Department of Public Health

C O P Y

MEMORANDUM

To: Honorable William E. Warne, Director
Department of Water Resources
P. O. Box 388
Sacramento 2, California

Date: December 2, 1964

Subject: Draft Copy of
Bulletin No. 117-7

From: Department of Public Health

We have reviewed the "San Luis Reservoir and Forebay Recreation Development Plan", and agree with you on the necessity of developing outdoor recreational facilities to take care of the vast growing population in California.

In the initial development you have used as a design criteria 765,000 visitor days and are recommending to the Legislature that they appropriate $4,855,000 for construction of the initial on-shore recreation facilities. Of this amount, $600,000 has been estimated for the water supply, and $300,000 for a sewer system. The water and sewage works required at the San Luis Reservoir and Forebay are equivalent to those of a small sized community, and we would like to have an opportunity to review the plans for the facilities to be provided. The report also indicates that a permanent crew will be required to operate the recreational area. We concur that this is necessary, and we would like to work with the Department of Parks and Recreation on plans for the patrol necessary to maintain proper sanitation, and on planning for the operation of the water supply and waste treatment plants.

We thank you for the opportunity of reviewing this report in its preliminary stage.

/s/ Malcolm H. Merrill
Malcolm H. Merrill, M.D.
Director of Public Health

State of California

C O P Y

MEMORANDUM

To: Hon. William E. Warne, Director
Department of Water Resources
1416 Ninth Street
Sacramento, California

Date: December 2, 1964

File No.: 10-Mer-152

Subject: San Luis Reservoir and Forebay

From: Department of Public Works
Director's Office

The draft copy of Bulletin No. 117-7 entitled "San Luis Reservoir and Forebay Recreation Development Plan" submitted by letter dated November 23, 1964, has been reviewed.

It appears that necessary coordination of recreation facilities with highways has already been accomplished. The access proposed from the State highway to the recreation areas is provided for in the freeway agreement with Merced County.

/s/ John Erreca
JOHN ERRECA
Director of Public Works

C O P Y

MERCED COUNTY PARK AND RECREATION DEPARTMENT

670 W. 22nd Street
Merced, California

December 2, 1964

Mr. William Warne, Director
State of California
Department of Water Resources
P.O. Box 388
Sacramento, California

Dear Mr. Warne:

The members of the Merced County Board of Supervisors have no comments to make for the final report, of your draft copy of Bulletin No. 117-7, on the San Luis Reservoir and Forebay Recreation Development Plan.

This department and the Merced County Planning department have also reviewed the Preliminary Draft with the members of our board and find that your department and the San Luis Recreation Planning Committee has done an outstanding job in the overall plans for Recreation for the San Luis Reservoir and Forebay.

Thank you.

Sincerely,

/s/ Pat Cosentino

Pat Cosentino, Superintendent
Parks and Recreation

PC/nm

State of California The Resources Agency of California

C O P Y

MEMORANDUM

To: Mr. William E. Warne, Director
Department of Water Resources

Date: December 4, 1964

Subject: San Luis Reservoir and Forebay - Recreation Development Plan - Review of Draft Copy of Bulletin No. 117-7

From: Department of Parks and Recreation

The Department of Parks and Recreation has reviewed the above report and generally concurs in its recommendations.

DIVISION OF BEACHES AND PARKS

The Division of Beaches and Parks' comments remain essentially the same as the report which was transmitted to the Department of Water Resources by this department on July 15, 1964.

Several minor editorial and organizational changes have been made which do not affect either the basic content or the objective of the report. One error was noted. Table 1, Page 14, gives the reservoir area (minimum) as 4,000 acres. On page 15, Line 13 and in Figure 1, Page 16, the minimum pool area is given as 3,750 acres. These figures should be reconciled before publication of the report.

The Division of Beaches and Parks recommends that with the exception of the above noted suggested change, that the Bulletin No. 117-7 be approved for publication.

DIVISION OF SMALL CRAFT HARBORS

The Division of Small Craft Harbors commented that inasmuch as the projected recreational usages are not broken down into types, it is difficult to relate prospective boat usage to the requirements and therefore the adequacy of the proposed facilities for this purpose. The initial recreational development is planned to meet the demand of 765,000 visitor-day usage annually. The demand is based on the projected usage during the first decade of operation.

With reference to the "California Small Craft Harbors and Facilities Plan--Comprehensive Report", in 1962 there were 29,400 small craft in the South Valley planning region, the region in which the San Luis project is located. This number is projected to

increase to 54,000 by 1975 and to 102,000 by the year 2000. This is in an area in which there is now a deficiency in launching facilities and in which a further shortage is expected by 1975. Also, a considerable deficiency in berthing or mooring facilities is expected in the region by 1975.

As for boating, the plan calls for the initial development of an 8-lane launching ramp and 200-car and trailer parking area in the Basalt Recreational Area on the south shore of the San Luis Reservoir. A 3-lane launching ramp and a 150-car and trailer park are proposed for the San Luis Forebay in the San Luis Creek Recreational Area. Our information indicates that the ratio of parking to the launching lanes should be approximately 60 to 1. This standard should be followed in the plan and sufficient areas set aside accordingly, although actual construction could be accomplished as the demand warrants at each site.

The plan calls for the development of the most accessible and desirable sites initially, and other sites as the demand may require. It calls for more initial boating development in the basalt area than in the San Luis Creek area; yet, the greater over-all recreational usage, and particularly boating, is expected at the latter. This indicates that the greater number of launching lanes should be at the San Luis Creek site rather than in the Basalt area, the reverse of that indicated in the report. In this respect, there is a discrepancy between Plate No. 4 in the Bulletin and a similar plate prepared for the 1965-66 Fiscal Year Capital Outlay Budget Request. In the latter, a 100-foot wide, rather than a 3-lane ramp, is indicated for the San Luis Creek Area.

Due to the difficulty of building launching ramps under water and the relatively stable water level expected in the Forebay, initial construction here should provide for long-term needs. The inclusion of the development of marina-type facilities in the plan, rather than on a concessionaire basis, would permit and facilitate over-all and inter-related development in that launching ramp requirements, for example, could be gauged more closely to their expected usage.

In order to support the stated purposes of the Bulletin, more detail planning relating to boating and a refinement in estimated cost data appears to be advisable in connection with the revision of the Bulletin. This includes the projection of boating activities associated with the over-all project, and facilities requirements to meet the demands on a time schedule basis. The Division

of Small Craft Harbors will be glad to assist in the more advance studies of the recreation aspects of this project to the end that adequate facilities be provided for boating, one of the more important recreational activities expected to be associated with the project.

/s/ John H. Knight

JOHN H. KNIGHT
Deputy Director

cc: Edward F. Dolder
Lachlan M. Richards

te of California The Resources Agency

C O P Y

MEMORANDUM

To: Honorable William E. Warne, Director Date: January 12, 1965
Department of Water Resources
1416 Ninth Street
Sacramento, California

From: Department of Fish and Game

Subject: San Luis Reservoir and Forebay, Merced County:
DWR Bulletin 117-7 Draft, October 1964

We have reviewed subject draft report and believe that the recreational use estimates and the planning therefor is sufficiently detailed and adequate, based on the assumed operation as outlined. With the great annual fluctuation and consequent extensive littoral exposure and disruption (71.8% in a normal year), it will be difficult to maintain angling quality above the level of poor to fair. Hunting for waterfowl, if fully provided for, may be an added recreation feature; however, conditions may vary so widely from season to season as to make any predictions unreliable.

Obviously, a great deal hinges on the ultimate operational pattern for the reservoir; and the report does not include the effect of changes in operation which may result from diversions through Pacheco Tunnel to the San Felipe Division, subject of a recent feasibility announcement by the U.S. Bureau of Reclamation. At such time as the effect of this project is reflected in San Luis operations we will want to make further comments.

It is our belief that only with the addition of a fish and wildlife development and management plan will the full recreational potential be realized at San Luis Reservoir and Forebay. Our recommendations for enhancement features and for the management of wildlife populations should be considered along with this report. We therefore recommend that the report not be submitted to the Legislature until a fish and wildlife development plan is prepared to accompany Bulletin 117-7.

We have been unable to prepare a complete development and management plan because of the lack of funds. We have, however,

done some work as time could be spared from other programs. We are currently trying to find personnel time to complete this work. It may be necessary to postpone some other work of our Contract Services Section in order to accomplish this. I am asking our personnel to look into this and make every effort to find a way to complete this task at an early date in consultation with appropriate members of your staff.

/s/ W. A. Shannon

Director

C O P Y

UNITED STATES
DEPARTMENT OF THE INTERIOR

Bureau of Reclamation
Sacramento, California 95811

Jan. 19, 1965

Mr. William E. Warne, Director
Department of Water Resources
State of California
P. O. Box 388
Sacramento, California 95802

Dear Mr. Warne:

This acknowledges the receipt of your letter of November 23, 1964 enclosing three copies of your Bulletin 117-7, San Luis Reservoir and Forebay Recreation Development Plan, dated October 1964. We have sent copies of the Bulletin to the National Park Service and the Bureau of Outdoor Recreation for review and comment.

We are in general agreement with the plan and development program and specifically with the anticipated management of the reservoirs and their shoreline by the Department of Parks and Recreation.

Your recommendation on page 35 does not mention Federal participation in the cost of construction of the initial recreation facilities. We do anticipate participation and are presently negotiating a suitable contract for construction and joint financing of these facilities. These negotiations should be mentioned in Bulletin 117-7.

Our authority for recreation development is limited to Section 7 of the San Luis Act, Public Law 86-488. This section reads as follows:

> Section 7: The Secretary is authorized, in connection with the San Luis Unit, to construct minimum basic public recreational facilities and to arrange for the operation and maintenance of the same by the State or an appropriate local agency or organization. The cost of such facilities shall be nonreturnable and nonreimbursable under the Federal reclamation laws.

It is our interpretation that minimum basic facilities consist of those needed to meet the initial demand which occurs on project completion. An estimate of $100,000 for minimum basic facilities was presented to Congress in hearings on Public Law 86-488 and was for facilities originally suggested by the National Park Service in 1952. Since that time a great increase in public outdoor recreation has occurred and your estimates are considered more realistic. Consequently, we plan to request Congressional approval for greater Federal financial participation.

We note on the top of page 18 that the construction schedule calls for completion by the fall of 1967. This should read 1968 with water storage commencing in 1967.

Sincerely yours,

/s/ R.J. Pafford, Jr.

R.J. PAFFORD, Jr.
Regional Director

APPENDIX B

Plates

The plates in this appendix were prepared by the Department of Parks and Recreation under contract with Department of Water Resources.

SURVEYED BY	DESIGNED BY	REVIEWED BY
DATE	DATE	DATE 6-64
TRACED BY	DRAWN BY HWL	REVIEWED BY
DATE	DATE 6/64	DATE
CHECKED BY	CHECKED BY NH	REVIEWED BY
DATE	DATE 6/64	DATE

STATE OF CALIFORNIA

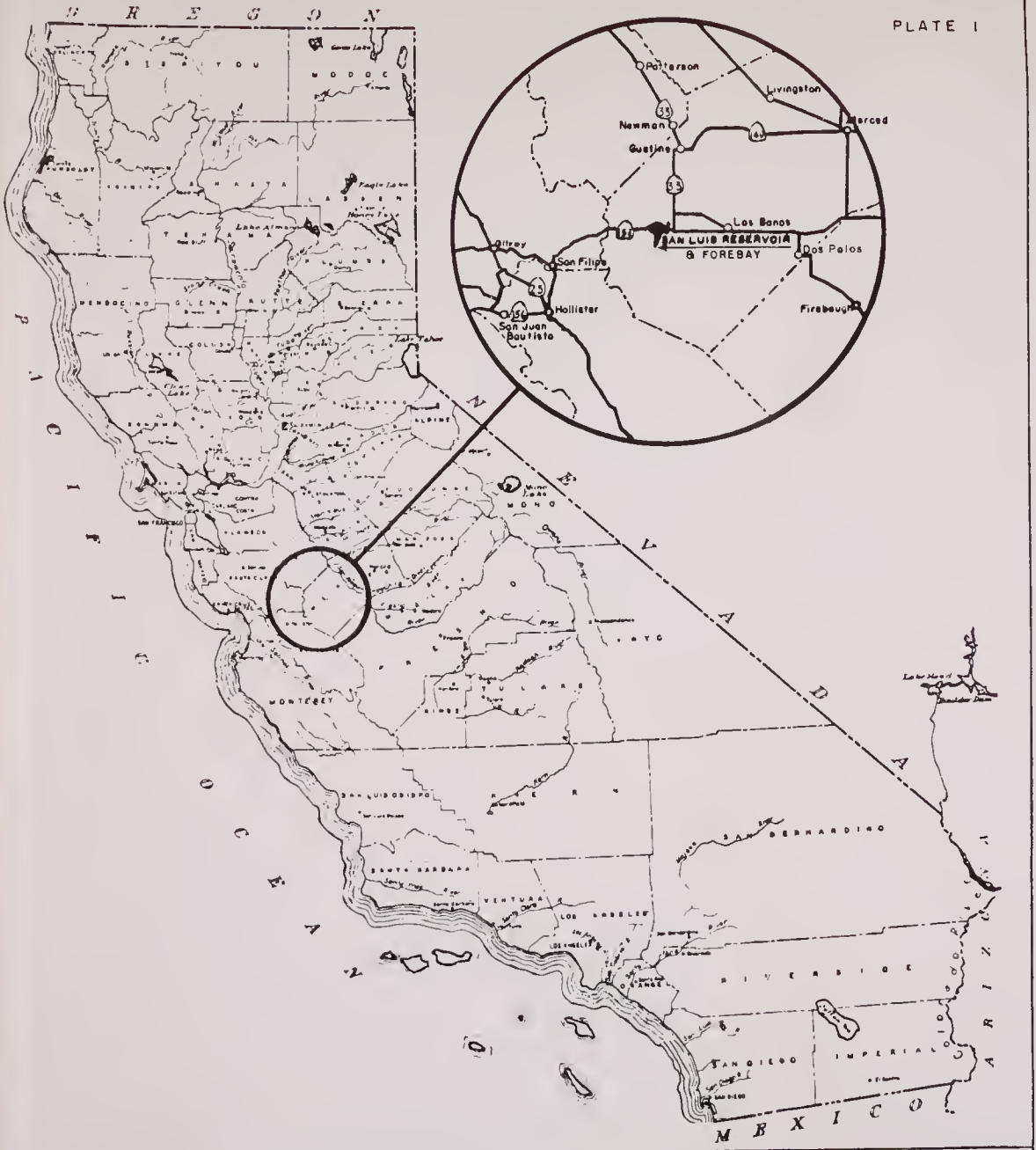
DIVISION OF BEACHES AN

DEPARTMENT OF PARKS AND REC

APPROVED

CHIEF DIVISION OF BEACHES A

PLATE I



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DATE	DATE 6/64	DATE

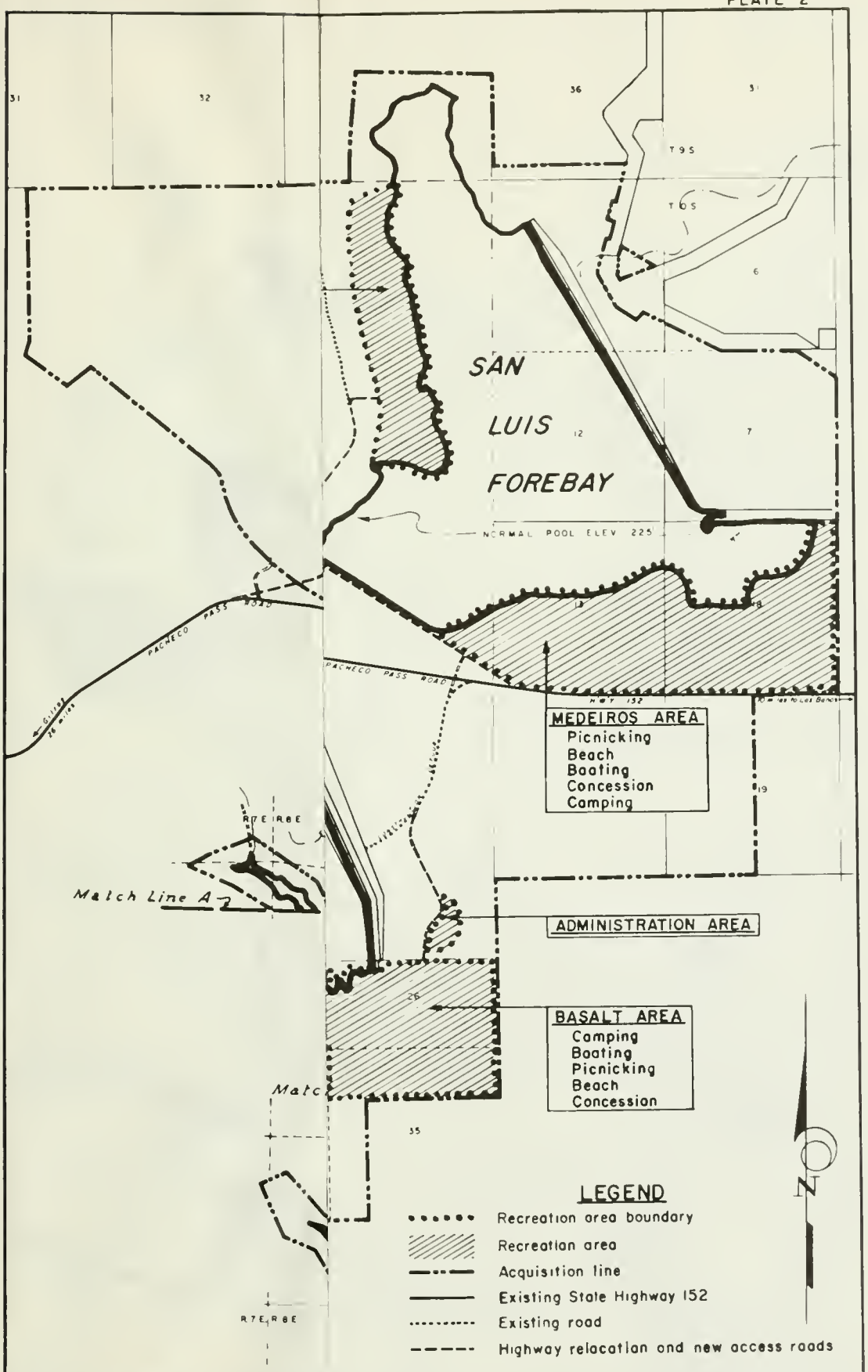
STATE OF CALIFORNIA
DIVISION OF BEACHES AND PARKS
DEPARTMENT OF PARKS AND RECREATION

APPROVED _____ DATE _____
CHIEF DIVISION OF BEACHES AND PARKS

SAN LUIS RESERVOIR & FOREBAY
VICINITY MAP

DRAWING NO
WR-100
SCALE
1" = 80 mile
DISTRICT

PLATE 2



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LUIS RESERVOIR AND FOREBAY

RECREATION LAND USE AND ACQUISITION PLAN

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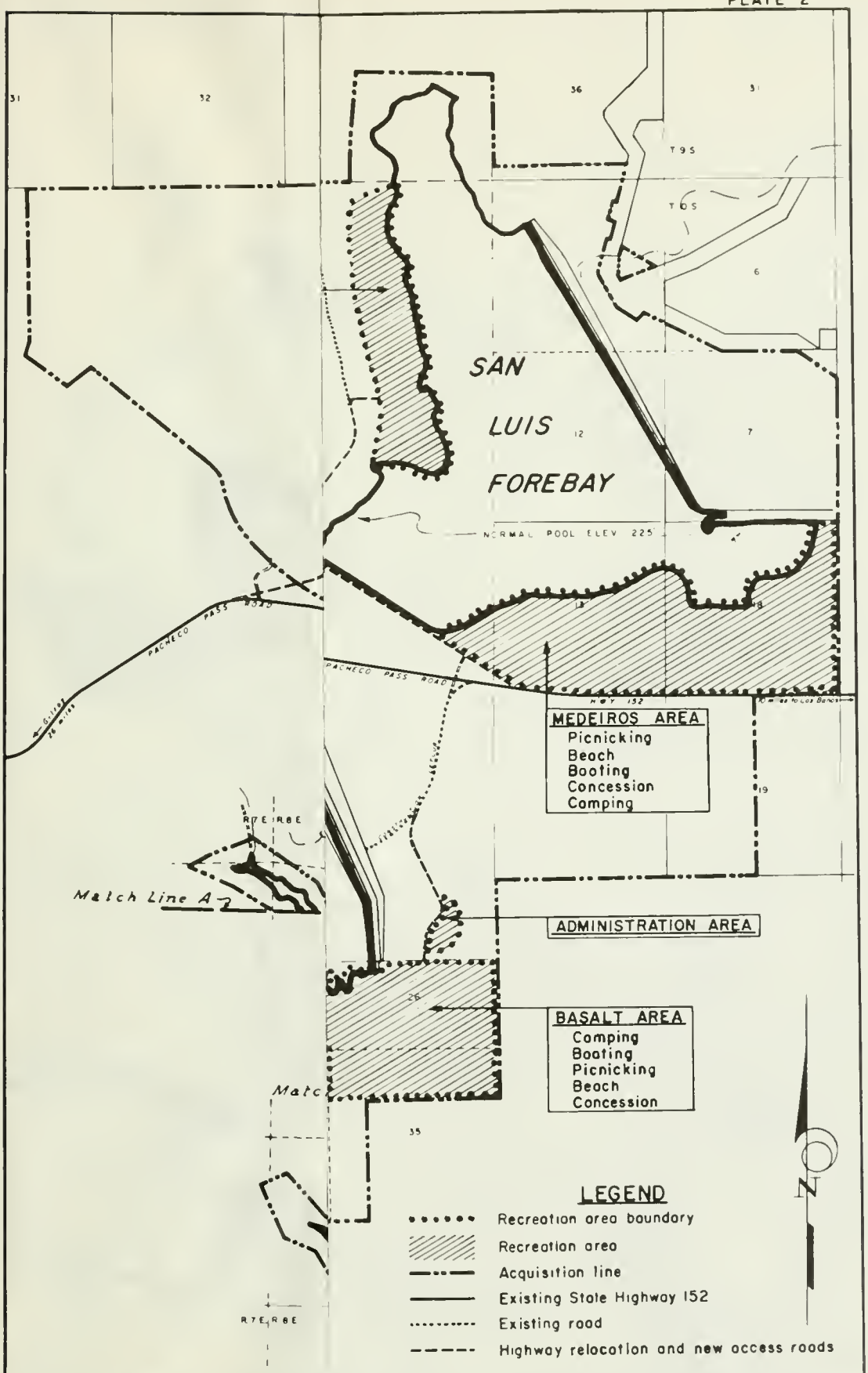
PLATE 2



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LUIS RESERVOIR AND FOREBAY

RECREATION LAND USE AND ACQUISITION PLAN

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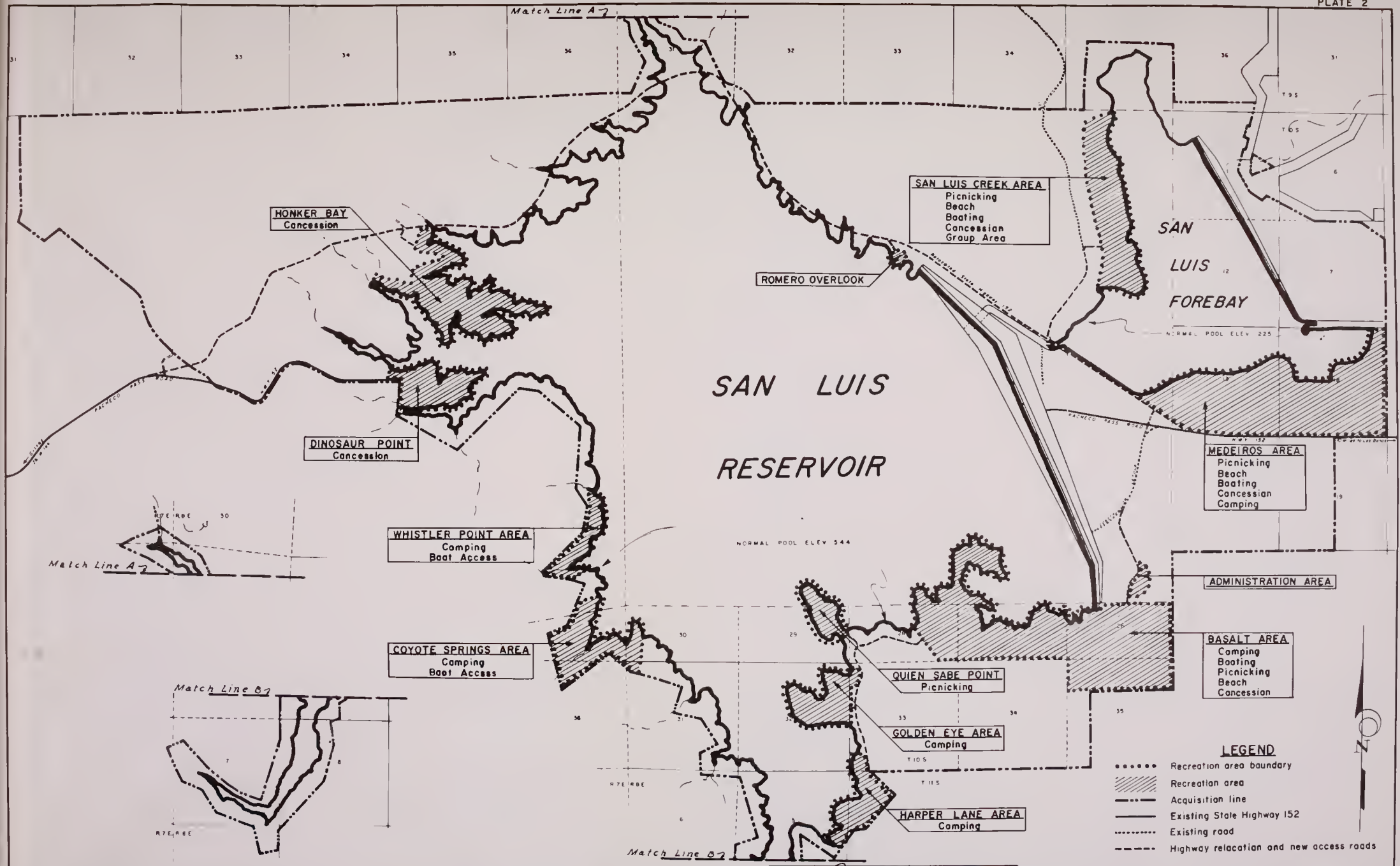
FILE NO	OF
DISTRICT	1

PLATE 2



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	STAFF	HONOLD
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	SMITH	
DATE	DATE 5-10-64	DATE
CHECKED BY	CHECKED BY	REVIEWED BY
	LANG	
DATE	DATE 11-55	DATE

RECOMMENDED
Wm J Hausler DATE 6-11-64
James Evans DATE 6-11-64
DATE

APPROVED Parke A. Brown DATE 6-12-64
DIRECTOR, DEPARTMENT OF PARKS AND RECREATION

RESOURCES AGENCY OF CALIFORNIA
DIVISION OF BEACHES AND PARKS
DEPARTMENT OF PARKS AND RECREATION

APPROVED Edward F. Dolden DATE 6/17/64
CHIEF DIVISION OF BEACHES AND PARKS

SAN LUIS RESERVOIR AND FOREBAY
RECREATION LAND USE AND ACQUISITION PLAN

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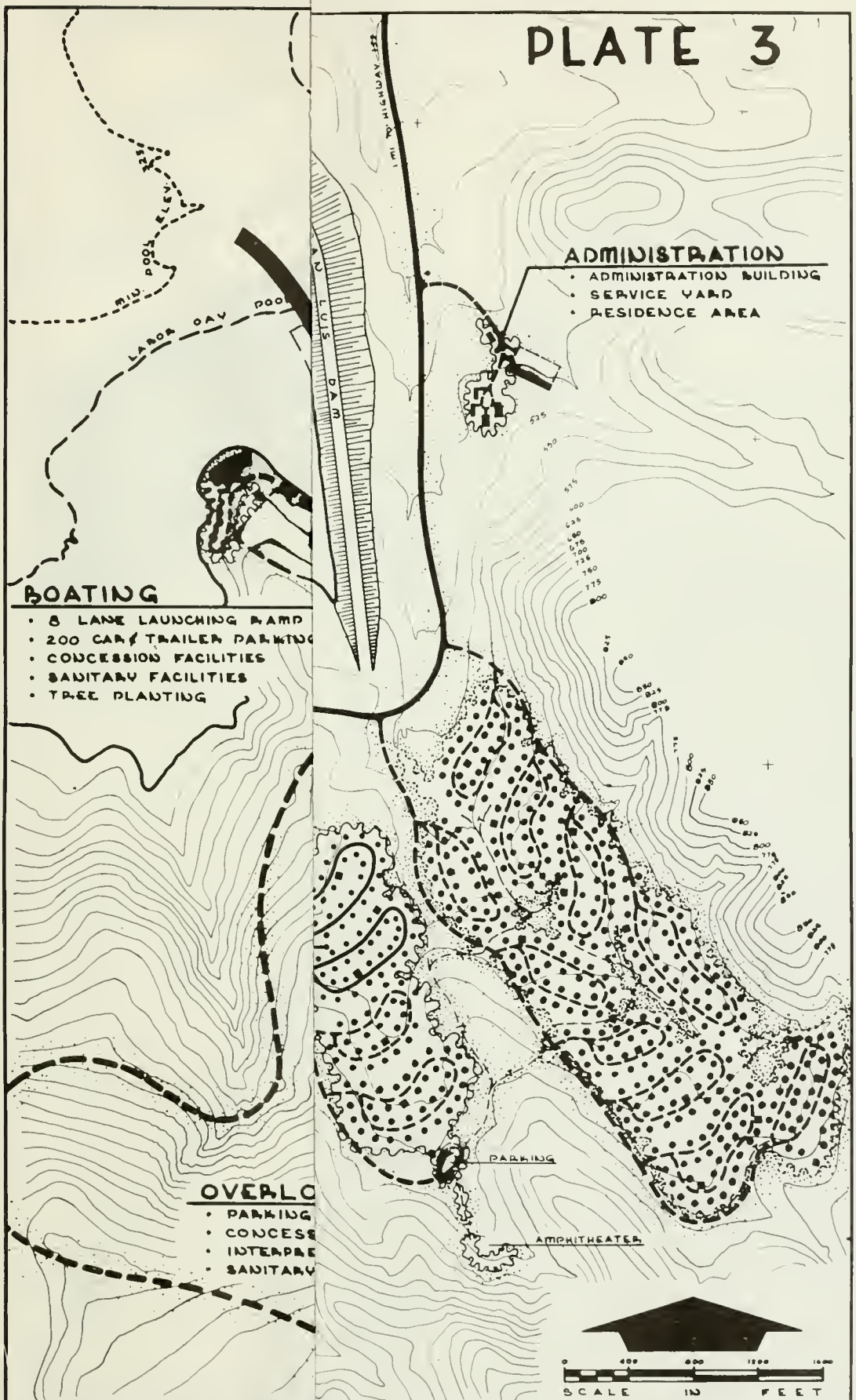
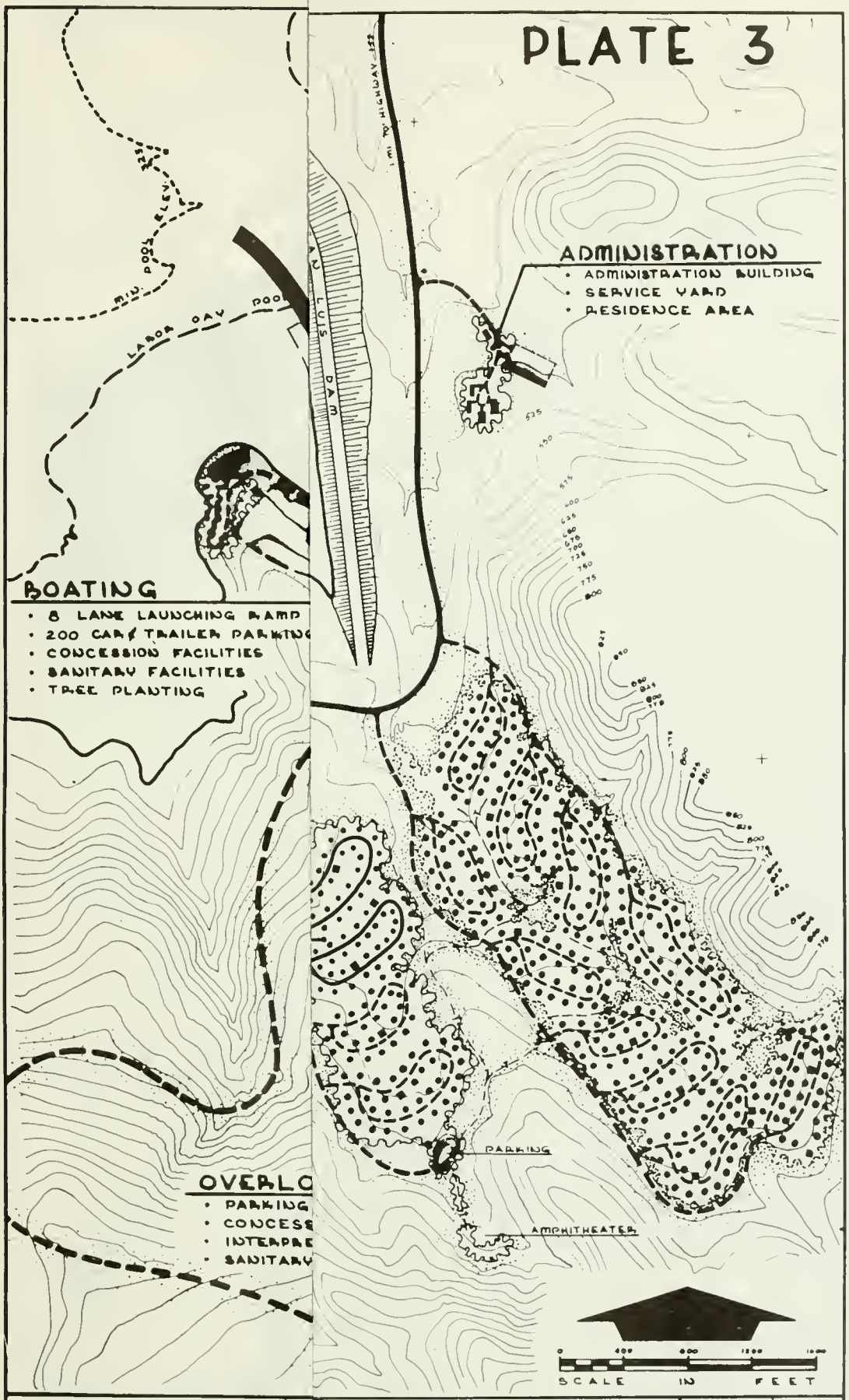
PLATE 3



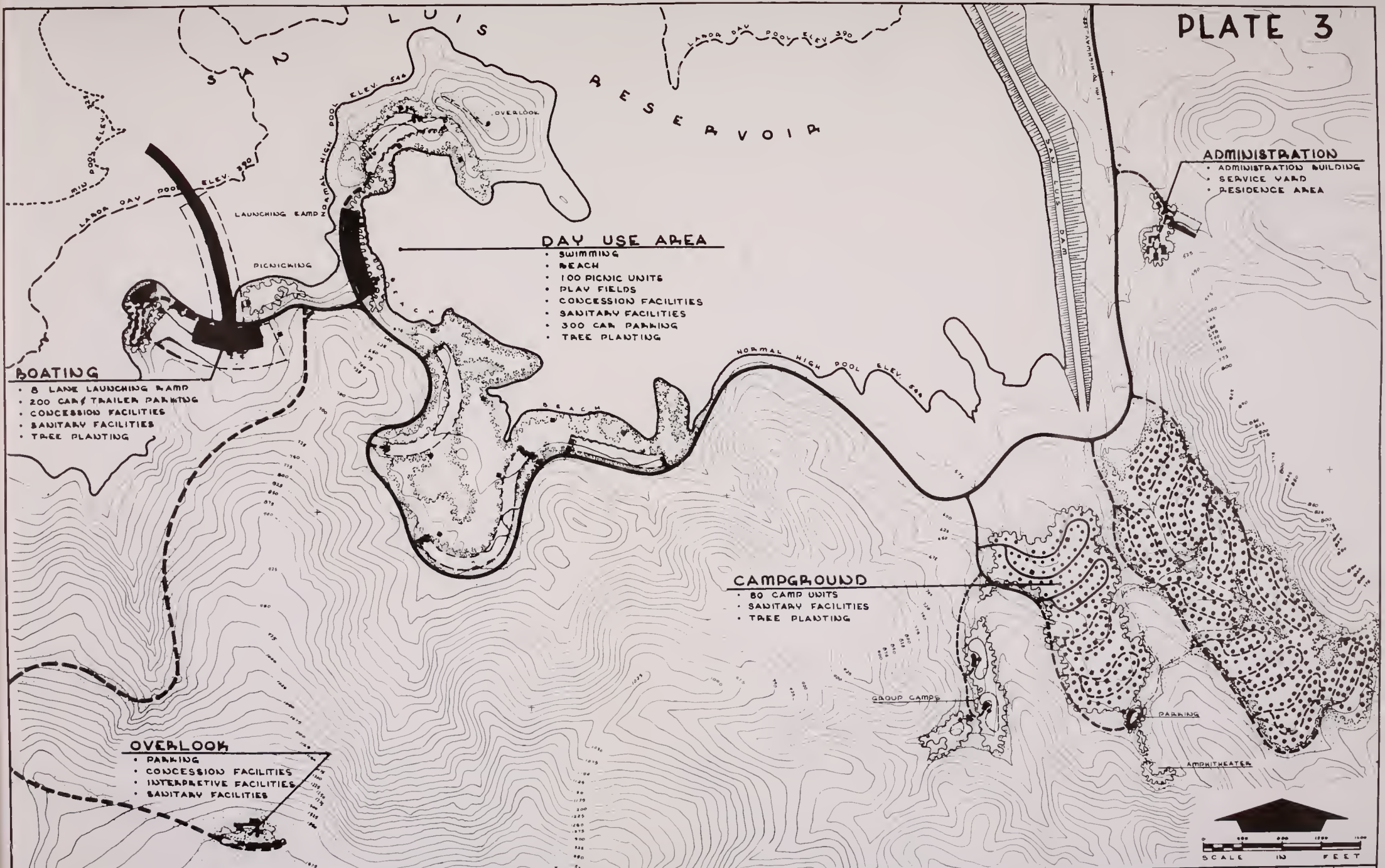
REVISIONS	DEVELOPED AREA PLAN SAN LUIS RESERVOIR BASALT AREA	DRAWING NO B-BL-2 FILE NO DISTRICT THREE	SHEET 1 OF 1

PLATE 3



REVISIONS	DEVELOPED AREA PLAN SAN LUIS RESERVOIR BASALT AREA	DRAWING NO B-BL-2 FILE NO DISTRICT THREE	SHEET 1 OF 1

PLATE 3



REVISIONS	BY	DATE

SCALE : 1" = 400' CONTOUR INT 25'

LEGEND
- ROADS
- PARKING
- TREES
- CAMP UNITS

INITIAL DEVEL FUTURE DEVEL

SURVEYED BY	DESIGNED BY	REVIEWED BY
DATE	DATE 8-64	DATE
TRACED BY	DRAWN BY STAFF	REVIEWED BY
DATE	DATE 8-64	DATE
CHECKED BY	CHECKED BY	REVIEWED BY
DATE	DATE	DATE

RECOMMENDED: Earl P. Hanson DATE 8-4-64; DATE 8-7-64

RESOURCES AGENCY OF CALIFORNIA
DIVISION OF BEACHES AND PARKS
DEPARTMENT OF PARKS AND RECREATION
APPROVED: Edward J. Hudler, CHIEF DIVISION OF BEACHES AND PARKS DATE 6/10/64

DEVELOPED AREA PLAN
SAN LUIS RESERVOIR
BASALT AREA

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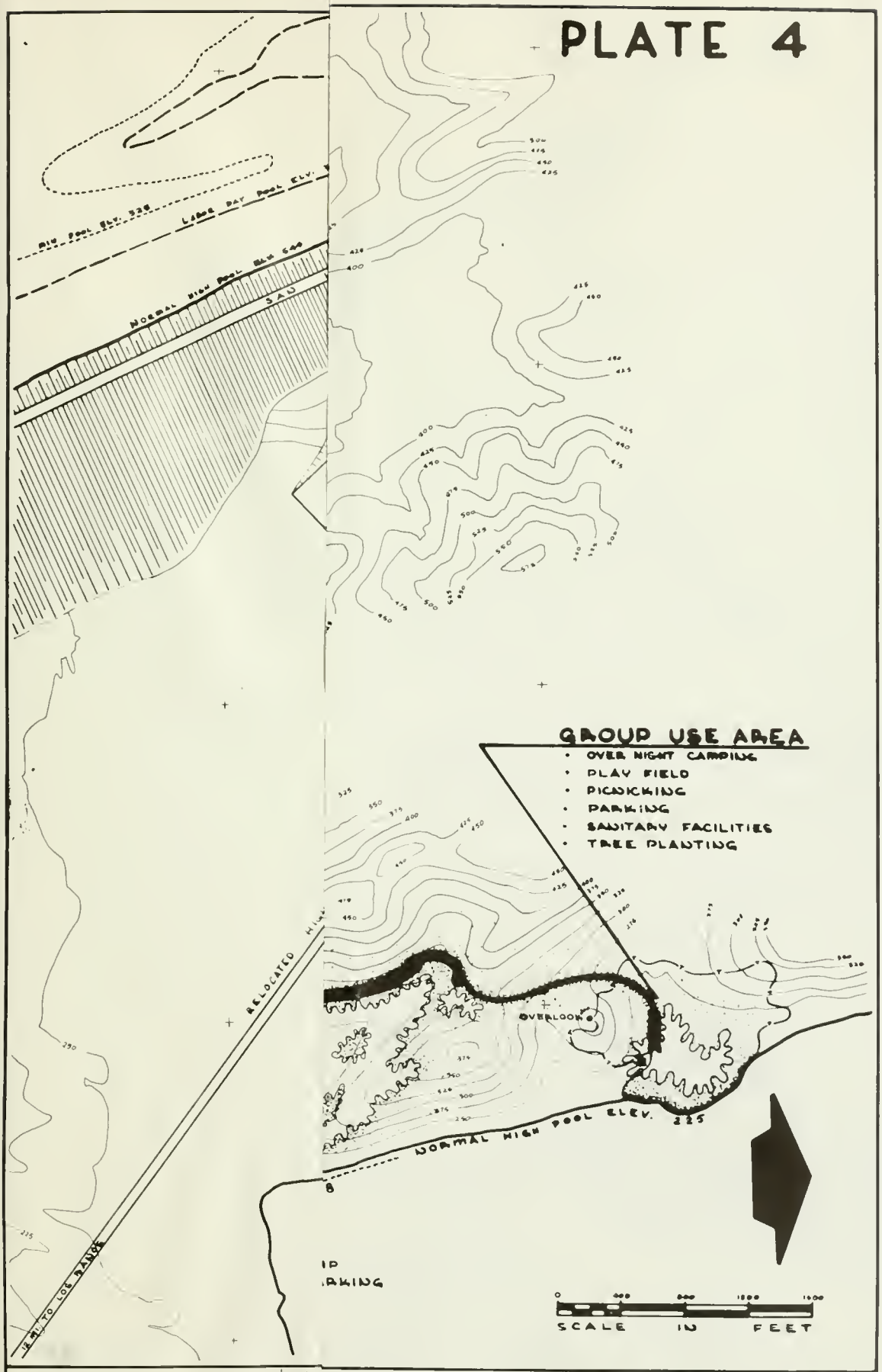
PLATE 4



REVISIONS	BY

DEVELOPED AREA PLAN
SAN LUIS FOREBAY
AN LUIS CREEK AREA

DRAWING NO	A-SL-8
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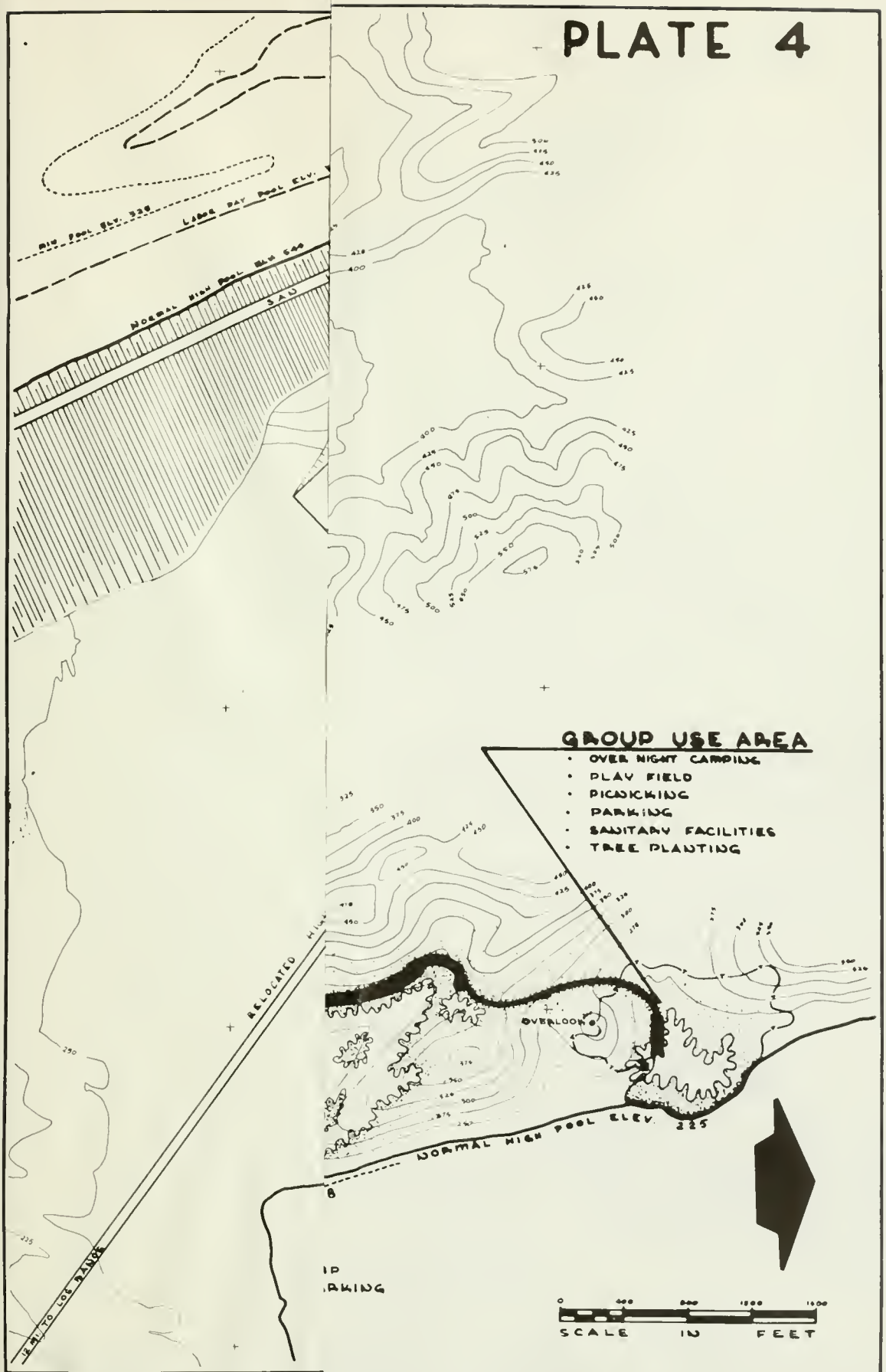
DISTRICT	THREE
SHEET	1 OF 1

PLATE 4

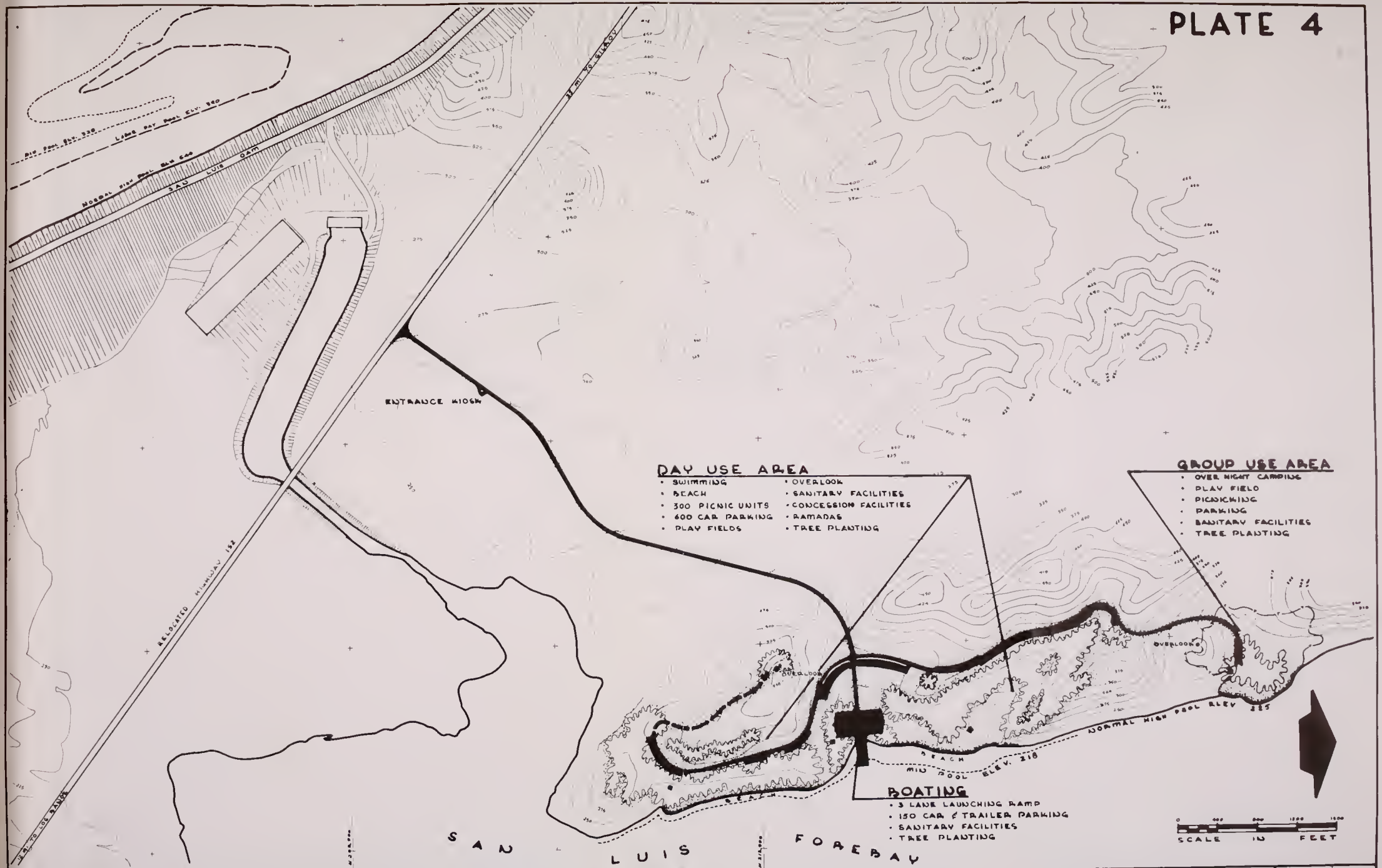


REVISIONS	BY

DEVELOPED AREA PLAN
SAN LUIS FOREBAY
AN LUIS CREEK AREA

DRAWING NO	A-SL-8
FILE NO	
DISTRICT	THREE
SHEET	1 OF 1

PLATE 4



REVISIONS	BY	DATE

SCALE: 1" = 400' CONTOUR INT. 25'

LEGEND
- ROADS
- PARKING
- TREES
- CAMP UNITS

INITIAL DEVEL FUTURE DEVEL

SURVEYED BY	DESIGNED BY STAFF	REVIEWED BY
DATE	DATE 8-64	DATE
TRACED BY	DRAWN BY STAFF	REVIEWED BY
DATE	DATE 8-64	DATE
CHECKED BY	CHECKED BY	REVIEWED BY
DATE	DATE	DATE

RECOMMENDED

Manager Lower date 8-64

Chief Planning Section date 6-9-64

Chief Engineering Section date 6-9-64

RESOURCES AGENCY OF CALIFORNIA
DIVISION OF BEACHES AND PARKS
DEPARTMENT OF PARKS AND RECREATION

APPROVED Edward Y. Dobbs DATE 6/10/64
CHIEF DIVISION OF BEACHES AND PARKS

DEVELOPED AREA PLAN
SAN LUIS FOREBAY
SAN LUIS CREEK AREA

DRAWING NO. N-SL-8
FILE NO.
DISTRICT THREE
SHEET 1 OF 1

RD