

LAKEVIEW LAKE

TRINITY RIVER BASIN
MOUNTAIN CREEK, TEXAS

MASTER PLAN (REVISED)

DESIGN MEMORANDUM NO. 11
FEBRUARY 1981



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U.S. ARMY ENGINEER DISTRICT, FORT WORTH, TEXAS
CORPS OF ENGINEERS
FORT WORTH, TEXAS

EX-111

SWDPL-R (SWFED-PR/SWFED-DC 28 Jun 79) 7th End Mr. Koechley/fao/7-3045
SUBJECT: Lakeview Lake, Mountain Creek, TX, Design Memorandum No. 11 (Revised)
Master Plan

DA, Southwestern Division, Corps of Engineers, 1114 Commerce Street, Dallas,
Texas 75242 21 MAR 1985

TO: Commander, Fort Worth District, ATTN: SWFED-PR/SWFED-DC

1. The subject supplement to the master plan is approved subject to the following comments.
2. In accordance with recent DAEN-CWO-R guidance letter dated 20 December 1984, subject: Clarification of Recreation Facility Cost Sharing Policy, the following items in this supplement may not be cost-shared as proposed.
 - (a) flag pole
 - (b) maintenance complex
 - (c) caretakers residence
 - (d) site preparation for screened shelters

FOR THE COMMANDER:

William R. Pover

wd all encls

for BARRY G. ROUGHT, P.E.
Chief, Planning Division

CF: w/6th End & encls
DAEN-CWO-R (5 cys)

*File
Lakeview DM 11*

SWFED-DC (SWFED-PR/SWFED-DC 28 Jun 79) 6th End
SUBJECT: Lakeview Lake, Mountain Creek, TX, Design Memorandum No. 11 (Revised)
Master Plan

DA, Fort Worth District, Corps of Engineers, P. O. Box 17300, Fort Worth,
Texas 76102-0300 30 November 1984

TO: Commander, Southwestern Division, ATTN: SWDPL

Submitted for review and approval are nine copies of Supplement No. 1 to the
subject design memorandum. Copies are for distribution in accordance with
SWD Supplement 1 to ER 1110-2-1150.

FOR THE COMMANDER:

T. R. Vogt
T. R. VOGT
Chief, Planning Division

Encl
Added 1 encl
4. Supplement No. 1

~~RODMAN~~ *RODMAN*
~~HARRIS~~
~~JOHNSON~~ *TJ*
~~PERRY~~ *CRP*
Johnson NICKERSON-FILE
DM 11
Lakeview (Joe P. 1)

TRINITY RIVER BASIN, TEXAS

DESIGN MEMORANDUM NO. 11 MASTER PLAN (REVISED)

JOE POOL (LAKEVIEW) LAKE
MOUNTAIN CREEK, TEXAS

SUPPLEMENT NO. 1

LAKEVIEW STATE PARK

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
FORT WORTH, TEXAS

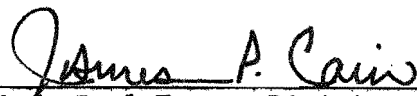
NOVEMBER 1984

TRINITY RIVER BASIN, TEXAS
Supplement No. 1 to
Design Memorandum No. 11
Master Plan
for
Joe Pool (Lakeview) Lake
Mountain Creek, Texas

This report, prepared in Environmental Resources Branch, Planning Division, Fort Worth District, has been coordinated with the Engineering Division, Operations Division, and Real Estate Division and is recommended for approval.



Act Chief, Engineering Division



Chief, Real Estate Division



Chief, Operations Division

TRINITY RIVER BASIN
JOE POOL LAKE (LAKEVIEW)
MOUNTAIN CREEK, TEXAS

SUPPLEMENT NO. 1
(LAKEVIEW STATE PARK)

DESIGN MEMORANDUM NO. 11 MASTER PLAN (REVISED)

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LIST OF EXHIBITS

<u>Exhibit</u>	<u>Title</u>
A	SWFPL Letter of 18 Jan 84 to Mr. Charles B. Travis
B	TWPD Letter of Sep 13, 1984 to Mr. Steve Armstrong

LIST OF APPENDICES

<u>Appendix</u>	<u>Title</u>
I	Master Plan - Lakeview State Park (TPWD)

TRINITY RIVER BASIN, TEXAS

MOUNTAIN CREEK
 TRIBUTARY TO
 TRINITY RIVER, TEXAS

JOE POOL (LAKEVIEW) LAKE

STATUS OF DESIGN MEMORANDA

Design:	:	:	:	:
Memo :	:	Date :	SWD :	OCE
No. :	Title :	Submitted :	Approval :	Approval
1	Hydrology	24 Oct 68	10 Dec 68	20 Feb 69
	Supplement No. 1	17 Nov 69	19 Dec 69	19 Mar 70
	Supplement No. 2	13 Sep 74	13 Feb 75	Not Req'd
	Supplement No. 3	11 Jan 79	9 Feb 79	Not Req'd
	Supplement No. 4	9 Oct 79	1 Nov 79	Not Req'd
2	Site Selection	Included in General		
3	Availability of Materials	28 Feb 69	26 Mar 69	22 Apr 69
4	General (including Site Selection)	8 Dec 69	12 Mar 70	22 Jun 70
	Supplement No. 1	26 Oct 70	5 Apr 71	9 Jul 71
	Supplement No. 2	12 Sep 74	24 Oct 74	5 Dec 74
	Supplement No. 3	26 Mar 79	31 May 79	Not Req'd
5	Land for Construction and Reservoir Areas	19 Dec 69	28 Jan 71	17 May 71
6	Land Requirements Plan - Public Use	16 Jan 70	19 Mar 70	15 Jun 70
7	Project Buildings, Overlook and Access Road	30 Nov 70	25 Mar 71	Not Req'd
7	Project Buildings, Overlook, Access Road and Recreation Facilities (Rev)	11 Jan 79	10 Apr 79	Not Req'd
	Supplement No. 1	30 Apr 82	21 May 82	Not Req'd
	Supplement No. 2 (Rev)	10 Jul 84		
8	FM Road 1382 Relocation	22 Jul 71	18 Sep 74	Not Req'd
	Supplement No. 1	6 Oct 78	31 Oct 78	Not Req'd
9	Embankment and Spillway	9 Apr 80	9 Jun 80	Not Req'd
	Supplement No. 1	29 Apr 81	8 Jun 81	Not Req'd
10	Relocations, Dam Construction Area	31 Mar 75	18 Apr 75	Not Req'd
11	Recreation Master Plan	28 Jun 79	-	-
11	Recreation Master Plan (Rev)	5 Feb 81	10 Jul 81	Not Req'd
	Supplement No. 1	This Report		
12	Relocate TESCO Electric Dist & Transmission Lines - Lake Area	29 Jun 84	16 Aug 84	Not Req'd
14	Relocate SW Bell Telephone Lines - Lake Area	8 Aug 84	14 Sep 84	Not Req'd
15	Relocate TP&L Transmission Lines - Lake Area	18 Aug 82	20 Oct 82	Not Req'd
16	Relocation of City Streets and County Roads	30 Apr 80	6 Aug 80	Not Req'd
	Supplement No. 1	31 Aug 83	29 Sep 83	Not Req'd
	Supplement No. 2	11 May 84	31 Jul 84	Not Req'd

STATUS OF DESIGN MEMORANDA (CONT'D)

Design:	:	:	:
Memo :	Date	SWD	OCE
No. :	Title	Submitted	Approval : Approval
19	Southern Pacific Railroad Relocation	25 Feb 81	16 Apr 81 Not Req'd
20	Mobil Oil Pipe Line Relocation	12 Dec 80	12 Jan 81 Not Req'd
21	Lone Star Gas Pipe Line Relocation	31 Dec 80	10 Feb 81 Not Req'd
22	Relocation FM 661 Supplement No. 1	31 Jan 80 31 Jul 84	12 Mar 80 31 Oct 84 Not Req'd
23	Clearing and Secimentation and Degradation Ranges	16 Mar 83	31 May 83 Not Req'd
24	Outlet Works Supplement No. 1 - Initial Embankment	27 Nov 78 16 Feb 79	22 Jan 79 26 Mar 79 Not Req'd
25	Recreation Facilities	10 Dec 82	16 Feb 83 Not Req'd
27	Relocate Tarrant County Water Control & Improve- ment District Facilities	29 Mar 83	1 Aug 83 Not Req'd
28	Relocate Hill County Elec Distr Lines in Lake Area	28 Feb 83	5 Apr 83 Not Req'd
29	Reservoir Filling Plan	Jan 85*	

*Scheduled Submission Date

TRINITY RIVER BASIN
JOE POOL LAKE (LAKEVIEW)
MOUNTAIN CREEK, TEXAS

SUPPLEMENT NO. 1

DESIGN MEMORANDUM NO. 11 MASTER PLAN (REVISED)

1. Background.- The State of Texas, through the Texas Parks and Wildlife Department (TPWD) entered into a recreation cost sharing contract with the Corps of Engineers for the development and management of Lakeview State Park on the 17th of April 1979.

2. Purpose.- The purpose of this supplement is to include current conceptual plans and budget for recreation development of Lakeview State Park at the Joe Pool Lake project. The basic master plan for Joe Pool Lake was approved in July 1981 and included conceptual plans of recreation development for all park areas to be operated and maintained by the Trinity River Authority. A preliminary plan and budget for the recreation development of Lakeview State Park was prepared and submitted by the Texas Parks and Wildlife Department and was also included in the 1981 Master Plan. The TPWD plan was, however, preliminary and submitted with the understanding that a more detailed plan for Lakeview State Park would be prepared and supplemented into the basic master plan (DM 11) at a later date. TPWD is also scheduled to prepare plans and specification drawings, and will administer all construction activities for Lakeview State Park. The latest approved PB3 shows the total initial recreation facility development (14 account) for Lakeview State Park to be \$11,796,000. This coincides with the TPWD budget estimate of \$11,804,000. Future development proposed by the state is estimated to be \$10,500,000.

3. Recommendation.- Plans and budget information were prepared by the Texas Park's and Wildlife Department and submitted to the Fort Worth District Corps of Engineers for review and approval in November 1983. Review by the Fort Worth District surfaced concerns over the siting of recreation facilities in areas of steep terrain (see attached correspondence, exhibit A). Subsequent meetings with TPWD staff resulted in assurances made by TPWD that modifications to facility siting could be made with input from Corps personnel during the state's preparation of plans and specification documents, and construction phases (see exhibit B). The Fort Worth District agrees that these assurances are adequate to warrant approval of the conceptual recreation development plans at the master plan level. SWD approval is recommended.

TABLE 1

SUMMARY OF ESTIMATED RECREATION COST
TEXAS PARKS AND WILDLIFE DEPARTMENT *

INITIAL CONSTRUCTION

COST SHARABLE CONSTRUCTION COST (NOV 83 DOLLARS)	\$11,687,288
1% INFLATION (NOV 83 TO SEPT 84 DOLLARS)	116,873
SUBTOTAL	<u>11,804,161</u>
CONTINGENCIES (5%)	590,208
CONSTRUCTION SURVEY AND TESTING (2%)	236,083
CONSTRUCTION ADMINISTRATION (.5%)	59,020
COST ESCALATION (6%)	708,250
TOTAL COST SHARABLE	<u>\$13,397,722</u>
NON COST SHARABLE CONSTRUCTION COST (NOV 83 DOLLARS)	\$525,361
1% INFLATION (NOV. 83 TO SEPT. 84 DOLLARS)	5,253
SUBTOTAL	<u>530,614</u>
CONTINGENCIES (5%)	26,531
CONSTRUCTION SURVEY AND TESTING (2%)	10,607
CONSTRUCTION ADMINISTRATION (.5%)	2,653
COST ESCALATION (6%)	31,837
TOTAL NON COST SHARABLE	<u>\$602,242</u>

FUTURE CONSTRUCTION

ESTIMATED FUTURE CONSTRUCTION COST	\$10,500,000
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* BUDGET SUPPLIED BY TEXAS PARKS AND WILDLIFE DEPARTMENT

TABLE 2

DETAILED COST ESTIMATE

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
LAKEVIEW STATE PARK BUDGET NOVEMBER 1983					
<u>AREA A, HEADQUARTERS COMPLEX</u>					
AM	Headquarters Bldg.				
	Interior	1,100 SF	\$ 73.64/SF	\$ 81,000	\$
	Exterior	500 SF	26/SF	13,000	
BE	Fee Collection Booth	86 SF	39.53/SF	3,400	
JN	Sidewalk	250 LF	5/LF	1,250	
IN	Area Lighting	2	800/EA	1,600	
JL	Flag Pole	1	1,800/EA	1,800	
JL	Landscaping	20,000 SF	LS		25,000
MX	Roads (FM 682 to Hdq Bldg)	.50 MI	185,000/MI	92,500	
IP	Erosion Control @ Roads	.50 MI	30,000/MI		15,000
JN	Parking - Headquarters				
	Autos	12	340/EA	4,080	
	Autos w/trailers	4	680/EA	2,720	
	Curb & Gutter	850 LF	7/LF	5,950	
JZ	Information Signs	LS	7,500/PK		7,500
KK	Drip Irrigation System		LS		3,000
AM	Safe	1	LS	1,100	
JX	Trash Receptacles	3	90	270	
AM	Loop Detector & Counter	1	LS	1,100	
IQ	Gates	3	2,000/EA	6,000	
KI	Site Preparation	20,000 SF	.25/SF	5,000	
AM	Entrance Portal	LS	15,000	15,000	
IW	Bridge at Main Park Road		LS	75,000	
*	UTILITIES				
KV	Water System		LS	9,877	
IN	Electricity		LS	22,203	
JX	Sewage		LS	12,216	
	Area A - Subtotal			\$ 355,066	\$ 50,500

* Non-Federal Cost

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
<u>AREA B, LATE ARRIVAL AREA</u>					
JN	Parking Autos w/trailers	13	\$ 1,360/EA	\$ 17,680	\$
IP	Erosion Control at Road	.12 MI	30,000/MI		3,600
JV	Road - 18' width	.12 MI	185,000/MI	22,200	
IQ	Gate	1	2,000/EA	2,000	
KI	Site Preparation	20,000 SF	.25/SF	5,000	
JL	Landscaping	10,000 SF	.30/SF		3,000
KK	Drip Irrigation System		LS		800
IN	Area Lighting	2	800/EA	1,600	0
	Trail access to Hdq Bldg	.12 MI	16,000/MI		1,920
	Trail Bridge 4'x60'	240 SF	35/SF	8,400	
* UTILITIES:					
KV	Water (Hose Bibb)	LS	LS	1,800	
IN	Electricity	LS	LS	4,065	
Area B, Subtotal				\$ 62,745	\$ 9,320
<u>AREA C, BOAT LAUNCH, CONCESSION DAY USE</u>					
BOAT LAUNCH					
KI	Site Preparation	165,000 SF	.20/SF	\$ 33,000	\$
JV	Road (Main Park Road Thru Parking Lanes, etc)	.625 MI	185,000	115,625	
IP	Erosion Control @ Road	.625 MI	30,000		18,750
JN	Parking Auto/trailer	90	680/EA	61,200	
IJ	Boat Lanes	6	20,000/EA	120,000	
IJ	Buoys	800 LF	12/LF	9,600	
IJ	Courtesy Docks (300 SF) (6' x 50')	3	15/SF	13,500	
JL	Landscaping at Boat Ramp	47,500 SF	.50/SF		23,750
KK	Drip Irrigation System		LS		3,000

*Non-Federal Cost

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
AI	Fish Cleaning Shelter with Roof	LS	\$ 6,000/EA	\$ 6,000	\$
JN	Sidewalks	200LF@6'WD	25/SY	3,333	
JX	Trash Receptacles	4	90		360
IN	Area Lighting	6	800/EA	4,800	
AG	CONCESSION BUILDING				
	*Interior	1,577	74/SF	116,698	
	*Exterior	818	26/SF	21,268	
	Restroom	LS		28,512	
*KI	Site Preparation	40,000 SF	.20/SF	8,000	
*JN	Parking				
	Autos	18	340/EA	6,120	
	Autos w/Trailers	2	680/EA	1,360	
*AZ	Gasoline Service				
	Two 1,000 Gal. Tanks	2	6,200/EA	12,400	
	Two Concrete Auto/Trailer Parking	2	900/EA	1,800	
*IP	Erosion Control @ Roads	.11 MI	30,000/MI		3,300
*JV	Roads (18' Main Road thru Concession Area)	.11 MI	185,000/MI	20,350	
*JN	Curb & Gutter	1,290 LF	7/LF	9,030	
*JN	Sidewalks 350 LF x 4' Width	156 SY	25/SY	3,900	
*IJ	Courtesy Dock 12'x50'	600 SF	25/SF	15,000	
*IN	Area Lighting	3	800/EA	2,400	
*JL	Landscaping at Concession	10,000 SF	.50/SF		5,000
*KK	Drip Irrigation System		LS		10,000
*JX	Trash Receptacles	6	90/EA		540
DAY USE AREA:					
JO	Picnic Sites	8	1,160	\$ 9,280	\$
BB	Shade Shelters	4	2,500/EA	10,000	
JN	Parking (Auto)	12 sp	300/EA	3,600	
JL	Landscaping	20,000 SF	.20/SF		4,000
KK	Drip Irrigation System		LS		500

*Non-Federal Cost

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
UTILITIES					
KV	Water		\$	\$ 20,265	\$
*IN	Electricity			13,530	
	Electricity (Restroom)			30,026	
JX	Waste Water			<u>25,065</u>	
Area C, Subtotal					
	Cost Shareable			\$ 493,806	\$ 50,360
	Non-Cost Shareable			231,856	18,840
<u>AREA D, DAY USE AREA</u>					
JO	Picnic Sites	32	1,160	\$ 37,120	\$
BB	Shade Shelters	16	2,500/EA	40,000	
JN	Parking				
	Picnic Sites	77	340/EA	26,180	
	Comfort Station	5	340/EA	1,700	
AF	Comfort Station				
	Interior	432 SF	110/SF	47,520	
	Exterior	684 SF	35/SF	23,940	
JN	Sidewalk 4'x50'	23 SY	25/SY	575	
JP	Playground	1	LS		18,000
JL	Landscaping	110,000 SF	.10/SF		11,000
KK	Drip Irrigation System				3,000
IW	Pedestrian Bridge 6'x50'	300 SF	35/SF	10,500	
AR	Trail Overlook 10x10	100 SF	25/SF	2,500	
IW	Hiking Trail	.18	16,000/MI		2,880
UTILITIES					
KV	Water			6,040	
IN	Electricity			13,580	
JX	Sewage			<u>7,500</u>	
Area D, Subtotal					
				\$ 217,155	\$ 34,880

*Non-Federal Cost

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
<u>AREA E, SWIMMING BEACH AREA</u>					
*II	Swimming Beach Excavation	7,000 SY	\$ 3.25/SY	\$ 22,750	\$
II	Swimming Beach		LS	25,000	
JO	Picnic Tables	16	150		2,400
JV	Roads at Parking Islands	0.05 MI	185,000	9,250	
JN	Parking				
	Autos @ Island 9x20	15	340/EA	5,100	
	Autos @ Park Road 9x32'	33	540/EA	17,820	
	Autos @ Concession/ Comfort Station	12	300/EA	3,600	
IP	Erosion Control @ Road	.05 MI	30,000		1,500
IW	Pedestrian Bridge (6'x200)	1,200 SF	35/SF	42,000	
AG	Concession/Comfort Station				
	Interior	1,100	74/SF	81,400	
	Exterior	1,359	26/SF	35,334	
JN	Sidewalk 4'x1400'	620 SY	25/SY	15,500	
JL	Landscaping	95,000 SF	.25/SF	23,750	
KK	Drip Irrigation		LS		500
IJ	Buoys	950 LF	12/LF	11,400	
JX	Trash Receptacles	24	90/EA		2,160
IN	Area Lighting	4	800/EA	3,200	
*	UTILITIES				
KV	Water			10,900	
IN	Electricity			24,500	
JX	Sewage			13,500	
	Area E, Subtotal			\$ 345,004	\$ 6,560
<u>AREA F, DAY USE AREA</u>					
JO	Picnic Sites	60	1,160	\$ 69,600	\$
BB	Shade Shelters	35	2,500	87,500	

*Non-Federal Cost

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
JN	Parking				
	Comfort Stations 10x32	12	\$ 540/EA	\$ 6,480	\$
	Group Pavilion 10x20	20	340/EA	6,800	
	Picnic Sites	97	340/EA	32,980	
JV	Roads-Secondary Road & Road @ Islands	.39 MI	185,000/MI	72,150	
IP	Erosion Control & Road	.39 MI	30,000/MI		11,700
AF	Comfort Stations (2)	(2)			
	Interior	(2) 432=864 SF	110/SF	95,040	
	Exterior	(2) 684=1368 SF	25/SF	34,200	
JN	Sidewalks (2 Comfort Station) 4'x100'	46 SY	25/SY	1,150	
JL	Landscaping @ Comfort Stations (2)	20,000 SF	.10/SF		2,000
KK	Drip Irrigation System		LS		800
JP	Playground	2	LS		36,000
AS	Group Pavilion 30x60	1,800 SF	36/SF	64,800	
	Picnic Tables (10)	10	300/EA		3,000
	Bar-B-Q Pit	1	LS	600	
*	UTILITIES				
KV	Water			15,650	
JX	Sewage			19,360	
IN	Electricity			35,175	
	Area F, Subtotal			\$541,485	\$ 53,500
	<u>AREA G, MULTI-USE CAMPING & GROUP DINING HALL</u>				
JM	Multi-use Campsite	42	2,840 A/E		
			1,210 TPWD	\$119,280	\$ 50,820
BB	Shade Shelters	42	2,500/EA	105,000	
AV	Restroom (type B)				
	Interior	960	105/SF	100,800	
	Exterior	880	36/SF	31,680	
JN	Parking @ Restroom	6	340/EA	2,040	
JN	Sidewalk (4'x50')	23 SY	25/SY	575	
JL	Landscaping				8,000

*Non-Federal Cost

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
KK	Drip Irrigation System				\$ 500
JV	Roads	.78 MI	\$185,000/MI	\$144,300	
IP	Erosion Control @ Road	.78 MI	30,000/MI		23,400
JP	Playground	1	LS		18,000
KI	Site Preparation	30,000 SF	.20/SF	6,000	
*KI	Site Preparation @ Dining Hall	7,000 SF	.20/SF	1,400	
*AK	Group Dining Hall				
	Interior	2,600	100/SF	260,000	
	Exterior	1,200	35/SF	42,000	
*AK	Tables (12')	12	300/EA		3,600
*AK	Kitchen Equipment	3	7,000/Unit		21,000
*AK	Large Bar-B-Q Pit	1	LS	3,000	
*JN	Parking @ Dining Hall	40	340/Ea	13,600	
	Road @ Dining Hall	.08 MI	185,000/MI		14,800
*IP	Erosion Control @ Road	.08 MI	30,000/MI		2,400
*IN	Area Lighting	2	800/EA	1,600	
	UTILITIES (MULTI-USE CAMPING)				
KV	Water			30,314	
KX	Waste Water			37,456	
IN	Electricity			68,079	
	UTILITIES (GROUP DINING HALL)				
*KV	Water			10,096	
*UX	Waste Water			13,574	
*IN	Electricity			24,671	
JN	Sidewalks 6'x150'	100 SY	25/SY	2,500	
JX	Trailer Dump Station	1	7,000/EA	<u>7,000</u>	<u></u>
	Area G, Subtotal				
	Cost Shareable			\$655,024	\$100,720
	Non Cost Shareable			\$370,831	\$41,800
	<u>AREA H-1, MULTI-USE CAMPING</u>				
JM	Multi-use Campsites	64	2,840 A/E		
			1,210 TPWD	181,760	\$77,440
BB	Shade Shelters	32	2,500/EA	80,000	
AV	Restroom (Type A)				
	Interior	1,200 SF	105/SF	126,000	
	Exterior	948 SF	36/SF	34,128	
JN	Sidewalk 4'x50'	23 SY	25/SY	575	

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
JL	Landscaping @ Restroom		\$ LS	\$	\$ 2,000
	Landscaping @ Pavilion		LS		1,000
KK	Drip Irrigation System				800
JN	Parking				
	Restroom	6	340/EA	2,040	
	Overflow	14	340/EA	4,760	
	Pavilion	16	340/EA	5,440	
	Courtesy Dock	9	340/EA	3,060	
JV	Roads	.97 MI	185,000/MI	179,450	
IP	Erosion Control @ Roads	.97 MI	30,000/MI		29,100
JP	Playground	1	LS		18,000
KI	Site Preparation				
	Restroom	4,000 SF	.20/SF	800	
	Pavilion	3,600 SF	.20/SF	720	
AS	Pavilion 30x60	1,800 SF	36/SF	64,800	
	Tables (12' length)	12	300/EA		3,600
	Bar-B-Q Pit	1	1,000/EA	1,000	
IN	Area Lighting				
	Pavilion	1	800/EA	800	
	Courtesy Dock	1	800/EA	800	
IM	Courtesy Boat Dock 6/x25'	150 SF	35/SF	5,250	
	UTILITIES				
KV	Water			22,075	
JX	Waste Water			27,310	
IN	Electricity			49,650	
	Area H-1, Subtotal			\$790,418	\$131,940
	<u>AREA H-2, MULTI-USE CAMPING</u>				
JM	Multi-Use Campsites	21	2,840 A/E		
			1,210 TPWD	\$59,640	\$ 25,410
BB	Shade Shelters	5	2,500/EA	12,500	
AV	Restroom (Type C)				
	Interior	720 SF	100/SF	72,000	
	Exterior	816 SF	35/SF	28,560	
JN	Sidewalk 4'x50'	23 SY	25/SY	575	

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
JL	Landscaping - Restroom		\$ LS		\$ 2,000
KK	Drip Irrigation System		LS		500
JN	Parking				
	Restroom	6	340/EA	2,040	
	Overflow	8	340/EA	2,720	
JV	Roads	.27 MI	185,000/MI	49,950	
IP	Erosion Control @ Road	.27 MI	30,000/MI		8,100
JP	Playground	1	LS		18,000
KI	Site Preparation - Restroom	4,000	.20	800	
UTILITIES					
KV	Water			7,000	
JX	Waste Water			9,000	
IN	Electricity			16,350	
Area H-2, Subtotal				\$261,135	\$54,010
<u>AREA I-1, MULTI-USE CAMPING</u>					
JM	Multi-use Campsites	46	2,840 A/E	1,210 TPWD	\$130,640 \$55,660
BB	Shade Shelters	23	2,500/EA	57,500	
AV	Restroom (Type B)				
	Interior	960	100/SF	96,000	
	Exterior	880	35/SF	30,800	
JN	Sidewalk 4'x50'	23 SY	25/SY	575	
JL	Landscaping				
	Restroom		LS		2,000
	Group Pavilion		LS		1,000
KK	Drip Irrigation System		LS		800
JN	Parking				
	Restroom	6	340/EA	2,040	
	Pavilion	14	340/EA	4,760	
	Courtesy	6	340/EA	2,040	
	Overflow	7	340/EA	2,380	
JV	Roads	.70 MI	185,000	129,500	

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
IP	Erosion Control @ Road	.70 MI	\$ 30,000	\$	\$ 21,000
JP	Playground	1	LS		18,000
KI	Site Preparation				
	Restroom	4,000 SF	.20/SF	800	
	Pavilion (20'x30')	1,800 SF	.20/SF	360	
AS	Pavilion 20'x30'	600 SF	35/SF	21,000	
	Tables 12' length	6	300/EA		1,800
	Bar-B-Q Pit	1	LS	1,000	
IM	Courtesy Dock 6'x50'	150 SF	35/SF	5,250	
IN	Area Lighting				
	Pavilion	1	800/EA	800	
	Courtesy Dock	1	800/EA	800	
	UTILITIES				
KV	Water			15,525	
JX	Waste Water			19,200	
IN	Electricity			34,875	
	Area I-1, Subtotal			\$555,845	\$100,260
<u>AREA I-2, MULTI-USE CAMPING</u>					
JM	Multi-Use Campsites	56	2,840 A/E \$		
			1,210 TPWD	159,040	\$ 67,760
BB	Shade Shelters	14	2,500/EA	35,000	
AV	Restroom (Type B)				
	Interior	960	105/SF	100,800	
	Exterior	880	36/SF	31,680	
JN	Sidewalk 4'x50'	23 SY	25/SY	575	
JL	Landscaping		LS		2,000
KK	Drip Irrigation		LS		500
JN	Parking				
	Restroom	6	340/EA	2,040	
	Overflow	14	340/EA	4,760	
JV	Roads	.48 MI	185,000/MI	88,800	
IP	Erosion Control @ Roads	.48 MI	30,000/MI		14,400

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
JP	Playground	1	\$ LS	\$	\$ 18,000
KI	Site Preparation - Restroom	4,000 SF	.20/SF	800	
	<u>UTILITIES</u>				
KV	Water			13,500	
JX	Waste Water			16,650	
IN	Electricity			29,850	
	Area I-2, Subtotal			\$483,495	\$102,660
	<u>AREA J-1, DAY USE AREA</u>				
JO	Picnic Sites	60	1,160/Site		\$ 69,600
BB	Shade Shelters	30	2,500/EA	75,000	
JN	Parking				
	Picnic Sites	81	340/EA	27,540	
	Comfort Stations	10	340/EA	3,400	
	Group Pavilions (2)	40	340/EA	13,600	
AF	Comfort Stations (2)				
	Interior	(2) 432 SF	110/SF	95,040	
	Exterior	(2) 684 SF	35/SF	47,880	
JN	Sidewalk @ Each Comfort Station	46 SY	25/SY	1,150	
JL	Landscaping				
	Comfort Stations (2)		LS		2,000
	Group Pavilions (2)		LS		2,000
KK	Drip Irrigation System		LS		8,000
AS	Group Pavilions				
	20'x30'	600 SF	35/SF	21,000	
	30'x60'	1,800 SF	36/SF	64,800	
	18 Tables (12')	18	300/EA		5,400
	Bar-B-Q Pit	2	1,000/EA	2,000	
IW	Hiking Trail	.13 MI	16,000/MI		2,080
JV	Road (Main Park Road thru Day Use Area)	.90 MI	185,000/MI	166,500	
IP	Erosion Control @ Road	.90 MI	30,000/MI		27,000

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
	UTILITIES				
KV	Water		\$	\$ 18,850	\$
JX	Waste Water			23,306	
IN	Electricity			42,375	
	Area J-1, Subtotal			\$602,441	\$116,080
	<u>AREA J-2, DAY USE AREA</u>				
AS	Group Pavilions 20'x30'	600 SF	35/SF	21,000	
	6 Tables (12')	6	300/EA		1,800
	Bar-B-Q Grill	1	1,000/EA	1,000	
AF	Comfort Station Interior	432 SF	110/SF	47,520	
	Exterior	684 SF	35/SF	23,940	
JN	Sidewalk Comfort Station	23 SY	25/SY	575	
	Fishing Jetty	67 SY	25/SY	1,675	
	Pavilion	23 SY	25/SY	575	
IR	Fishing Jetty 12'x150'	1,800 SF	LS	80,000	
	Buoys	800 LF	12/LF	9,600	
AI	Fish Cleaning Shelter	1	LS	5,000	
IN	Area Lighting	3	800/EA	2,400	
JN	Parking Group Pavilion	15	340/EA	5,100	
	Fishing Jetty	24	340/EA	8,160	
	Comfort Station	6	340/EA	2,040	
JV	Road	.25 MI	185,000/MI	46,250	
IP	Erosion Control @ Road	.25 MI	30,000/MI		7,500
IW	Hiking Trail	.06 MI	16,000/MI		960
	UTILITIES				
KV	Water			8,200	
JX	Waste Water			10,100	
IN	Electricity			18,350	
KK	Drip Irrigation System		LS		800

JOB CODES	PROPOSED FACILITY	QUANTITY	COST	A/E	TP&W
JL	Landscaping Comfort Station Pavilion		\$	\$	\$ 2,000 <u>1,000</u>
	Area J-2, Subtotal			\$291,485	\$ 14,060

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
<u>AREA L, MAINTENANCE COMPLEX AND RESIDENCE</u>					
AZ	Maintenance Bldg.				
	Shop	1,240 SF	\$ 36/SF	\$ 44,640	\$
	Covered Parking	1,215 SF	21/SF	25,515	
AZ	Volatile Storage Bldg. (10'x10')	100 SF	LS		1,000
AZ	Wash Ramp	1	2,000/EA	2,000	
AZ	Gasoline Storage & Pumps (2,000 Gals. Each)	2	6,200/EA	12,400	
AZ	Compressor Unit & Plumbing	1	3,000/EA		3,000
JL	Landscaping & Maintenance Bldg.		LS		3,000
IQ	Fencing 6' Security	800	15/LF	12,000	
JN	Service Yard Paved (200'x200')	4,150 SY	17/SY	70,550	
IN	Area Lighting	2	800/EA	1,600	
JV	Road (From Main Park Road to Maintenance Complex)	.05 MI	185,000/MI	9,250	
IP	Erosion Control @ Road	.05 MI	30,000/MI		1,500
KI	Site Preparation & Main- tenance Building	32,000 SF	.20/SF	6,400	
<u>RESIDENCE</u>					
AT	Park Superintendent's Residence	2,128 SF	LS	95,000	
KI	Site Preparation	10,000 SF	.20/SF	2,000	
JV	Road 12' Width	.03 MI	185,000	5,550	
IP	Erosion Control @ Road	.03 MI	30,000/MI		900
JL	Landscaping		LS		2,000
IQ	Fencing (6' Privacy)	400 LF	20/LF		8,000
JN	Parking	2	300/EA	600	
IN	Area Lighting	1	300/EA	300	

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
JX	Trailer Dump Station	1	\$ 7,000/EA	\$ 7,000	\$
UTILITIES					
KV	Water			9,400	
JX	Waste Water			11,625	
IN	Electricity			<u>21,100</u>	
Area L, Subtotal				\$336,930	\$ 19,400
<u>AREA M-1, MULTI-USE CAMPSITES</u>					
AX	Multi-Use Camping	37	2,840	\$105,080	\$
		37	1,210	44,770	
BB	Shade Shelters	37	2,500/EA	92,500	
AV	Restroom (Type B)				
	Interior	960 SF	105/SF	100,800	
	Exterior	880 SF	36/SF	31,680	
JN	Sidewalk (4'x50')	23 SY	25/SY	575	
JN	Parking @ Restroom	6	340/EA	2,040	
JL	Landscaping @ Restroom		LS		2,000
KK	Drip Irrigation System		LS		500
JV	Roads (From secondary road thru Campground)	.50 MI	185,000/MI	92,500	
IP	Erosion Control @ Road	.50 MI	30,000/MI	15,000	
JP	Playground	1	LS	18,000	
KI	Site Preparation				
	Restroom	4,000 SF	.20/SF	800	
	Screened Shelters	27,000 SF	.20/SF	5,400	
UTILITIES					
KV	Water			26,000	
JX	Waste Water			32,200	
IN	Electricity			<u>58,500</u>	
Area M-1, Subtotal				\$625,845	\$ 2,500
<u>AREA M-2, MULTI-USE CAMPSITES</u>					
JM	Multi-Use Campsites	16	2,840/EA	\$ 45,440	\$
		16	1,210/Ea	19,360	
BB	Shade Shelters	16	2,500/EA	40,000	

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
AV	Restroom (Type C)				
	Interior	720 SF	\$ 105/SF	\$ 75,600	\$
	Exterior	816 SF	36/SF	29,376	
JN	Sidewalk (4'x50')	23 SY	25/SY	575	
JN	Parking @ Restroom	6	340/EA	2,040	
JL	Landscaping @ Restroom		LS		2,000
KK	Drip Irrigation System		LS		500
JV	Roads (From main park road thru Loop)	.45 MI	185,000/MI	83,250	
IP	Erosion Control @ Roads	.45 MI	30,000/MI	13,500	
KI	Site Preparation				
	Restroom	4,000 SF	.20/SF	800	
	Screened Shelters	11,600 SF	.20/SF	2,320	
	UTILITIES				
KV	Water			14,200	
JX	Waste Water			17,560	
IN	Electricity			31,925	
	Area M-2, Subtotal			\$375,946	\$ 2,500
	<u>AREA N, MULTI-USE CAMPING</u>				
JM	Multi-use Campsites	80	\$ 2,840 A/E	\$ 227,200	\$ 96,800
			1,210 TPWD		
BB	Shade Shelters	60	2,500	150,000	
AV	Restroom (Type A)				
	Interior	1,200 SF	105/SF	126,000	
	Exterior	948 SF	36/SF	34,128	
AV	Restroom (Type B)				
	Interior	960	105/SF	100,800	
	Exterior	880	36/SF	31,680	
JN	Sidewalk				
	Restroom A	23 SY	25/SY	575	
	Restroom B	23 SY	25/SY	575	

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
JL	Landscaping				
	Restrooms	2	\$ LS	\$	\$ 4,000
	Group Pavilion		LS		1,000
KK	Drip Irrigation System		LS		800
JN	Parking				
	Restrooms	12	340/EA	4,080	
	Pavilion	16	340/EA	5,440	
	Courtesy Dock	10	340/EA	3,400	
	Overflow	21	340/EA	7,140	
JV	Roads	.86 MI	185,000	159,100	
IP	Erosion Control @ Road	.86 MI	30,000		25,800
JP	Playground	1	LS		18,000
AS	Pavilion (20'x30')	600 SF	35/SF	21,000	
	Tables 12' Length	6	300/EA		1,800
	Bar-B-Q Grill	1	LS	1,000	
KI	Site Preparation				
	Restrooms (2)	8,000 SF	.20/SF	1,600	
	Pavilion	1,800 SF	.20/SF	360	
IM	Courtesy Dock 6'x50'	150 SF	35/SF	5,250	
IN	Area Lighting				
	Pavilion	1	800/EA	800	
	Courtesy Dock	1	800/EA	800	
	UTILITIES				
KV	Water			28,075	
JX	Waste Water			34,700	
IN	Electricity			63,070	
	Area N, Subtotal			\$1,006,773	\$148,200

AREA O-1 AND O-2, PRIMITIVE
CAMPING

AP	Trailhead	2	4,000/EA	\$	\$ 8,000
JX	Clivus Multrum	2	18,000/EA		36,000
IW	Hiking Trails	2 MI	16,000/MI		32,000

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
JN	Parking	10	\$ 500/EA	\$ 5,000	\$
KV	Water		LS	<u>200</u>	<u></u>
	Area O-1 & O-2, Subtotal			\$ 5,200	\$ 76,000
<u>AREA P, DAY USE AREA</u>					
JO	Picnic Sites	57	700 A/E 460 TPWD	\$ 39,900	\$ 26,220
BB	Shade Shelters	40	2,500/EA	100,000	
AF	Comfort Stations (3)	(3)			
	Interior	(3) 432 SF	110/SF	142,560	
	Exterior	(3) 684 SF	35/SF	71,820	
JN	Parking				
	Picnic Sites	85	340/SF	28,900	
	Comfort Stations (3)	15	340/SF	5,100	
JN	Sidewalks				
	Comfort Stations (3)	69	25/SY	1,725	
JP	Playgrounds	2	LS		36,000
JL	Landscaping				
	Comfort Stations (3)		LS		3,000
KK	Drip Irrigation System		LS		1,000
JX	Roads (From Boat Launch thru Day Use Area)	.67 MI	185,000	123,950	
IP	Erosion Control @ Road	.67 MI	30,000		20,100
<u>UTILITIES</u>					
KV	Water			16,350	
JX	Waste Water			20,200	
IN	Electricity			<u>36,725</u>	<u></u>
	Area P, Subtotal			\$587,230	\$ 86,320

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
<u>AREA Q, BOAT LAUNCH</u>					
KI	Site Preparation - Boat Launch	165,000 SF	.20/SF	\$ 33,000	\$
JV	Road (From Main Park Road thru Boat Ramp)	.44 MI	185,000/MI	81,400	
IP	Erosion Control @ Road	.44 MI	30,000/MI		13,200
JN	Parking Auto w/Trailer	81	680/EA	55,080	
IJ	Boat Lanes	4	20,000/EA	80,000	
IJ	Buoys	800 LF	12/LF	9,600	
IJ	Courtesy Docks (6'x50')	2	15/SF	9,000	
JL	Landscaping @ Boat Ramp	47,500 SF	.50/SF		23,750
KK	Drip Irrigation				3,000
AI	Fish Cleaning Shelter	1	6,000/EA	6,000	
JX	Trash Receptacles	4	90/EA		360
IN	Area Lighting	6	800/EA	4,800	
AF	Comfort Station Interior	432 SF	110/SF	47,520	
	Exterior	684 SF	35/SF	23,940	
JN	Sidewalk 4'x50'	23 SY	25/SY	575	
JN	Parking @ Comfort Station	6	340/EA	2,040	
UTILITIES					
KV	Water			11,220	
JX	Waste Water			13,875	
IN	Electricity			25,220	
Area Q, Subtotal				\$ 403,270	\$ 40,310

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
<u>AREA R, FISHING PIER</u>					
IR	Fishing Jetty (12'x150')	1,800 SF	\$ LS	\$ 80,000	
	Buoys	800 LF	12/LF	9,600	
AI	Fish Cleaning Shelter	1	LS	5,000	
IN	Area Lighting	4	800/EA	3,200	
JN	Parking	30	340/EA	10,200	
JV	Road (From Y-Inter- section thru Loop)	.11 MI	185,000	20,350	
IP	Erosion Control @ Road	.11 MI	30,000		3,300
IW	Trail	.04 MI	LS		1,500
UTILITIES					
KV	Water			4,080	
IN	Electricity			<u>9,175</u>	
Area R, Subtotal				\$ 141,605	\$ 4,800
<u>AREA S RESIDENCE</u>					
AT	Residence		LS	\$ 95,000	\$
KI	Site Preparation	10,000 SF	.20/SF	2,000	
JV	Road (From Beltline to Residence)	.11 MI	185,000	20,350	
IP	Erosion Control @ Road	.11 MI	30,000		3,300
JL	Landscaping		LS		2,000
IQ	Fencing 96' Privacy)	400 LF	20/LF		8,000
JN	Parking	2	340/EA	680	
JN	Sidewalk (4'x75')	34 SY	25/SY	850	
IN	Area Lighting	1	800/EA	800	
UTILITIES					
KV	Water			3,800	
JX	Waste Water			4,700	
IN	Electricity			<u>8,550</u>	
Area S, Subtotal				\$136,730	\$ 13,300

JOB CODES	PROPOSED FACILITY	QUANTITY	UNIT COST	A/E	TP&W
<u>MISCELLANEOUS</u>					
JV	Roads (Main Park Road)	4.20 MI	\$185,000/MI	\$ 777,000	\$
IP	Erosion Control @ Road	4.20 MI	30,000/MI		126,000
JZ	Park Signs		LS		10,000
JL	Arboriculture		LS		27,500
KV	Water System		LS	75,625	
IQ	Tree Protection - Construction Fencing		LS		5,000
JX	Wastewater		LS	53,350	
IN	Electricity (6.5%)			100,000	
	Telephone			<u>20,000</u>	<u> </u>
				\$1,025,975	\$168,500

EXHIBITS

EXHIBIT A

January 18, 1984

Planning Division

Mr. Charles D. Travis
Executive Director
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

Dear Mr. Travis:

I am writing to you about our recent review of your Lakeview State Park Master Plan for the Joe Pool Lake. Members of our staffs met in Austin on December 8, 1983, to discuss comments and concerns.

One of our primary concerns is whether or not your present construction schedule will allow enough time to complete work on beach excavation, and boat ramps, prior to inundation of these areas. Our currently scheduled date for deliberate impoundment for Joe Pool Lake is December 1985. The anticipated reservoir filling period under normal rainfall conditions is approximately 2 years, however, most areas below conservation pool elevation 522 in the Lakeview State Park area may well be inundated within a ~~one~~-year period after deliberate impoundment is begun. Of course, abnormally high or low rainfall will increase or decrease the filling period, respectively.

I am also concerned about the siting of high density recreation facility development in areas of very steep terrain (camping areas BB, H1, H2, I1, I2, and N). According to plans submitted, a high percentage of the proposed camper sites in these areas will require up to eight feet of excavation or fill to enable a level surface for each camper pullout. This far exceeds our own guidelines which limit cut and fill for camper pullouts ~~is~~^{to} a 2-foot maximum. Not only will development of pullouts, roads, and drainage in these areas be costly and difficult to design, but will also have a high potential to create a negative visual and environmental impact upon the site.

Our staffs discussed the need for 1" = 200' scale drawings for all phase one (initial development) plans. I understand your staff has already furnished mapping which will be suitable for enlargement to this scale. For further work, we requested the following information.

- o Update of construction budget

- o Estimated cost for future (phase 2) park development
- o Estimated O&M budget
- o Visitation for phase one development
- o Funding schedule for engineering and design, and supervision and administration costs per year

I believe that additional consideration needs to be given to the siting and numbers of recreation facilities in the areas having steep terrain. Therefore, I recommend that appropriate representatives from the U.S. Army Corps of Engineers and Texas Parks and Wildlife Department (TPWD) conduct an on-site survey of the above mentioned camping areas and attempt to reach a solution which will be preferable from both an engineering and environmental point of view.

In anticipation of this suggestion being acceptable to you, I am asking Mr. Steve Wild of my planning staff to initiate contact with Mr. Joe Griganavicius of TPWD. Of course, if you wish to discuss this matter with me, I am always available. I look forward to successful completion of our joint development activities at Joe Pool Lake.

Sincerely,

Theodore G. Stroup
Colonel, CE
District Engineer

EXHIBIT B



TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 Smith School Road Austin, Texas 78744

COMMISSIONERS

EDWIN L. COX, JR.
Chairman, Athens
GEORGE R. BOLIN
Vice-Chairman, Houston

CHARLES D. TRAVIS
Executive Director

September 13, 1984

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Santa Elena

PERKINS D. SAMS
Midland

DR. RAY E. SANTOS
Lubbock

WM. M. WHELESS, III
Houston

Mr. Steve Armstrong
Project Manager
Engineering & Planning Division
U. S. Army Corps of Engineers
P. O. Box 17300
Fort Worth, Texas 76102

RE: Lakeview State Park / Joe Pool Lake

Dear Mr. Armstrong:

Mr. Ed Werland of our planning staff recently met with you and Mr. Steve Wild to discuss the siting of multi-use campsites and park roads at Lakeview State park.

Be assured the location of the multi-use campsites and park roads as shown on the master plan are conceptual only, and during the design phase the roads and camp sites may require relocation due to slope, drainage, and/or vegetative site conditions. The Planning and Development staff has been instructed to request your input and assistance during on-site location of these facilities.

As required, all construction documents will be forwarded for your review prior to bidding.

Your approval of the master plan for the Lakeview State park will be appreciated. Please feel free to call on me if you need any additional information.

Sincerely,

A handwritten signature in cursive script that reads "Dale Robinson".

DALE ROBINSON, Chief
Planning & Development Program

DR:EW:smg

APPENDICES

APPENDIX I



**MASTER PLAN
LAKEVIEW STATE PARK**

TEXAS PARKS & WILDLIFE DEPARTMENT

**MASTER PLAN
FOR
LAKEVIEW STATE PARK
DALLAS COUNTY, TEXAS**

LAKEVIEW STATE PARK

MASTER PLAN

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INTRODUCTION

INTRODUCTION

Lakeview State Park was made possible through a joint lease agreement between the Texas Parks and Wildlife Department, the Corps of Engineers, and the Trinity River Authority of Texas. The Park consists of 1,826 acres and is the largest located on the 7,470 surface acre Joe Pool Lake which was constructed by the Corps of Engineers to provide flood control, water supply, recreation, and fish and wildlife conservation.

Lakeview State Park is recognized as an urban area park due to its proximity to the Dallas-Ft. Worth metroplex. As an urban area park, the recreational demand is forecast to be extremely high and increasing annually, not only for overnight facilities, but particularly for day-use activities and facilities.

In order to provide proper stewardship of the resource, i.e., an equilibrium between the intensive recreation demand and the preservation and conservation of the resource, a master plan has been developed.

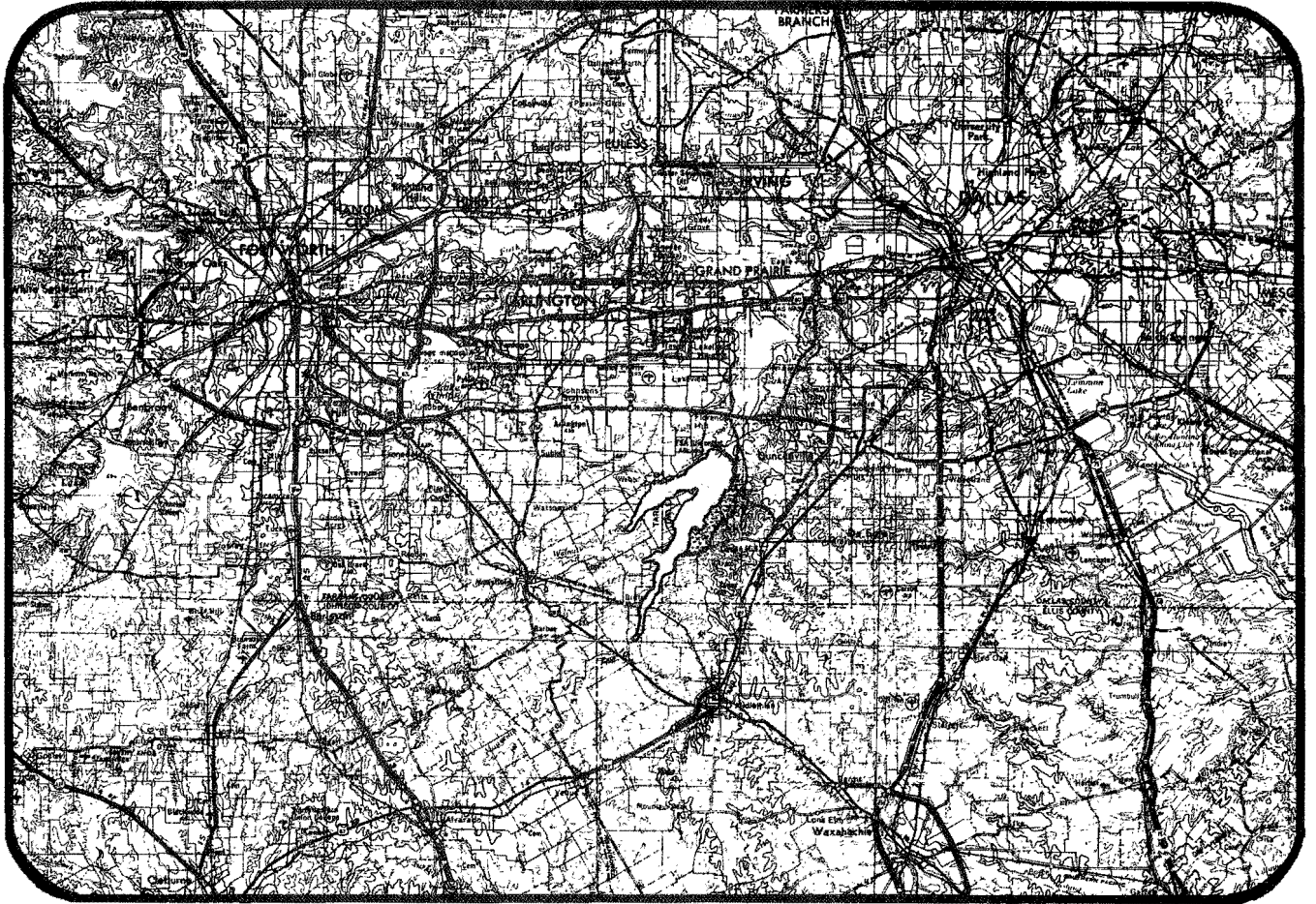
SITE DESCRIPTION

Lakeview State Park is located 10 miles southwest of Dallas and 4 miles southeast of Grand Prairie and is accessible via FM 1382. The park is bisected by FM1382, Beltline Drive, and skirted by Mansfield Road.

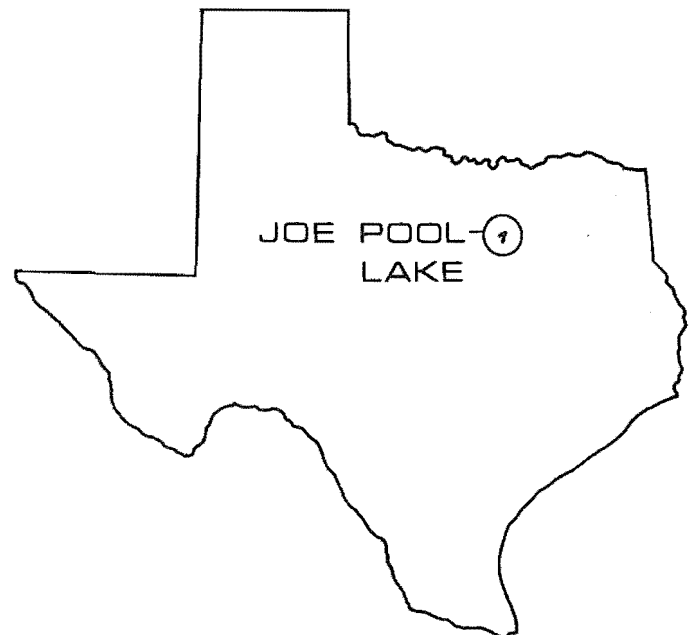
The park site is linear in shape, contains 1,826 acres, and includes 7.5 miles of frontage on the northeastern shore of Joe Pool Lake. Portions of the park site lie within the extra-territorial jurisdiction of the City of Dallas, the City of Cedar Hill, and the City of Grand Prairie. The site consists of upland woodlands, grasslands, and bottomland woodlands. The topography ranges from 522 MSL at the Lake conservation pool elevation to 750 MSL at the White Rock Escarpment area unique to the site.

The uplands are wooded with cedar, elm, honey locust, hackberry, Texas ash, mesquite, scattered juniper, and are covered with native grasses. The bottomland woodlands are wooded with pecan, green ash, bois d'arc, walnut, and hackberry. Several areas of remnant tall-grass prairie exist and are dominated by big bluestem, Indian grass, little bluestem, and rosin-weed.

Lakeview State Park, prior to acquisition by Texas Parks and Wildlife Department, was utilized as homesites, farming, and ranching operations. A portion of the park site was first settled in the late 1850's by the family of Major John Penn, who occupied and farmed the site until 1970. The Penn farmstead consists of fifteen buildings which range from log structures of the mid 19th century to the Penn homestead. Other improvements include wells, tanks, fences, and fields which were essential to the operation of the farmstead.



PROJECT LOCATION MAP LAKEVIEW STATE PARK



MASTER PLAN

FACILITIES SUMMARY
(Phase One)

Day Use Facilities

Picnic Sites	(217)
Comfort Stations	(10)
Group Pavilions	(4)
Playgrounds	(6)
Fishing Jetties	(2)
Boat Lanes	(10 Lanes)
Swimming Beach	

Camping Facilities

Multi-Use Campsites	(267)
Screen Shelters	(95)
Primitive Camping Areas	(20)
Restrooms	(9)
Group Pavilions	(3)
Playgrounds	(6)
Group Dining Hall	(1)
Clivus Multrums	(2)
Trailer Dump Stations	(2)

Support Facilities

Headquarters Complex	
Late Arrival Area	
Maintenance Complex	
Residences	(2)

PROPOSED FACILITIES

AREA A

HEADQUARTERS COMPLEX

Headquarters Building
& Fee Booth
Parking Spaces 12 Autos & 4
Autos With Trailers

AREA B

LATE ARRIVAL AREA

Parking For 13 Automobiles
With Trailers

AREA C

BOAT LAUNCH/PARK STORE, AND DAY USE AREA

Six Lane Boat Ramp
Parking For 90 Automobiles
With Trailers
Park Store With Gasoline & Sales
Parking For 18 Automobiles With
2 Provided For Auto and Trailer
Picnic Sites 8 With Parking
For 10

AREA D

DAY USE AREA

Picnic Sites 32
Comfort Station With Parking
For 5
Parking For 82 Automobiles
Playground

AREA E

DAY USE AREA

Concession/Comfort Station
With Parking For 12
Swimming Beach
Parking For 46

AREA F

DAY USE AREA

Picnic Sites 60
Group Pavilion (20'x30') With
Parking For 20
Comfort Stations 2 With
6 Parking Spaces Each
Playgrounds (2)
Parking For 97

AREA G

SCREEN SHELTER AREA

Screen Shelters 42
Restroom (B) With Parking
For 6
Group Dining Hall With
Parking For 40
Trailer Dump Station
Playground

AREA H-1

MULTI-USE CAMPING AREA

Multi-Use Campsites 64
Restroom (A) With Parking
For 6
Group Pavilion (20'x30') With
Parking For 16
Playground
Courtesy Dock With
9 Parking Spaces
Overflow Parking
14 Parking Spaces

AREA H-2

MULTI-USE CAMPING AREA

Multi-Use Campsites 21
Restroom (C) With Parking
For 6
Playground
Overflow Parking For 8

AREA I-1

MULTI-USE CAMPING AREA

Multi-Use Campsites 46
Restroom (B) With Parking
For 6
Group Pavilion (20'x30') With
Parking For 14
Courtesy Dock With Parking
For 6
Playground
Overflow Parking For 7

AREA I-2

MULTI-USE CAMPING AREA

Multi-Use Campsites 56
Restroom (B) With Parking
For 6
Playground
Overflow Parking For 14

AREA J-1
DAY USE AREA
Picnic Sites 60
Comfort Stations (2)
With Parking For
5 at Each
Group Pavilions (1-20'x30'
and 1-30'x60') With parking
For 57
Playground
Parking For 81

AREA J-2
DAY USE AREA
Comfort Station With
Parking For 5
Group Pavilion (20'x30')
With Park For 15
Fishing Jetty With
Parking For 24

AREA K
PENN COMPLEX
Archeological Preserve

AREA L
MAINTENANCE COMPLEX
Maintenance Building
Residence

AREA M-1
SCREEN SHELTER AREA
Screen Shelters 37
Restroom (B) With
Parking For 6
Playground

AREA M-2
SCREEN SHELTER AREA
Screen Shelters 16
Restroom (C) With
Parking For 6

AREA N
MULTI-USE CAMPING AREA
Multi-Use Campsites 30
Restrooms (Type A and B) With
Parking For 6 at Each
Group Pavilion (20'x30') With
Parking For 16
Courtesy Dock With Parking
For 10
Playground
Overflow Parking For 21

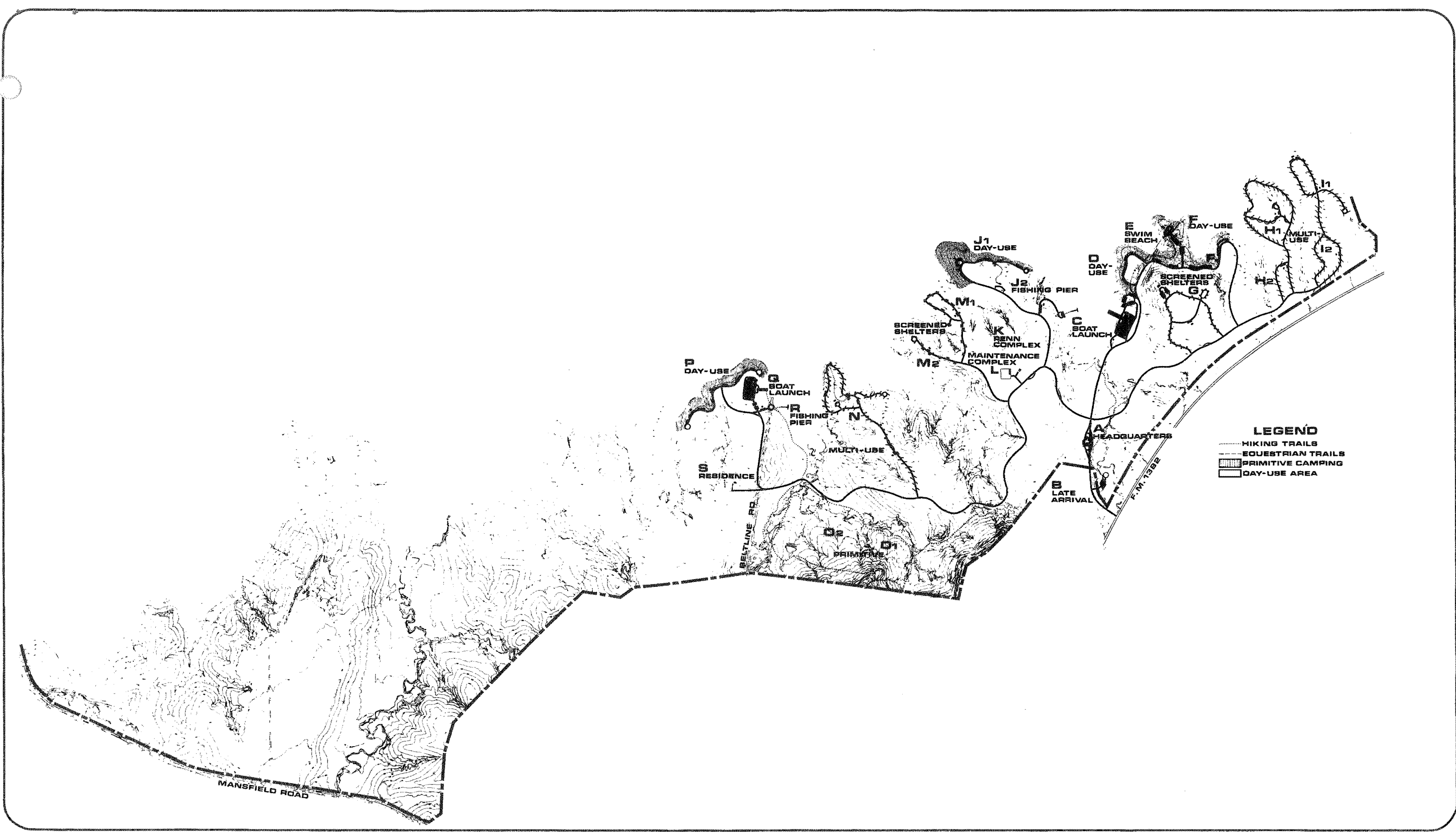
AREA O-1 and O-2
PRIMITIVE CAMPING AREAS
Primitive Camping Areas
30 Acres
Trailheads (2) With Parking
For 20
Clivus Multrums (2)
Hiking Trail - Two miles

AREA P
DAY USE AREA
Picnic Sites 57
Comfort Stations (3) With
Parking For 5 at Each
Playgrounds (2)
Parking For 85

AREA Q
BOAT LAUNCH
Four Lanes With Parking For 81
Fish Cleaning Shelter
Comfort Station With Parking
For 5

AREA R
Fishing Jetty Area
Fishing Jetty With Parking
For 30
Fish Cleaning Shelter

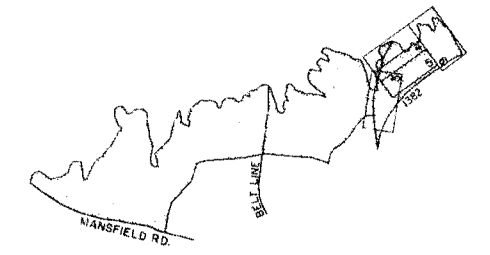
AREA S
Residence Area
Park Residence



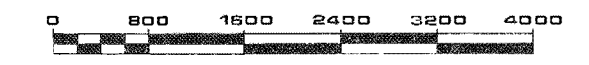
LEGEND
 - - - HIKING TRAILS
 - - - EQUESTRIAN TRAILS
 ▨ PRIMITIVE CAMPING
 □ DAY-USE AREA

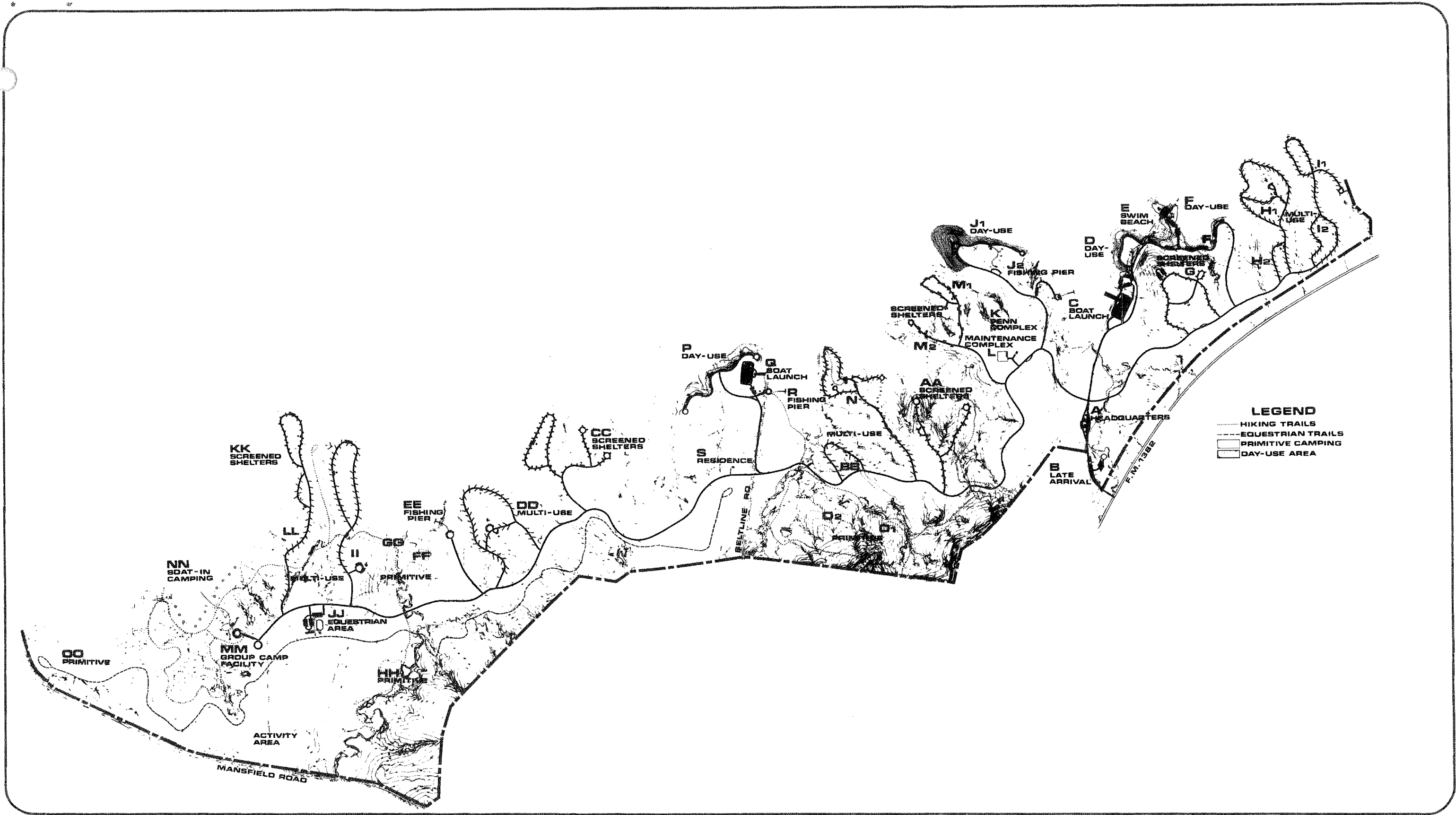


LAKEVIEW STATE PARK
 TEXAS PARKS AND WILDLIFE DEPARTMENT

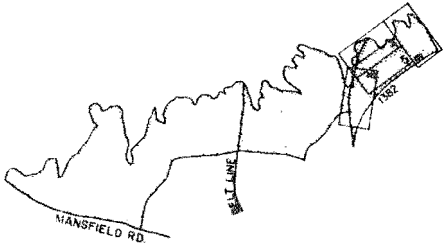


MASTER PLAN
PHASE ONE
 SCALE IN FEET

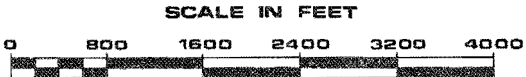


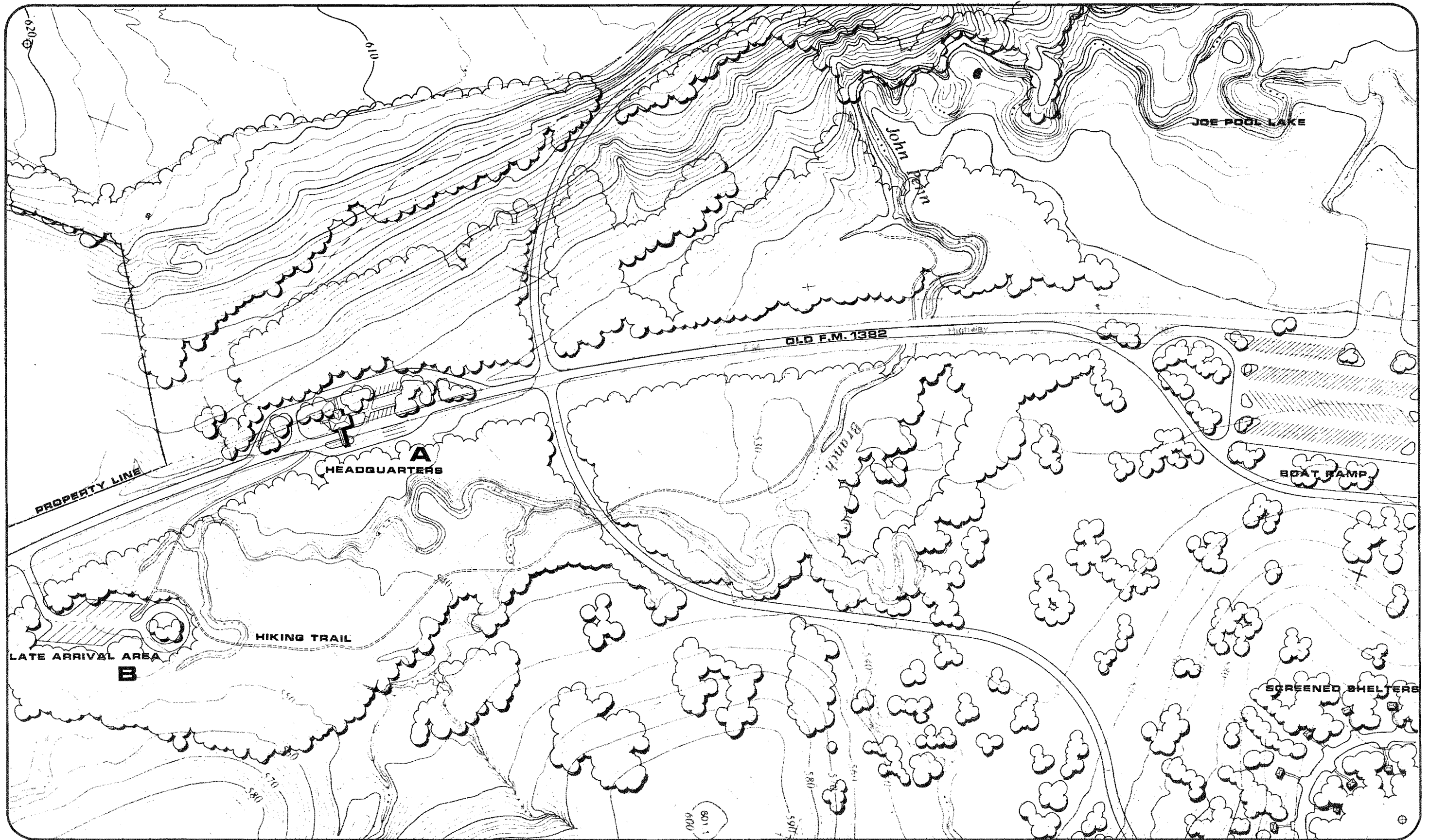


LAKEVIEW STATE PARK
 TEXAS PARKS AND WILDLIFE DEPARTMENT

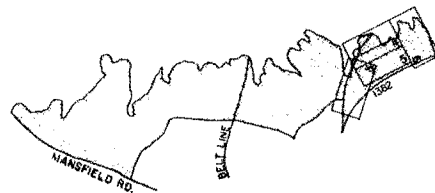


MASTER PLAN

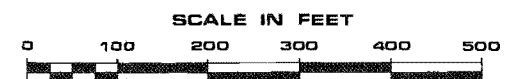


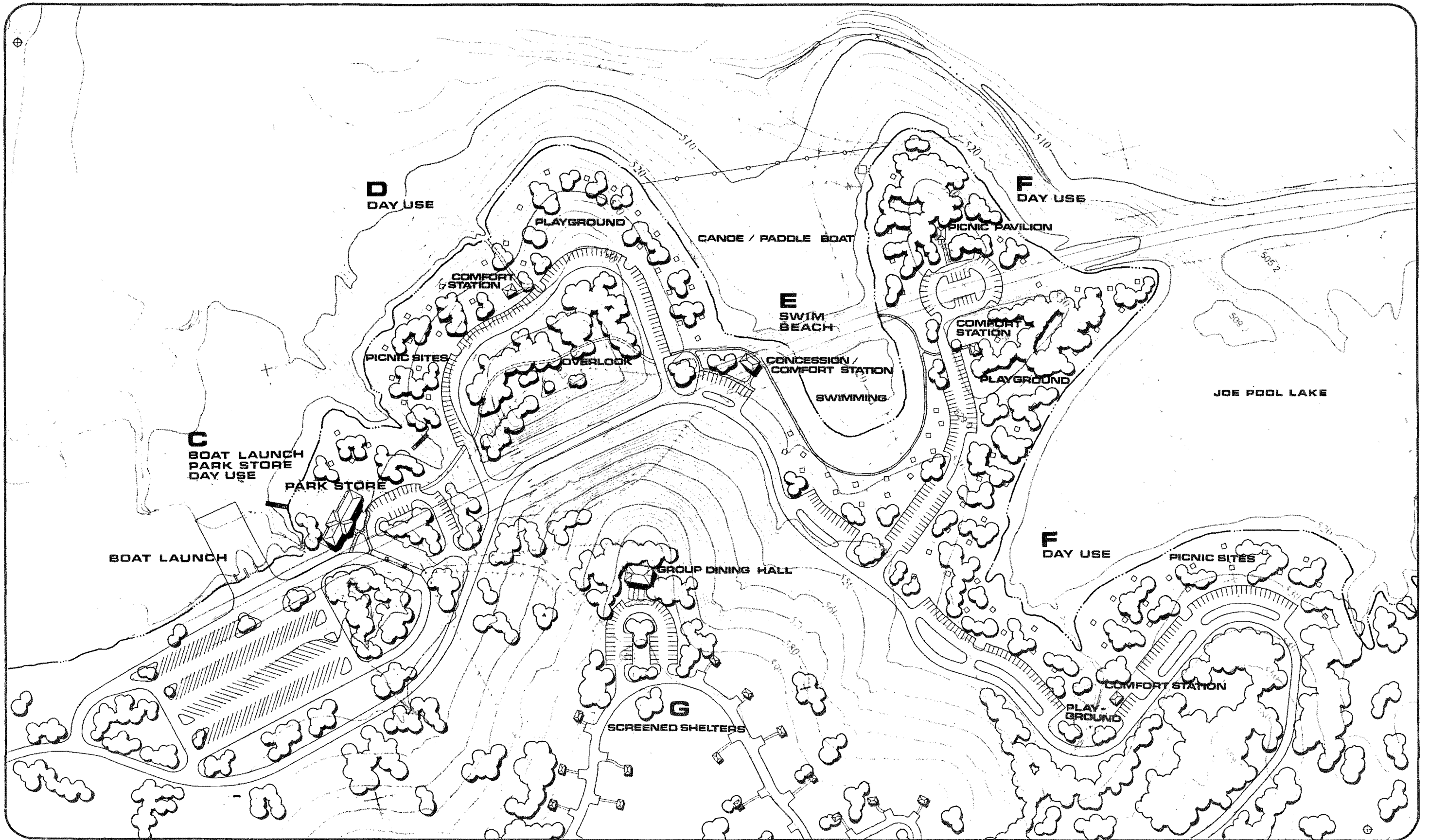


LAKEVIEW STATE PARK
TEXAS PARKS AND WILDLIFE DEPARTMENT

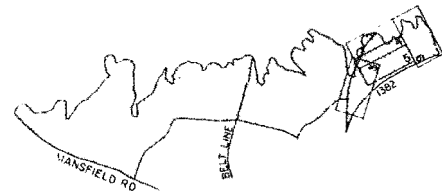


AREAS A & B

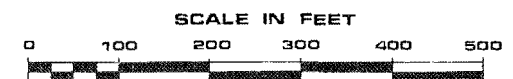


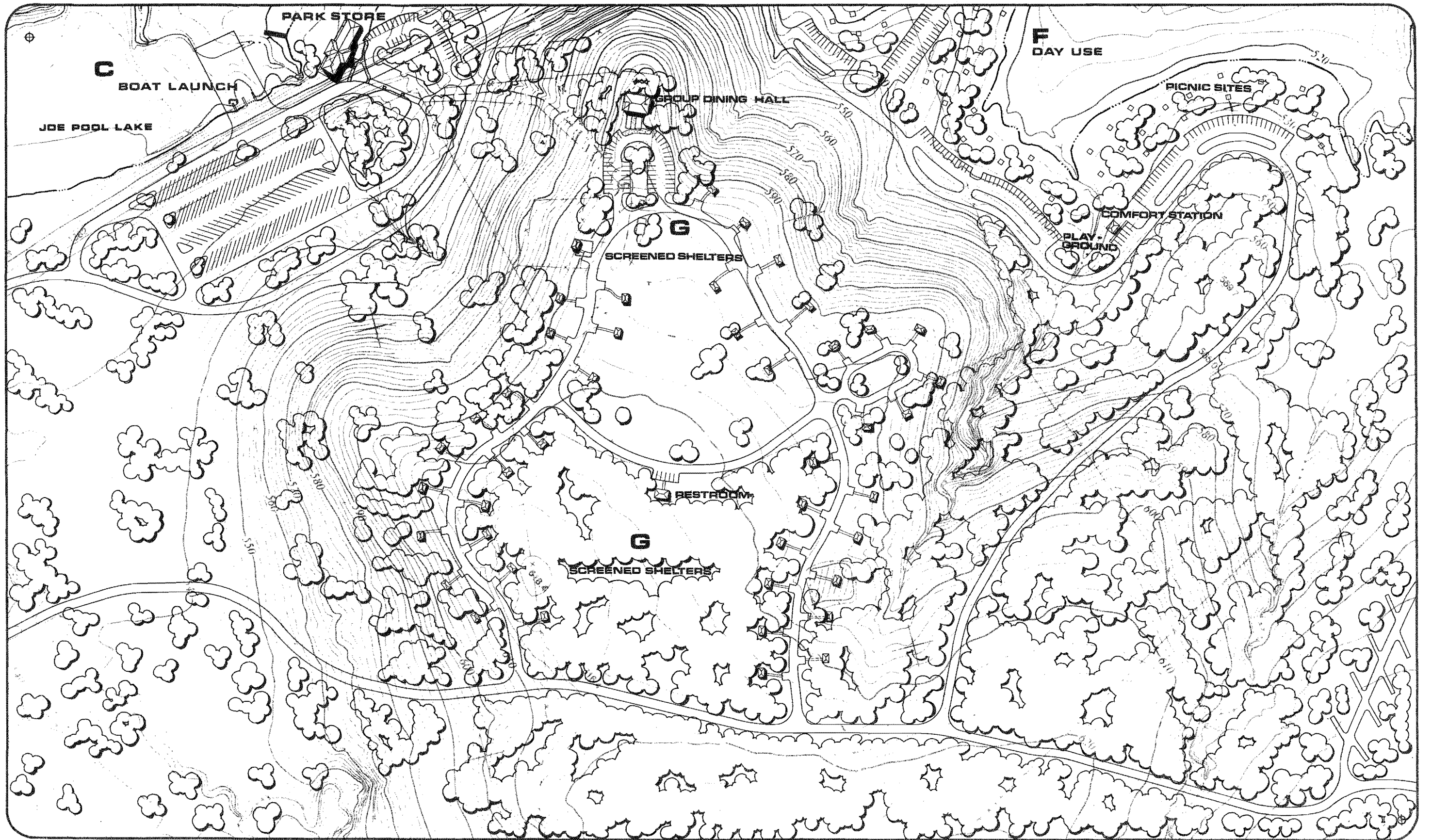


LAKEVIEW STATE PARK
 TEXAS PARKS AND WILDLIFE DEPARTMENT



AREAS C, D, E, F & G

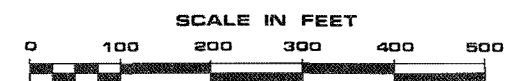


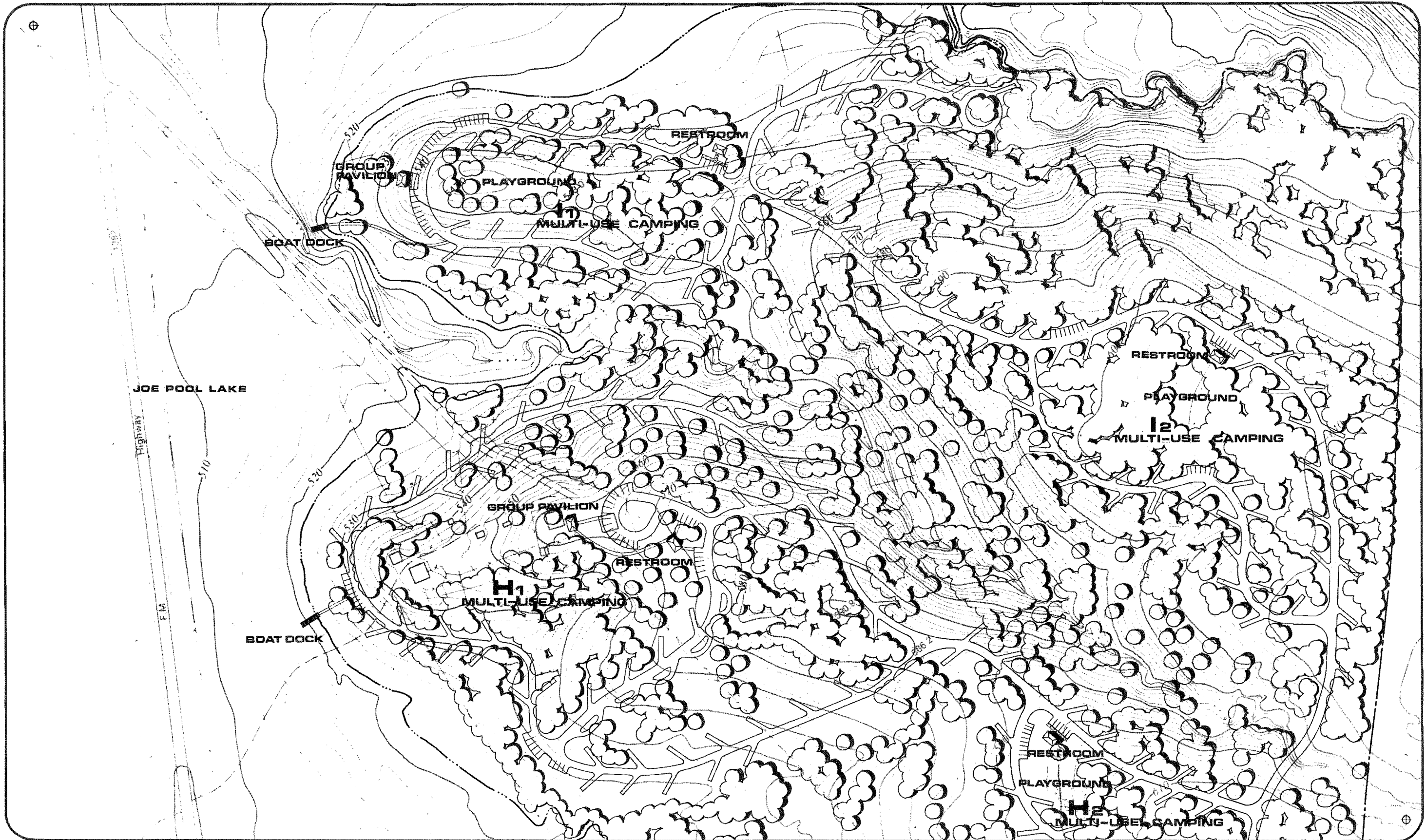


LAKEVIEW STATE PARK
 TEXAS PARKS AND WILDLIFE DEPARTMENT



AREAS C, F & G

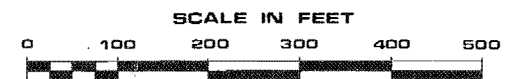
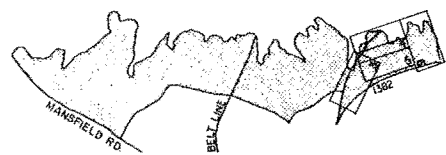




AREAS H1, H2, I1 & I2



LAKEVIEW STATE PARK
 TEXAS PARKS AND WILDLIFE DEPARTMENT



PROPOSED FACILITIES BY AREA

AREA A - HEADQUARTERS COMPLEX

Area A, the Headquarters complex will serve as the control point for overall park operations from which questions will be answered, literature dispensed, fees collected and permits issued and checked. The headquarters complex will consist of a park headquarters building, fee collection booth, and parking to accommodate visitor automobiles and recreational vehicles. A public telephone will be provided at the headquarters.

AREA B - LATE ARRIVAL AREA

Area B, the late arrival area, is provided near the headquarters complex as a waiting area for those visitors arriving after the park has closed. Area lighting and water will be provided; however, comfort station facilities will be located at the headquarters with trail access. This area will provide parking for thirteen (13) vehicles with trailers.

AREA C - BOAT LAUNCH, PARK STORE, AND DAY USE

Area C will consist of a boat launching area, park store, and day-use facilities. The boat launching area will consist of six (6) contiguous boat ramps, three (3) courtesy docks, and parking for ninety (90) automobiles with trailers. The park store will provide a source for basic camping and fishing supplies including gasoline sales and live bait concessions. A boat dock will also be located near the boat launch and park store to provide boat access to the concession. The day-use facilities will consist of approximately eight (8) picnic sites for visitors utilizing the boat launch and/or concession facility.

Boat Launch: The boat launch facility consists of six (6) contiguous boat ramps each fourteen feet wide with three (3) courtesy docks serving two (2) ramps each. Parking for ninety (90) automobiles with trailers will be provided for the launching area with a fish cleaning shelter located nearby. Vehicular access from the boat launching area to the park store for gasoline, camping, fishing supplies, and/or live bait will also be provided.

Park Store Facility: This facility will contain approximately 2,500 square feet and provide a source for basic camping and fishing supplies including gasoline sales and live bait concessions. The building will be accessible by the physically handicapped. A public telephone will also be provided.

Day-Use Area: Approximately eight (8) picnic sites will be provided in this area for visitors utilizing the boat launch and/or concession facility. Each picnic site will consist of a table on a concrete pad and a cooking grill. Hose bibbs will be shared by every two (2) sites. Parking for twelve (12) vehicles will be provided, and the public restroom facilities at the concession facility will service this area.

AREA D - DAY-USE AREA

Day-Use Area D will provide approximately thirty-two (32) picnic sites, parking for eighty-two (82) automobiles, pedestrian bridge, trail overlook, comfort station, and playground.

Picnic Site: Each picnic site will consist of a table on a concrete pad and cooking grill. Trash receptacles and hose bibbs will be shared by every two (2) sites.

Pedestrian Bridge: A pedestrian bridge approximately six (6) feet wide and fifty (50) feet long will provide access from day-use area D to the concession facility. The pedestrian bridge will be similar in design and construction to Town and Country Bridges as manufactured by Debourgh Manufacturing Company.

Trail Overlook: The trail overlook will be a wooden, roofed structure with a seating area and be located so as to provide the park visitor with a panoramic view of day-use Area D and the lake.

Comfort Station: The comfort station will contain approximately 432 square feet of interior space with an exterior seating area provided as a waiting or lounging area.

Roads & Parking: The roadway surface will be asphalt, eighteen (18) feet in width and provide for two-way traffic. The asphalt parking areas will be located adjacent to the roadway with a minimum of twenty (20) feet depth and be allocated as follows:

Picnic Sites (32) Seventy-seven (77) parking spaces.

Comfort Station Five (5) parking spaces including one handicapped space.

AREA E - SWIMMING BEACH AREA

Swimming Beach Area E will provide a swimming area, picnic tables, parking for seventy (70) automobiles, boat rental area, and a concession/comfort station facility with outside showers.

Swimming Area: The swimming area will be approximately 5,000 square yards in size and provide swimming opportunities for young children through adults. The sandy bottom of the swimming area will extend a minimum of fifty (50) feet from the water (at conservation pool elevation 522.0) to provide a lounging and sun bathing area.

Picnic Tables: Approximately sixteen (16) picnic tables will be provided near the beach area for visitors utilizing the swimming area and/or concession facility.

Concession/Comfort Station Facility: The concession/comfort station facility will contain approximately 1,100 square feet of interior floor space provided as a waiting, lounging, and eating area. The concession area will contain approximately 576 square feet.

Roads and Parking: The asphalt serving day-use areas E and F will be eighteen (18) feet in width and provide for two-way traffic. The asphalt parking areas along this roadway will be located adjacent to the roadway and have a minimum depth of twenty (20) feet. The parking areas located adjacent to the primary park road will be separated from the primary road by an island. The parking will be allocated as follows:

Concession/Comfort Station Twelve (12) parking spaces.

Swimming Beach Areas Forty-six (46) parking spaces.

One handicapped parking space will be provided at each parking area.

AREA F - DAY-USE AREA

Day Use Area F will provide sixty (60) picnic sites, one (1) group pavilion (20'X30'), a playground, two (2) comfort stations, and parking for 129 automobiles.

Picnic Site: Each picnic site will consist of a picnic table on a concrete pad and cooking grill. Trash receptacles and hose bibbs will be shared by every two (2) sites.

Group Picnic Pavilion: The group picnic pavilion as manufactured by Koppers Company or an equal will consist of a roofed structure approximately 30' x 60' (1,800 square feet) constructed on a concrete pad. The pavilion will be furnished with electricity, picnic tables, hose bibb, trash receptacle, and a group cooking grill.

Playgrounds: The playgrounds should be designed to provide active recreation for children of all ages and be located near the group pavilion and comfort stations. The playgrounds will harmonize with the park's native, natural character.

Comfort Stations (2): Each comfort station will contain approximately 432 square feet of interior space with an exterior public space provided as a waiting or lounging area.

Roads and Parking: The asphalt roadway serving day-use areas E and F will be eighteen (18) feet in width and provide for two-way traffic. The asphalt parking areas along this roadway will be located adjacent to the roadway and have a minimum depth of twenty (20) feet. The parking areas located adjacent to the primary park road will be separated from the primary road by an island. The parking will be allocated as follows:

- Group Picnic Pavilion Twenty (20) parking spaces.
- Picnic Sites Ninety-seven (97) parking spaces.
- Comfort Stations (2) Six (6) parking spaces at each
(total of 12).

One handicapped parking space will be provided at each parking area.

AREA G - SCREEN SHELTER AREA & GROUP DINING HALL:

Screen Shelter Area G will provide forty-two (42) screened shelters, one (1) restroom, a group dining hall, and trailer dump station.

Screen Shelters: Each screened shelter site will consist of a (12' x 18') (216 square feet) screen shelter, paved parking for two (2) automobiles, outdoor Bar-B-Que grill, picnic table, water, electricity, and trash receptacle.

Restrooms: The restroom will contain approximately 960 square feet of interior space with a roofed exterior spaced provided as a waiting or lounging area.

The restroom will also conform to the requirements of the physically handicapped.

Group Dining Hall: The group dining hall will provide kitchen and dining facilities for groups utilizing the screen shelter camping area or groups utilizing day-use facilities. The group dining hall will contain approximately 2,600 square feet of interior floor space and approximately 1,200 square feet of exterior hard surface. The building will contain a kitchen facility, dining area with fireplace, restroom facilities, storage area, and exterior Bar-B-Que pit.

Trailer Dump Station: The Trailer Dump will be provided as indicated on the Master Plan. The trailer dump ingress and egress should allow for a turning radius which would enable a vehicle pulling a trailer to return in the direction from which it came. The access lanes to the station should be adequate to handle more than one unit. The connection to the wastewater drain should allow for the removal of effluent from two trailers at a time. Each dump connection should be provided with a hose bibb. Area lighting and trash receptacles will also be provided.

Roads & Parking: The asphalt surface in Screen Shelter Area G will be eighteen (18) feet in width and provide for two way traffic. Parking areas will be allocated as follows:

- Screened Shelter Site Two (2) parking spaces per shelter site.
- Restroom Six (6) parking spaces including one handicapped.
- Group Dining Hall Forty (40) parking spaces including two (2) handicapped.

AREA H-1 - MULTI-USE CAMPING AREA

Multi-Use Camping Area H-1 will provide approximately sixty-four (64) multi-use campsites, one restroom, group pavilion, overflow parking area, and courtesy boat dock.

Multi-Use Campsite: Sixty-four (64) multi-use campsites will be provided as outlined in the General Design Elements Section of this program.

Restroom: The restroom will contain approximately 1,200 square feet of interior space with a roofed exterior space provided for waiting or lounging. The restroom will conform to the requirements of the physically handicapped.

Group Pavilion: A group pavilion (30' x 60') will be provided as outlined in the General Design Elements Section of this program.

Courtesy Dock: A courtesy dock (6' x 25') with associated parking (nine parking spaces) will provide the campers in areas H-1 and H-2 access to the lake for fishing and boating activities.

Roads and Parking: The asphalt roadway surface in multi-use camping area H-1 will be fourteen (14) feet in width and provide for one way traffic. The interior road which provides access to the restroom and group pavilion will be eighteen (18) feet in width and provide for two-way traffic. Parking areas within the camping area will be allocated as follows:

Restroom	Six (6) parking spaces including one handicapped.
Group Pavilion.	Sixteen (16) parking spaces including one handicapped.
Courtesy Dock.	Nine (9) parking spaces including one handicapped.
Overflow Parking	Fourteen (14) parking spaces.

AREA H-2 - MULTI-USE CAMPING AREA

Multi-Use Camping Area H-2 will provide approximately twenty-one (21) multi-use campsites, one restroom, a playground, and eight (8) overflow parking spaces.

Multi-Use Campsite: Twenty-one (21) multi-use campsites will be provided as outlined in the General Design Elements Section of this program.

Restroom: The restroom will contain approximately 720 square feet of interior space with roofed exterior space provided as a waiting or lounging area.

The restroom will conform to the requirements of the physically handicapped.

Roads and Parking: The asphalt surface in multi-use camping area H-2 will be eighteen (18) feet in width and provide for two-way traffic. Parking areas within the camping area will be allocated as follows:

- Restroom Six (6) including one handicapped parking space.
- Overflow Parking Eight (8) parking spaces.

AREA I-1 - MULTI-USE CAMPING AREA

Multi-Use Camping Area I-1 will provide approximately forty-six (46) multi-use campsites, one restroom, playground, group pavilion, courtesy dock, and an overflow parking area.

Multi-Use Campsites: Forty-six (46) multi-use campsites will be provided as outlined in the General Design Elements Section of this program.

Restroom: The restroom will contain approximately 960 square feet of interior floor space with an exterior roofed space provided for waiting or lounging.

Group Pavilion: A group pavilion (20' x 30') will be provided as outlined in the General Design Elements Section of this program.

Courtesy Dock: A courtesy dock (6' x 25') with six (6) parking spaces will provide the campers in areas I-1 and I-2 access to the lake for fishing and boating activities.

Roads and Parking: Roadway surface in multi-use area I-1 will be eighteen (18) feet in width and provide for two-way traffic. Parking areas within the camping area will be allocated as follows:

- Restroom Six (6) parking spaces including one handicapped.
- Group Pavilion. Fourteen (14) parking spaces including one handicapped.
- Courtesy Dock. Six (6) parking spaces including one handicapped.
- Overflow Parking Seven (7) parking spaces.

AREA I-2 MULTI-USE CAMPING AREA

Multi-Use Camping Area I-2 will provide approximately fifty-six (56) multi-use campsites, one (1) restroom, playground, and two (2) overflow parking areas.

Multi-Use Campsites: Fifty-six (56) multi-use campsites will be provided as outlined in the General Design Elements Section of this program.

Restroom: The restroom will contain approximately 960 square feet of interior floor space with an exterior roofed area provided for waiting or lounging.

Roads and Parking: The roadway surface will be eighteen (18) feet in width and provide for two-way traffic. Parking areas will be allocated as follows:

- Restroom Six (6) parking spaces including one handicapped.
- Overflow Parking One six (6) and one eight (8) space parking area for a total of fourteen (14) spaces. Refer to Master Plan for location.

AREA J-1 - DAY USE AREA

Day-Use Area J-1 will provide approximately sixty (60) picnic sites, parking for eighty-one (81) automobiles, two (2) comfort stations, fishing jetty with fish cleaning shelter, two group pavilions, one 20' x 30', and one 30' x 60'.

Picnic Site: Area J-1 will have approximately sixty (60) picnic sites. Each picnic site will consist of a table on a concrete pad and cooking grill. Trash receptacles and hose bibbs will be shared every two (2) sites.

Comfort Station: Two (2) comfort stations will be located as shown on the Master Plan. Each comfort station will contain approximately 432 square feet of interior space with an exterior seating area provided as a waiting or lounging area.

Group Pavilion: Two (2) group pavilions will be provided as shown on the Master Plan and as outlined in the General Design Elements Sections. One pavilion will be 20' x 30' in size and one will be 30' x 60'.

Roads and Parking: The asphalt roadway serving Area J-1 will be eighteen (18) feet in width and provide for two-way traffic. The parking will be allocated as follows:

- Picnic Sites Eighty-one (81) parking spaces.
- Comfort Stations (2) Ten (10) parking spaces. Five (5) spaces at each comfort station including one handicapped space.
- Group Pavilion.....Seventeen (17) parking spaces
- (20' x 30') including one handicapped space.
- Group Pavilion. Twenty-three (23) parking spaces (30' x 60') including one handicapped space.

AREA J-2 - DAY USE AREA

Day Use Area J-2 will provide one (1) group pavilion, 20' x 30', a fishing jetty with fish cleaning shelter, and a comfort station.

Group Pavilion: A group pavilion, 20' x 30', will be provided as shown on the Master Plan and as outlined in the General Design Elements Sections.

Fishing Jetty with Fishing Cleaning Shelter: A lighted fishing jetty, approximately 12' x 150' with a 50' T-section at the end, will be provided as shown on the Master Plan. A fishing jetty will be constructed due to the lake fluctuation. Buoys will be located to delineate the no wake area for boaters and fishermen. A fish cleaning shelter will provided adjacent to the jetty.

Comfort Station: A Comfort Station will be located as shown on the Master Plan. The comfort station will contain approximately 432 square feet of interior space with an exterior seating area provided as a waiting or lounging area.

Roads and Parking: The asphalt roadway surface will be eighteen (18) feet in width and provide for two-way traffic. Parking areas will be allocated as follows:

- Group Pavilion. Fifteen (15) parking spaces including one handicapped.
- Fishing Jetty Twenty-four (24) parking spaces including one handicapped space.
- Comfort Stations Six (6) parking spaces including one handicapped.

AREA K - PENN COMPLEX

The Penn Complex is a unique family farm complex dating from the 1850's to the 1960's consisting of thirteen (13) structures and associated cisterns, hand-dug wells, water tanks, stock tanks, windmills, and corrals. The significance of the complex is reflected by its eligibility for inclusion on the National Register of Historic Places. The Penn Complex will be fenced and initially designated as an archeological and historic preserve pending mitigation plans prepared by the Corps of Engineers to ensure compliance with State and Federal regulations.

AREA L - MAINTENANCE COMPLEX AND RESIDENCE

Area L will consist of a maintenance complex, a residence, and a trailer dump station.

Maintenance Complex: The maintenance complex will provide for the general maintenance and service of park facilities, vehicles, and storage of equipment. The maintenance building will contain approximately 2,455 square feet consisting of enclosed shop, storage, offices, restroom, and open parking bays. In addition to the Maintenance Building, the complex will contain the following:

1. Volatile Materials Storage Building (10' x 10').
2. Concrete slab for servicing and washing located near the shop. The slab will be provided with a drain with grease and sand trap and a hose bibb. An exterior electrical outlet will also be provided.
3. Two 1,000-gallon tanks for unleaded gasoline and regular gasoline. The tanks will be provided with a duplex pump with metering device.
4. The maintenance complex will be secured with security lighting and a chain link fence approximately 200' x 200'. The area will be paved and well drained. Large trees within the yard area will be preserved, and the building yard area will be located so that existing vegetation acts as a screen wherever possible.

Residence: A residence will be located adjacent to the maintenance complex as shown on the Master Plan to provide security to the area. The residence will utilize the standard residence plan. A twelve (12) foot paved drive and a privacy fence at the rear and side yards will be provided.

Trailer Dump Station: The Trailer Dump should be provided as indicated on the Master Plan. The trailer dump ingress and egress should allow for a turning radius which would enable a vehicle pulling a trailer to return in the direction from which it came. The access lanes to the station should be adequate to handle more than one unit. The connection to the wastewater drain should allow for the removal of effluent from two trailers at a time. Each dump connection should be provided with a hose bibb. Area lighting and trash receptacles will also be provided.

Roads and Parking: The asphalt roadway surface to the maintenance complex will be eighteen (18) feet in width and provide for two-way traffic.

AREA M-I - SCREENED SHELTER AREA

Screen Shelter Area M-I will provide thirty-seven (37) screened shelters, one restroom and playground.

Screen Shelters: Each screened shelter site will consist of a 12' x 18' (216 square feet) screen shelter, paved parking for two automobiles, outdoor Bar-B-Que grill, picnic table, water, electricity, and trash receptacle as described in the General Facilities Design Elements Section.

Restroom: The restroom will contain approximately 960 square feet of interior space with an exterior roofed area provided for waiting or lounging.

The restroom will also conform to the requirements of the physically handicapped.

Roads and Parking: The asphalt roadway surface in Screen Shelter Area M-1 will be eighteen (18) feet in width and provide for two-way traffic. Parking will be allocated as follows:

- Restroom Six (6) parking spaces including one (1) handicapped.
- Screened Shelter Site Two (2) parking spaces per site.

AREA M-2 - SCREENED SHELTER AREA

Screen Shelter Area M-2 will provide for sixteen (16) screened shelters and a restroom.

Screen Shelters: Each screened shelter site will consist of a 12' x 18' (216 square feet) screen shelter, paved parking for two automobiles, outdoor Bar-B-Que grill, picnic table, water, electricity, and trash receptacles as described in the General Facilities Design Elements Section.

Restroom: The restroom will contain approximately 720 square feet of interior space with an exterior roofed area provided for waiting or lounging.

The restroom will conform to the requirements of the physically handicapped.

Roads and Parking: The roadway width in area M-2 will be eighteen (18) feet in width and provide for two-way traffic. Parking will be allocated as follows:

- Screened Shelter Site Two (2) parking spaces per site.
- Restroom Six (6) parking spaces including one (1) handicapped.

AREA N-MULTI-USE CAMPING AREA

Multi-Use Camping Area N will provide approximately eighty (80) campsites, two (2) restrooms, group pavilion, playground, courtesy dock, and overflow parking.

Multi-Use Campsites: Eighty (80) multi-use campsites will be provided as outlined in the General Design Elements Section of this program.

Restrooms: The primary restroom will contain approximately 1,200 square feet of interior space and the secondary Restroom will contain approximately 960 square feet. Both restrooms will be provided an exterior roofed area provided for waiting and/or lounging.

The restroom will conform to the requirements of the physically handicapped.

Group Pavilion: A group pavilion (20' x 30') will be provided as outlined in the General Design Elements Section of this program.

Courtesy Dock: A courtesy dock (6' x 25') with associated parking (ten parking spaces) will provide the campers in Area N access to the lake for fishing and boating activities.

Roads and Parking: The roadway surface in multi-use camping area N will be eighteen (18) feet in width and provide for two-way traffic. Parking areas within the camping area will be allocated as follows:

- Restroom(s) Six (6) parking spaces per restroom, including one (1) handicapped space. (Total of 12 spaces.)
- Group Pavilion. Sixteen (16) parking spaces including one handicapped space.
- Courtesy Dock. Ten (10) parking spaces including one handicapped space.
- Overflow Parking Twenty-one (21) parking spaces total 3 parking areas of ten (10), six (6) and five (5).

AREA O-1 and O-2 PRIMITIVE CAMPING AREAS

Primitive Camping Areas O-1 and O-2 will provide approximately thirty (30) acres of camping area, two (2) trailheads, parking for twenty (20) automobiles, two (2) clivus multrums, and approximately two (2) miles of hiking trail.

Primitive Camping: The primitive camping will be located as shown on the Master Plan. The areas will be designated by natural features and/or signage and be accessible only by hiking trail. The primitive campsites will not be located site specific, that is, each campsite will not have a designated area. The park visitor will be permitted to camp anywhere within the boundaries of the camping area. For park visitor safety and park site preservation, no open fires will be permitted.

Trailhead(s): The trailhead(s) will be located adjacent to the parking area(s) and consist of a small all-weather trail structure. The trail structure will display a large permanent map of the trails and provide a dispenser for information and small scale maps of the trail. A hose bibb will be located at the trailhead to provide water for the campers and hikers.

Clivus Multrums(s): Two Clivus Multrums, organic waste treatment systems, will be located near the primitive camping areas.

Hiking Trails: The hiking trail providing access from the trailheads to the primitive camping areas will be approximately two (2) miles in length and have minimum improvements.

Parking: Ten (10) parking spaces will be provided at each of the two (2) trailheads as shown on the Master Plan.

AREA P - DAY USE AREA

Day Use Area P will provide approximately fifty-seven (57) picnic sites, three (3) comfort stations, two (2) playgrounds, and approximately eighty-five (85) parking spaces.

Picnic Site: Each picnic site will consist of a table on a concrete pad and cooking grill. Trash receptacles and hose bibbs will be shared every two (2) sites.

Comfort Station(s): The comfort station(s) will contain approximately 432 square feet of interior space with an exterior seating area provided as a waiting or lounging area. The Comfort station will conform to the requirements of the physically handicapped.

Roads and Parking: The roadway surface will be asphalt, eighteen (18) feet in width and provide for two-way traffic. The parking areas will be located adjacent to the roadway with a minimum of twenty (20) feet depth and be allocated as follows:

- Picnic Sites (57) Eighty-five (85) parking spaces.
- Comfort Station(s) Five (5) parking spaces including one handicapped space per comfort station for a total of fifteen (15) spaces.

AREA Q - BOAT LAUNCH

Area Q will consist of a boat launching area and comfort station.

Boat Launch: The boat launching facility consists of four (4) contiguous boat lanes fourteen (14) feet wide with two (2) courtesy docks serving two ramps each. Parking for eighty-one (81) automobiles with trailers will be provided for the launching area. A fish cleaning shelter will be located near the boat ramps.

Comfort Station: The comfort station will contain approximately 432 square feet of interior space with an exterior seating area provided as a waiting or lounging area. The comfort station will conform to the requirements of the physically handicapped.

Roads and Parking: Roads serving the boat launch and comfort station will be eighteen (18) feet in width and provide for two-way traffic. Parking will be allocated as follows:

- Boat Launch. Eighty-one (81) automobile/trailer parking spaces.
- Comfort Station Six (6) parking spaces including one handicapped.

AREA R - FISHING JETTY

Area R will consist of a fishing pier/jetty, fish cleaning shelter, and parking for thirty (30) automobiles.

Fishing Jetty: A lighted fishing jetty approximately 12' x 150' with a 50' T-Section at the end will be provided as shown on the Master Plan. A fishing jetty will be constructed due to the lake fluctuation. Buoys will be located to delineate the no wake area for boaters and fishermen.

Fish Cleaning Shelter: A fish cleaning shelter will be provided adjacent to the jetty.

Roads and Parking: The park road serving the fishing jetty will be (18) eighteen feet in width and provide for two-way traffic. Twenty-five (25) parking spaces will be provided for the fishing jetty.

AREA S - RESIDENCE

A residence will be located in Area S as shown on the Master Plan. The residence will utilize the standard residence plan. A privacy fence at the rear and side yards will also be provided. Access to the residence will be provided by twelve (12) foot paved drive.

PROGRAMMING

ENGINEERING PROGRAM

ENGINEERING PROGRAM

ROADS & PARKING

Existing State Road:

Access to the park entrance will be via the recently relocated Farm Market Road 1382. A portion of the abandoned FM 1382 road bed will be utilized as part of the main park road system.

Two-Way Main Roads:

Two-way main roads will provide access to and from major recreation activity areas such as swimming areas, boat launching areas, day-use and camping areas. The alignment of these roads will be as shown in the master plan.

Secondary Roads:

Secondary roads will be either two-way or one way as shown on the plan and will provide circulation routes to and through major use areas.

Design Criteria:

All main roads will be located at or above the 100 year flood pool elevation (El. 538.5). The geometric surface configuration of roads will be in keeping with the requirements given in Texas Parks and Wildlife Department's "Design Standards, Part I, Roads and Parking." Considering the general site geology and anticipated soils properties the design criteria presented in Corps of Engineers Design Memorandum No. 25, Pages VIII 1-3, seem appropriate for the Lakeview State Park. However, the final design will be deferred until verification by site investigations and testing can be made. The option of using two-course surface treatment in lieu of hot mix asphaltic concrete will be deferred until site testing information is available.

Roadside Ditches:

Roadside ditches will be used to provide road drainage and to direct water to locations where it can be emptied into well defined drainage ways. Due to the inherent nature of soils derived from the Eagle Ford Formation considerable erosion will occur in roadside ditches if protective measures are not included in the road design.

Where the grades of the ditches do not exceed about 0.5% the early establishment of turf type vegetation could be used for protection. Where grades exceed 0.5% structural measures such as checks, drops, paving with concrete, soil, cement, or stone will be required. Where road ditches empty into incised natural channels let down type structures such as pipe drops, concrete overfall structures or chutes will be required. The diversion of flow away from ditches to naturally stable outlets may also be helpful at some locations.

Boat Launches:

Boat launches are planned for Areas C and Q. The Area C launch will have six 14-foot wide lanes and the ramp in Area Q will have four 14-foot wide lanes.

The top elevation of the ramps will be set at el. 527.5 (ten year flood level). The bottom of the ramp will be set at el. 502.0 which is four (4) feet below the ten (10) year drawdown stage. Boat outlet channels into the lake will have a bottom width of seventy-four (74) feet at el. 502.0 with side slopes not steeper than 3 horizontal to 1 vertical.

Ramps will have a uniform slope of 7 horizontal to 1 vertical and will be constructed of reinforced concrete using an effective slab depth of at least six (6) inches, placed on a 4-inch sand bedding layer. The subgrade will be of compacted soil except where natural preconsolidated material exists at subgrade elevation.

All earth side slopes adjacent to the boat ramp will be protected from wave erosion with loose rock riprap or rock gabions.

Courtesy docks that can be moved with the fluctuation of the lake level will be used at each boat ramp site.

Fishing Piers/Jetties:

Lighted fishing jetties are planned for two (2) locations, Area J-2 and Area R. An earthen pier with rock riprap slope protection will be used.

Swimming Beach:

A swimming beach is planned for Area E, with approximately 600 feet of shoreline. The swimming and sun bathing area will be shaped to accommodate a sand aggregate approximately one foot thick.

Water Supply System:

Water for the park may be obtained from the City of Cedar Hill. Presently, the City of Cedar Hill has an 8" supply line within approximately 3,000 feet south of the park entrance. The system will be expanded along the southeast park boundary and across the part of the park within the City Limits at some future date. Storage and repressurization of the supply from the City should not be required.

Another possible source of water will be from the proposed Trinity River Authorities' water treatment plant that will be constructed adjacent to the park site which will supply water to four (4) municipalities. The use of this source is contingent on when the plant is completed.

The distribution system within the park will utilize plastic pipes sized to provide sufficient pressure and quantity for the satisfactory operations of all fixtures and other demands.

Wastewater Collection and Disposal:

The wastewater generated in the park will be disposed by connecting to the City of Cedar Hill's wastewater collection system. The City presently has a 2,000 g.p.m. lift station near FM 1382 approximately one mile southeast of the park entrance.

The wastewater collection system will consist of discharging wastewater from the various use areas into grinder pump-type lift stations. The individual lift stations will pump into collection main lines. The collection mains will discharge into a main lift station near the park headquarters. From there, it will be relifted to the City of Cedar Hill's system.

Another possible means for disposing of wastewater might be by discharging into TRA's Mountain Creek Collection line if this line is extended into or near the park site as is tentatively proposed. Again, the timing of completion of this extension could dictate which option to utilize.

Electrical Supply and Distribution:

The electrical supply for the park will be furnished by two utility companies, Texas Power & Light and Dallas Power & Light. The distribution service in the park will use overhead lines for all primary service. In general, secondary service will use underground lines.

Alignment for overhead lines will be selected so as to take advantage of natural screening where practical. Secondary lines will generally be placed along roads. In camping areas, electric lines may be installed in the same trench as water lines. Secondary lines will use copper wire and be enclosed in a conduits. Pull boxes will be used at each junction.

Three phase service will be required at locations where motors of 5 horsepower or larger are needed.

All service shall conform to the requirements of the National Electric Code and those of the applicable utility company.

Foundation and Earth Slopes:

Due to the high shrink-swell and low strength properties of most soils in the park, soil testing should be made at building sites prior to foundation design. The same applies to locations where major cuts or fills are to be made to ensure that stable side slopes can be achieved.

Shoreline Erosion:

Some shoreline erosion will occur where natural slopes at the shoreline exceed about 10%. The park site is sheltered from prevailing southeast winds, but prolonged north west winds will be sufficient to generate waves of 3 foot or greater in height and most erosion would occur during these periods. However, this is not anticipated to be severe, because the water surface will have a fairly wide variance in water surface elevations, and some stratified layers of soft rock or tough shale will retard the development of large wave bites.

ENVIRONMENTAL ASSESSMENT

ENVIRONMENTAL ASSESSMENT

DESCRIPTION OF THE PROPOSED ACTION

Lakeview State Park encompasses 1,826 acres of upland woodlands and grasslands and creek bottom woods in southwestern Dallas County. Located on the eastern side of the future Joe Pool Lake, this park site will undergo development by the Texas Parks and Wildlife Department.

The proposed project will provide standard park facilities for administration, overnight camping, picnicking, water-based recreational opportunities, hiking and nature study. Only development planned for Phase I is included in this Environmental Assessment.

Construction of the facilities will include the following:

1. Headquarters and roads
2. Maintenance complex
3. Day-use areas
4. Screened shelter areas
5. Multi-use camping areas
6. Boat ramp complexes
7. Trails

DESCRIPTION OF THE ENVIRONMENT

Lakeview State Park exhibits a rolling topography which exists on soils developed from the eroded surface of the Eagle Ford Formation. The southeastern margin of a portion of the park includes the scarp face of the White Rock Escarpment consisting of the Austin formation. Soils forming upon those Upper Cretaceous marine formations are shallow to deep black clays. Current water resources include several intermittent streams, one perennial stream and several stock tanks. Climate of the area is warm temperate with an average annual temperature of 65.8°F and average annual rainfall of 34.55 inches. Following construction of Joe Pool Lake, the park site will lie on the eastern shore of a 7,740 acre reservoir.

The lower, rolling portion of the park would naturally be a mosaic of creek bottom and slope woodlands and tall-grass prairies. Past land use for farming and livestock operations have modified the natural biotic communities. Tall-grass prairie is now restricted for four (4) small plots, but these areas are the most important biological resource within Lakeview State Park. These four (4) plots represent the only native blackland prairie communities present within the State Park System of Texas. Dominant grasses are Indian grass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardi*) and little bluestem (*Schizachyrium scoparium*). Creek bottom woods retain a large proportion of their natural integrity; dominant woody species are pecan (*Carya illinoensis*), green ash (*Fraxinus pennsylvanicus*), bois d'arc (*Maclura pomifera*) and Texas sugarberry (*Celtis laevigata*). Wooded slopes remain in portions of the park but have been impacted to a variable extent by previous land-use practices. Dominant trees are cedar elm (*Ulmus crassifolia*), honey locust (*Gleditsia triacanthos*) and Texas sugarberry. Open rolling areas most impacted by human utilization are dominated by open mesquite (*Prosopis glandulosa*) woodlands. A narrow scarp woodland associated with the White Rock Escarpment is dominated by

Texas ash (Fraxinus texensis), mountain juniper (Juniperus ashei), shin oak (Quercus sinuata) and Texas oak (Quercus texana).

Wildlife resources of the park site are rather sparse. Most abundant are fox squirrels (Sciurus niger) and armadillos (Dasypus novemcinctus). Bird populations are generally low-density and low-diversity communities.

There are three (3) important archeological sites in the park: the Baggett Branch Site (41 DL 149), the Anderson Complex (41 DL 190), and the Penn Complex (41 DL 192). Two have been determined eligible for inclusion on the National Register of Historic Places and the action on the third, the Anderson Complex, is in progress.

Other insignificant scatters of historic materials have been recorded within the confines of the park boundary. There may also be additional archeological sites buried by alluvial soils or obscured by herbaceous vegetation. All archeological deposits discovered during construction activities are protected by the Texas Antiquities Code and Federal laws and will require additional archeological assessments.

Population of Dallas County (1980) is 1,556,549. Dallas County is considered a national center for insurance, banking, transportation, electronics, conventions and data processing. Agriculture and tourism also contribute to the local economy. A portion of the park site falls within the city limits of Cedar Hill (1980 population - 6,849).

ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

Implementation of the proposed action will subject approximately 185.8 acres to direct and indirect impact. This includes land to be covered by permanent facilities and immediately peripheral areas which will be subject to impact either during construction or during utilization of the facilities by the public following opening of park. This acreage represents 9.2% of the total acres. Existing vegetation and wildlife values and soil integrity will experience changes of varying degrees depending upon the facility involved, previous land use and local conditions. The most radical change in the environment will be associated with construction of two (2) new residences, comfort stations, headquarters, maintenance area, parking lots, day-use areas, multi-use camp sites and park roads. Other types of development, e.g., primitive camping areas and trails will result in less impact than other facilities as mentioned above.

1. Headquarters and roads. The headquarters complex including parking will impact 2.2 acres. Park roads not included in developed areas below will impact 5.6 miles. A late arrival area will impact 1.2 acres.
2. Maintenance complex. The maintenance area and associated residence will impact 2.8 acres.
3. Day-use areas. Five (5) day-use complexes will provide 217 picnic sites. Associated with picnic sites will be ten (10) comfort stations, four (4) group pavilions and one fishing pier with a fish-cleaning station. A total of 57.7 acres.
4. Screened shelter area. Three (3) screened shelter complexes will contain ninety-five (95) screened shelters, one (1) group dining hall and three (3) restrooms. These areas will impact 35.8 acres.

5. Multi-use camping areas. Three multi-use camping loops will provide 267 camping sites, three (3) group pavilions, two (2) playgrounds, six (6) restrooms and three (3) boat docks. A total of 75.4 acres will be impacted.
6. Boat launch complexes. Two (2) boat launch complexes will provide ten (10) boat lanes, one (1) fishing pier, one (1) concession/comfort station, and 201 parking spaces. An area encompassing 10.7 acres.
7. Trails and primitive camping. A total of 7.1 miles of access and hiking trails will be constructed. One (1) portion of the park will be open to primitive camping.

Operation of the park will result in concentration of solid waste and wastewater. Solid waste will be removed from the park site and deposited in an appropriate land fill. Wastewater will be pumped to the Cedar Hill sewage treatment system.

In general, facilities are placed to avoid areas of high vegetation and wildlife values. One portion of one of the prairie remnants will be covered by a park road. This area is rated high on the vegetative value map.

No wetland areas subject to U.S. Army Corps of Engineers 404 permits are known in the park. Upon impoundment of the waters of Mountain Creek, certain construction activities along the resultant shoreline will be subject to such regulations.

Construction and operation of the park will increase the economic base of the local area. Direct economic impact will be increased salary base and increased demands for gasoline, food and recreational supplies.

Proposed development for Phase I does not directly impact known cultural resources. Certain facility placement may indirectly affect sites proposed for the National Register of Historic Places by increasing erosional activities and park visitor pressure.

Phase I development will skirt the Penn Complex (41 DL 192) leaving the nine-acre fenced enclosure as an archeological preserve. Direct construction impact will not be a factor, but indirect impact from benign neglect may substantially affect the standing structures, some of which are poorly protected from the elements. Should the site be desired in the future for park recreational development, additional archeological assessment and mitigation will be required. Furthermore, should the Texas Parks and Wildlife Department inadequately comply with the mandatory mitigating measures, the Corps of Engineers may revoke the lease for all properties on the park site included or deemed eligible for the National Register of Historic Places.

MITIGATING MEASURES

The resource management section of the ecological analysis outlines basic management techniques which can be utilized to maintain integrity of the blackland prairie plots. Suitable tree species for reservoir shoreline erosion control are also suggested.

A trail system to explain the significance of the tall-grass prairie areas will increase knowledge among the park visitors concerning conservation of the resources of the park.

Creating a permanent archeological preserve for site 41 DL 192 does not constitute a mitigating measure. Mitigating measures will be implemented by the U.S. Army Corps of Engineers to adequately record the standing structures and other cultural features in compliance with the National Historic Preservation Act of 1966, as amended (Section 110, (a)(2)). Additional measures which may be agreed upon and stated in a memorandum of agreement among parties (such as the U.S. Army Corps of Engineers, Texas Parks and Wildlife Department, the Advisory Council on Historic Preservation, and the Texas State Preservation Officer) shall be necessary to mitigate the site or to preserve it in perpetuity. If the memorandum of agreement calls for preservation of the standing structures, then protection from fire, vandalism, and natural agents of destruction through a conscientiously applied management plan will be required.

UNAVOIDABLE ADVERSE EFFECTS

Implementation of the proposed action will involve direct impact on approximately 185.8 acres for development and recreational purposes. These areas will either lose all floral and faunal elements or suffer a change in species composition and/or population recruitment.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The proposed action will increase the recreational opportunities in the area centered around southwestern Dallas County. Previous land uses were cultivation and livestock operations with heavy impact on native plant and animal communities. Resource management techniques may allow some expansion of the native prairie areas.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OR RESOURCES

Implementation of the proposed action will directly impact 185.8 acres. The portion covered by roads or other permanent structures is effectively permanently committed. The remaining acreage will not be irretrievably committed and could feasibly be returned to its present status given sufficient time and management techniques. Unknown, but considerable, quantities of energy resources and person-hours will be irretrievably consumed during construction of these facilities.

ALTERNATIVES TO THE PROPOSED ACTION

Alternatives given consideration involved degree of park development. The degree of development was determined by recreational demands in the area and existing conditions (both natural and cultural) of the park site. Facility placement was determined by relationship to the future reservoir shoreline, physical site conditions and analysis of conservation elements. Adoption of the "no-action" alternative would mean a lack of utilization of recreational resources of the site as a park. Increased level of recreational development would impact the natural resources which occur within the boundaries of the park site.

ECOLOGICAL ANALYSIS

ECOLOGICAL ANALYSIS LAKEVIEW STATE PARK

LOCATION

Lakeview State Park consists of 1,826 acres of upland woodlands and grasslands and bottomland woodlands in southwestern Dallas County. Part of the park lies within the city limits of Cedar Hill. The park will lie on the northeastern shore of Joe Pool Lake which will result following impoundment of Mountain Creek.

LAND USAGE

Prior to purchase by Texas Parks and Wildlife Department, Lakeview State Park was used as homesites, farming, and ranching. Agricultural products generally included livestock and their foodstuffs, e.g., sorghum and oats.

CLIMATE

Climatic records from a nearby weather station (Dallas) indicate a warm temperate climate. The average annual temperature is 65.8° with record extremes of -3° (18 January 1930) and 111° (25 July 1954). Coldest winter temperatures occur during short term, extreme cold weather following passage of severe "northers" or cold fronts. Highest summer temperatures occur in lengthy periods of stagnant, high pressure atmospheric conditions. Average first fall freeze is 22 November with a range from 27 October to 27 December. Average last spring freeze is 18 March with a range from 14 February to 15 April. Rainfall averages 34.55 inches per year with maximum precipitation in April and May. Snow is generally rare except for occasional severe winters.

WATER RESOURCES

Current surface waters are restricted to several intermittent streams, one perennial stream (Baggett Branch), several stock tanks and several minor seeps. The park site is underlain by several Cretaceous aquifers (Woodbine, Paluxy, Basal Trinity) of variable quality. The proposed Joe Pool Lake will inundate approximately 10.5 miles of Mountain and Walnut Creeks to form a reservoir of 7,470 surface acres.

PHYSIOGRAPHY

Lakeview State Park consists of mostly gently rolling to steep slopes with relatively small areas of flat land. Conservation pool of the proposed Joe Pool Lake will be elevation 522' msl. Highest elevation in the park site slightly exceeds 750' msl.

Surface geology consists of Upper Cretaceous deposits. Most of the park is underlain by the Eagle Ford Formation consisting of various shale layers. Overlying the Eagle Ford along the eastern margin of the park is the Austin Formation. The Austin consists of well indurated layers of chalk which form the impressive White Rock Escarpment. Only a small portion of the park exhibits exposures of the Austin Chalk.

Soils developing on the Austin Chalk are characteristically shallow black clays with localized deep accumulations in drainages and talus slopes. Deep clay (blackland)

soils develop on the Eagle Ford but are highly erosive when disturbed. Excessive erosion has occurred on localized areas of the Eagle Ford to an extent that bedrock shale is exposed.

BIOTA

Lakeview State Park lies within the Texan Biotic Province which is in general an ecotonal region between the more mesic Austroriparian Biotic Province to the east and the more xeric Balconian and Kansan Biotic Provinces to the west. Bottomlands associated with the Trinity River and its tributaries provide migration routes for the more mesic adapted species characteristic of eastern Texas. The White Rock Escarpment functions as an access route from the Lampasas Cut Plains for species characteristic of the northern part of the Balconian Biotic Province. Few, if any, species characteristic of the Kansan Biotic Province occur on the park site because suitable edaphic substrates for such species are not present. Under natural conditions Eagle Ford-derived soils would develop Blackland Prairies with gallery woodlands along drainages and wooded areas on steeper slopes. Austin-derived soils normally support scarp woodlands along slopes; prairie areas would develop upon flat areas of the Austin (none occur within the park site).

Creek bottom woodlands occur along the lower reaches of small drainages. Best development of this woodland exists along Baggett Branch. Dominant trees are pecan (*Carya illinoensis*), green ash (*Fraxinus pennsylvanica*), bois d'arc (*Maclura pomifera*) and Texas sugarberry (*Celtis laevigata*). Also present is white buckeye (*Aesculus arguta*).

Gentle slopes and rolling hills support both open and closed woodlands and grasslands. Such variation in plant cover is partially due to land use history although some natural variability probably existed as a function of variable slope, solar exposure and disturbance (particularly fire) history. Wooded slopes support cedar elm (*Ulmus crassifolia*), honey locust (*Gleditsia triacanthos*) and Texas sugarberry. Also present are gum elastic (*Bumelia lanuginosa*) and western soapberry (*Sapindus saponaria* var. *drummondii*). Some invasion by mesquite (*Prosopis glandulosa* var. *glandulosa*) has occurred. Understory is dominated by coralberry (*Symphoricarpos orbiculatus*).

Several areas of remnant tall-grass prairie are present. The plots are dominated by big bluestem (*Andropogon gerardi*), Indian grass (*Sorghastrum nutans*), little bluestem (*Schizachyrium scoparium*) and rosin-weed (*Silphium albiflorum*). Utilization of these plots as hay meadows (as opposed to cultivated agricultural fields) allowed their preservation. These areas form the most significant biological resource of Lakeview State Park.

Areas previously cleared now supported open mesquite woodlands or savannahs with much buffalo grass (*Buchloe dactyloides*). Certain areas are dominated by grasses with heavy representation by the non-native weed, Johnson grass (*Sorghum halepense*).

A lower scarp woodland occurs on the upper part of the Eagle Ford. This woodland is dominated by cedar elm but also supports shin oak (*Quercus sinuata* var. *breviloba*), spring herald (*Forestiera pubescens*), skunkbush (*Rhus aromatica*), Texas sugarberry and Texas ash (*Fraxinus texensis*).

An upper scarp woodland occurs on the lower part of the Austin Chalk. Dominant trees are Texas ash, mountain juniper (Juniperus ashei) and shin oak. Also present is eastern redbud (Cercis canadensis var. canadensis), gum elastic, cedar elm, Mexican buckeye (Ungnadia speciosa), wing-rib sumac (Rhus copallina), Texas oak (Quercus texana), western soapberry, poison ivy (Rhus toxicodendron), Virginia creeper (Parthenocissus quinquefolia) and greenbrier (Smilax bona-nox). Less common species include rough-leaf dogwood (Cornus drummondii), Mexican plum (Prunus mexicana), Eve's necklace (Sophora affinis), prickly ash (Zanthoxylum hirsutum) and Texas mulberry (Morus microphylla).

A summit woodland occurs on the flat to gently sloping top of the Austin Chalk. Dominant trees are Texas oak, shin oak and mountain juniper. Also present are red bud, white buckeye, poison ivy, rusty blackhaw (Viburnum rufidulum), Texas acacia (Acacia texensis), Alabama supplejack (Berchemia scandens) and eastern red cedar (Juniperus virginiana).

Wildlife resources of Lakeview State Park appear to be rather meager. Fox squirrels (Sciurus niger) and armadillos (Dasypus novemcinctus) occur in moderate abundance. Most common birds are turkey vulture, red-tailed hawk, common crow, scissor-tailed flycatcher, cardinal and Carolina chickadee.

REGULATIONS

No Threatened, Endangered or Protected Non-Game Species are known to occur in the park area. With the exception of migratory bird species, none are expected.

No wetlands subject to U.S. Army Corps of Engineers jurisdiction (Section 404) occur on the park. Following impoundment structures placed in water of Joe Pool Lake will be subject to such scrutiny.

RESOURCE MANAGEMENT

To maintain or preserve the prairie resources of, Lakeview State Park certain management measures must be implemented. The objective is to maintain the unbroken prairie sod and to maintain a naturally diverse grassland community. All applied management will stimulate natural events which collectively influence the dynamics and composition of grasslands.

Natural fires can be simulated by prescribed burning practices in compliance with the appropriate Air Quality Control Board requirements. At least initially, all burning shall be during dormant periods. The blocks should not be burned simultaneously and for maximum diversity should not be burned in the same season or, in fact, year. Firelanes should not be emplaced within any of the meadow units. Inside firelanes would unnecessarily disturb the few, rare remaining tracts. The initial evaluation for use of prescribed burning for the hay meadows will be at the end of the 82-83 growing season. Should burning be deemed appropriate, the initial action will occur during winter 83-84, after which further evaluation will occur and burn prescriptions developed accordingly. Highest management priority is to remove woody vegetation, i.e., mesquite and cedar elm, by hand removal and basal stump treatment (chemical).

Under natural conditions, these prairies were influenced by free ranging grazing animals. Confined, restricted grazing will destroy this community as surely as will breaking the sod. Therefore, such grazing should be avoided.

These prairie remnants were preserved because they were managed as natural hay meadows, an activity which simulates grazing by large herbivores. Use of this ecologically compatible method will provide additional interpretive value. Hay should not be harvested continuously nor more than one cutting per year (5" stubble height should be specified). Haying the meadows should be accomplished by contract according to specifications prepared by resource management.

To avoid unnecessary disturbance on the valuable hay meadows, all vehicular access should be curtailed. Even minimal vehicular traffic is causing significant erosion; stabilization will occur if further vehicular access is prohibited.

Old field tracts may be maintained as cropland if compatible with park development and public utilization. Specific crops and specifications shall be developed by Resource Management as components of contractual agreements with private parties.

The shoreline created by Joe Pool Lake can be enhanced both aesthetically and biologically by selected tree planting, especially adjacent to use areas. Recommended species are Eastern Cottonwood (Populus deltoides), pecan (Carya illinoensis) cedar elm (Ulmus crassifolia), or burr oak (Quercus macrocarpa).

CULTURAL RESOURCES ANALYSIS

LAKEVIEW PARK SITE Cultural Resources Analysis

The Upper Trinity River Basin has produced a number of archeological sites considered important to both regional and national perspectives. The park site, located immediately east of Mountain creek, a north flowing tributary of the Trinity, does not have the assortment of cultural resources found elsewhere in Texas but does contain three sites of major importance. Both standing historic structures and sub-surface archeological features attest to the past importance of this area.

CULTURAL RESOURCES INVESTIGATIONS

Both intensive survey and testing projects have been accomplished (Skinner and Connors, 1979; Rabb, Bruseth and McIntyre, 1979; Ferring and Reese, 1979; Rabb, McGregor and McIntyre 1979; Ferring and Reese, 1980; Rabb, McIntyre, Bruseth, and McGregor, Ferring and Reese, 1982) and a final mitigation plan to be prepared by the United States Army, Corps of Engineers, is pending. Preliminary reports detail three significant cultural resources located on the park property. Two are dated to the historic period and one is a prehistoric habitation site dating to the Neo-American Stage (A.D. 800-A.D. 1500). Additional information will be available after the planned excavation phase is accomplished in 1983. At this time, all three (3) sites are pending nomination to the National Register of Historic Places.

SITE DATA

The Baggett Branch site (41 DL 149) is located on the left or west bank of Baggett Branch (540 ft/msl), an intermitant tributary of Mountain Creek in both a heavily wooded area and previously plowed field. A well-developed dark midden deposit is being cut by creek bank erosion during heavy runoff exposing animal bone, mussel shell, charcoal and occasionally pottery and lithic debitage.

Testing by Southern Methodist University exposed a 30 cm thick deposit with the major portion of the site lying on a low ridge in the southern wooded area. A deep (90 cm) refuse pit containing bone, shell, charcoal and fire-cracked rocks was the only feature encountered during testing. Charcoal from this pit provided a radiocarbon date of 1200 A.D. (TX 4001). Artifacts include engraved, grit tempered ceramic pottery sherds and both Alba and Perdiz arrow points. Faunal remains include deer, bison, cottontail, bird, rat, vole and aquatic species indicating an annual temperature above 55°F, a growing season of 180 days or more, a transition zone habitat of mixed grasslands, hardwood forests, and plenty of fresh water.

The significance of the site lies in its undisturbed nature and its ability to answer certain scientific questions. The site is not suited for interpretation but may be easily managed with a minimum of erosion control. No impact is anticipated from construction or park visitor activities at this time.

The Anderson site (41 DL 190) is located on the edge of the large cultivated flat overlooking Mountain Creek to the west and just above a still flowing spring. The site was settled in 1859 by Napoleon Bonaparte Anderson (born 1825 in Kentucky) who moved to Texas and married Mary Jane Penn in that same year. A rich legacy of marriage-linked families, intra-family strife over the Civil War and mild eccentricity is borne out by oral tradition while excavations and standing structures testify to the complex growth and wealth of this 2000 acre plus "plantation."

Structures include an old barn, a vaulted spring box and cellar, smokehouse firebox, mainhouse and other assorted outbuildings. Additional in-situ features including the original cabin built in 1859 can be expected in the immediate vicinity and can only add to the significance of this historic complex. The main house burned in the 1940's.

Park facilities development should be prohibited within 100 m of the known features and an archeological monitoring program will be required during all construction activities that include sub-surface land modification. Management problems should be minimal unless wind generated waves erode the lower portion of the site. The vaulted cellar should be stabilized and included as part of the interpretive program.

The Penn site (41 DL 192) consists of thirteen structures and associated cisterns, wells (hand-dug), water tanks, stock tanks, windmills, and corrals located along the northwestern edge of a flat below the White Rock Escarpment in much the same environmental setting as the Anderson place. This is a unique family farm complex dating from the 1850's to the 1960's with family members still present in the area who are able to provide information concerning previous lifeways (Dolman, 1977). Although vandalism has marred the quality of the complex, the condition of many structures makes preservation and interpretation of the site feasible.

Statements concerning testing results and Corps of Engineer mitigation plans are forthcoming and will be reviewed by park planners, the Texas Historical Commission, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation to ensure compliance with state and federal regulations.

The significance of these resources is reflected by the proposed declaration of eligibility for inclusion on the National Register of Historic Places for all three (3) sites. This unusually rich cultural milieu dictates that impact from future park development for recreational facilities be carefully weighed against damage to these fragile, non-renewable resources.

REFERENCES CITED

- Dolman, W. E.
1977 Notes from a tape recorded interview with Mrs. Andy (Deetta) Penn and Mr. and Mrs. Lovell Penn, October 27, 1977. MS on file with the Texas Parks and Wildlife Department, Austin.
- Ferring, C. Reid and Nancy Reese
1980 Archeological Investigations at Four Historic Sites within the Lakeview Reservoir Area, Dallas County, Texas. Draft report submitted to the Army Corps of Engineers, Ft. Worth District.
- Raab, L. Mark, James E. Bruseth and Alan J. McIntyre
1980 Archeological Testing at Lakeview Lake, 1979: Human Use of the Land. Draft report submitted to the Army Corps of Engineers, Ft. Worth District by the Southern Methodist University.
- Raab, L. Mark, Alan J. McIntyre, James E. Bruseth, Daniel McGregory, C. Reid Ferring and Nancy Reese
1982 The Archeology of Lakeview Lake, Texas: The Human Use of the Land. Southern Methodist University, Archeology Research Program, Archeological Monographs No. 2, Dallas, Texas.
- Skinner, S. Alan and Deborah T. Connors
1979 Archeological Investigations at Lakeview Lake. Archeological Research Program, Research Report No. 118, Southern Methodist University, Dallas, Texas.

ENVIRONMENTAL ANALYSIS REFERENCE

A detailed environmental analysis of the park site was completed as part of the Master Planning process. Below is an abbreviated table of contents of the analysis. A copy of the environmental analysis may be reviewed or obtained at the Texas Parks and Wildlife Department's Master Planning Branch.

MASTER PLANNING PROCEDURES

- Analysis of the Master Plan

Values Studies

- Conservation Series

 - Vegetation Values Map

 - Wildlife Values Map

 - Aesthetic Values Map

 - Archeological-Historical Values Map

 - Conservation Composite Map

- Development Series

 - Soil Values Map

 - Soil Survey Map

 - Gradients Map

 - Hydrography Map

 - Existing Culture Map

 - Development Composite Map

Planning

 - Coincidental Values Map

 - Recreational Values Map

 - Land Use Composite Map

 - Land Use Plan

CULTURAL RESOURCE ANALYSIS

GENERAL INFORMATION

- Utilization Analysis

- Projected Visitation

- Vegetation Checklist

- Wildlife Checklist

- Climatological Data

SWDPL-R (28 Jun 79) 5th Ind

SUBJECT: Lakeview Lake, Mountain Creek, TX, Design Memorandum No. 11 (Revised)
Master Plan

DA, Southwestern Division, Corps of Engineers, 1114 Commerce Street,
Dallas, TX 75242 10 Jul '81

TO: Commander, Fort Worth District

The subject plan is approved.

FOR THE COMMANDER:


BARRY G. ROUGHT, P.E.
Chief, Planning Division

wd incl

CF:
DAEN-CWO-R

Please include the attached basic letter and 1st Indorsement thereto in your copy of DM 11, Master Plan (Revised). The 2d, 3rd, and 4th Indorsements should already be in your copy of the Revised DM. The attached basic letter and 1st Indorsement will complete the chain of correspondence.



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102

REPLY TO
ATTENTION OF:

SWFED-PR / SWFED-DC

28 June 1979

SUBJECT: Lakeview Lake, Mountain Creek, Texas, Design Memorandum No. 11,
Master Plan

Division Engineer, Southwestern

1. Design Memorandum No. 11, Master Plan, for the development and management of the Lakeview Lake project is submitted for your review and approval.
2. The development of this master plan has been closely coordinated with the Trinity River Authority.
3. The preliminary layout and cost estimates for the State Park area are included to get an indication of the scale of the total recreational development program. This master plan will be supplemented with the State's final plan after we have reviewed and approved their master plan. Receipt of this final plan is expected in January 1981.
4. The plan is being submitted for coordination to the Trinity River Authority and the Texas Parks and Wildlife Department concurrently with SWD review.

1 Incl (9 cys)
as

A handwritten signature in black ink, reading "Donald J. Palladino", is positioned above the typed name.

DONALD J. PALLADINO
Colonel, CE
District Engineer

(50 copies prepared)

SWDPL-R (SWFED/PR/SWFED-DC 28 Jun 79) 1st Ind
SUBJECT: Lakeview Lake, Mountain Creek, Texas, Design Memorandum No. 11,
Master Plan

24 SEP 1979

DA, Southwestern Division, Corps of Engineers, Main Tower Building,
1200 Main Street, Dallas, TX 75202

TO: District Engineer, Fort Worth

1. The Lakeview Master Plan is returned pending resolution of the need for a road across the top of the dam. As the dam crest will be 30-feet and that a road will be constructed on the crest for maintenance vehicles, it appears we are being remiss in not opening the road to the public. The alternative of access from one side of the lake to the other is to route vehicles back to I-20 or local county roads. The I-20 route is lengthy and the quality of the local county roads are in question. In essence, if the top of the dam is not opened to public vehicles, those individuals utilizing Lynn Creek, Webb and Mountain Creek Parks will be essentially cut-off from the visitors' center.

2. The impact on existing/completed design will be nominal since a 30-foot roadway (two 12-foot lanes with 3-foot shoulders) is acceptable where the speed limit is reduced.

3. In the interim, pending resolution of the above, the following comments are furnished for necessary corrections or additional explanation,

a. Para 2-03, Project Features and Structures. Dimension for conduit and gates are stated incorrectly. Correct as follows: Conduit dimensions should be 10'6" rather than 10' x 6." Slide gate dimensions should be 4'9" x 10'6" rather than 10' x 6."

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d. Para 4-08, Thermal Stratification. This paragraph should be revised to recognize that, at certain times, the selective level outlet works will not have the capacity to release all discharges. In these cases, lower quality water will be released. It should be mentioned that stratification may or may not occur. Figure IV-1 is not believed representative of Lakeview and should be deleted or corrected.

e. Para 4-12, Borrow Areas. Some explanation should be included in this paragraph as to why these borrow areas are above the conservation pool.

SWDPL-R (SWFED-PR/SWFED-DC 28 Jun 79) 1st Ind
SUBJECT: Lakeview Lake, Mountain Creek, Texas, Design Memorandum No. 11,
Master Plan

f. Table V-5, Summary of resource Requirements for Recreation Facilities in Torp Regions 10 & 11. Portions of this table are contradictory. For instance it shows no Urban Resource Requirements in 1980 for fishing facilities or swimming beaches yet indicates a need for 3,008 acres of recreation water. Under Rural Resource Requirements for 1980 a need is expressed for fishing facilities and swimming beaches yet there is no need for recreation water. Contradictions should be resolved or the table should be deleted.

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h. Para 8-14, Park Descriptions. A sentence should be included in each park description as to who will be responsible for the development and/or management.

i. Plate VIII-3, Britton Park. Since this boat ramp is the only free access point on the lake, it is questionable that 60 car-trailer parking spaces will be adequate. Consideration should be given to expanding the amount of parking.

j. Para 9.04, 9.05, 9.08 - should be 9-04, 9-05 and 9-08 for consistency.

k. Para 9-03, Siting. All buildings requiring heat or domestic hot water should be sited to utilize solar systems.

l. Para 9-07, Roads. This paragraph needs to be expanded to discuss access and circulation roads between parks, and the parks and the proposed visitor center especially from Lynn Creek and Webb Parks. In addition, the District needs to consider a road across the top of the dam in reference to the excellent view of the lake and access to the proposed recreational features.

m. Para 9-08.6, Parking Space. The dimensions for 45 degree car-trailer spaces appear to be in error.

n. Table X-1, Initial Development. The 30 and 31 Accounts do not include the \$148.5 for Account 30 and \$132.5 for Account 31 that is shown in the 3rd and 4th lines of estimate on page X-4. (Also, the \$844.6 for the 31 Account on page X-5 is not in agreement with \$944.6 shown in second 31 Account on page X-4). On page X-5 the total initial development is shown as \$29,112.7. It should be \$29,393.7 with the 148.5 E&D and 132.5 S&A added as mentioned above. This would agree plus or minus with the sum of:

Table X-16	2,069.0
Table X-19	12,434.7
Table X-20	<u>14,890.0</u>
	29,393.7

SWDPL-R (SWFED-PR/SWFED-DC 28 Jun 79) 1st Ind
SUBJECT: Lakeview Lake, Mountain Creek, Texas, Design Memorandum No. 11
Master Plan

There are too much cost data and figures in this section. There should be some way to display this with less confusion.

o. Para 12-4, Park Areas. Reference is made to ER 1105-2-835, It is believed that the regulation should be ER 405-2-835. This paragraph also references ER 405-2-12; there is no such regulation,

p. Para 15.04.d., Grazing/Burning/Haying. It is indicated that controlled grazing may be allowed by short-term lease or permit systems. The Corps has no authority to allow grazing by permit, therefore, reference to permit in this paragraph should be deleted.

q. Para 17-08.e.3, Grazing. Same comment as p. above.

FOR THE DIVISION ENGINEER:



BARRY G. ROUGHT, P.E.
Chief, Planning Division

1 Incl
as

SWFED-DC (SWFED-PR/SWFED-DC 28 Jun 79) 4th Ind
SUBJECT: Lakeview Lake, Mountain Creek, TX, Design Memorandum No. 11 (Revised)
Master Plan

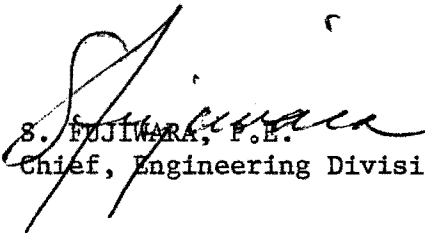
DA, Fort Worth District, Corps of Engineers, PO Box 17300, Fort Worth,
Texas 76102 28 May 1981

TO: Division Engineer, Southwestern, ATTN: SWDPL-R

We concur with the comment in the preceding 3d indorsement and paragraph 7-17,
page VII-5 has been revised accordingly. Paragraph 8-5, page VIII-6 has also
been revised as requested by Mr. Harold Green, SWDPL-R, in a telephone conversa-
tion on 29 May 1981. Revised pages are inclosed.

FOR THE DISTRICT ENGINEER:

1 Incl
wd incl 2
Added 1 incl
3. Rev pages


S. FUJIWARA, P.E.
Chief, Engineering Division

7-17. Hunting Restrictions.

a. During development of this master plan, consideration was given to providing opportunities for hunting and other wildlife oriented activities. According to the U. S. Fish and Wildlife Service and the Texas Outdoor Recreation Plan (TORP), hunting opportunities are in short supply for residents of the Dallas-Fort Worth urban area. On the other hand, Lakeview Lake offers a unique opportunity for the development of wildlife resources for non-consumptive uses. Such uses could be used by numerous schools and by organizations interested in observing, studying, photographing and painting the various landscapes and associated wildlife which exist in this ecological transition area of the north-central Texas prairie.

b. Currently, a major portion of the project area is within the existing corporate limits of the cities of Dallas, Grand Prairie, Arlington, Cedar Hill and Mansfield. Due to the rapid urbanization in the area, the corporate limits are expected to continue to expand. Regardless of whether corporate limits expand, adjacent lands are expected to be developed for residential purposes. Because of its location, the project is expected to receive heavy recreation use by area residents, both on developed and undeveloped areas.

c. Because of the factors described, the opportunities for hunting will likely be limited; however, to the extent feasible, such opportunities will be provided. A plan will be developed and updated annually, in cooperation with fish and wildlife agencies, local sponsors and the affected public. The plan will designate the areas available for hunting and constraints imposed.

7-18. Fishing. Fishing in accordance with State laws and regulations will be permitted for all fish species on all water areas except in swimming areas and other restricted use areas shown on the water use map.

7-19. Management of environmental and recreational resources.

a. General. The concept underlying the management of project resources is to conserve, improve, and manage the resources for their best use and proper stewardship for the benefit of the general public. The intent of this section is to present the objectives for management of each project resource. It will serve as a guide until a more detailed resource plan can be developed. These objectives will be met by employing the most modern resource management techniques available. This will include, but not be limited to, controlling soil erosion, enhancing the vegetative cover for erosion control, providing wildlife habitat, increasing forage production, and providing for high quality public use. Specific management plans for the various resources will be developed by the project office following an on-site survey; they will be submitted as an appendix to this master plan.

b. Archeological and historical. The objective of an archeological and historical management program is to protect and preserve the archeological and historical resources associated with the project. During the development of the program, the Corps of Engineers will seek cooperation from the National Park Service, State universities, and State and county historical societies and commissions. In addition, the Corps of Engineers will exert every effort to develop an archeological and historical program agreeable to all cooperating agencies so that the maximum benefits can be obtained.

c. Scenic. In developing the scenic resources, the purpose is to provide sensory pleasure to the majority of the visitors. Since a water resource project of this type greatly modifies the environment, the primary objective will be to minimize the impact of the project on the environment by protecting existing resources. In addition, a landscaping and beautification program will be initiated to harmonize facility development with its environs; it will be designed to emulate as far as practical the esthetically pleasing "natural" environment presently existing within the project area.

d. Soils. The primary objectives in developing a soil resources management program will be conservation, improvement, and enhancement. Improvement and development of the soil resources will be accomplished by controlling erosion on graded and disturbed areas, stabilizing gullies, and establishing and maintaining desirable vegetative cover.

e. Vegetation. The basic objective of a vegetative management program is to provide stewardship of the land and resources through protection, improvement, and management of vegetative cover. This will be accomplished by planting, maintaining, and improving desirable trees and grasses. It is essential that desirable trees and

hills. Tree species are medium to large and include mesquite, pecan, hackberry, Bois d'arc, and oak. Access to Lakeview State Park from FM Road 1382 will be excellent. Final plans will be submitted by the State in January 1981. Operation and maintenance of this park will be the responsibility of Texas State Parks and Wildlife.

b. Pleasant Valley Park (no plate) - 224 acres.- Pleasant Valley Park is located on the east side of Lakeview Lake. This park is designated as an interim wildlife area, managed by the Corps of Engineers. Major terrain features are moderately undulating to rolling hills. There are no densely tree-covered areas of any size. Approximately 25 percent of the area is scattered mesquite. Access to Pleasant Valley Park is good from U.S. Highway 67.

c. Britton Park (Plate VIII-3) - 129 acres.- Britton Park is located on the southwest side of Lakeview Lake adjacent to the city of Britton. Recreational use will comprise the conversion of the abandoned T&NO Railroad trestle into a fishing pier, a waterborne toilet, a two lane boat ramp, a trailer turnaround, and parking areas for fishing and boating. The area north of Road No. 1 will be used for interim wildlife management. The terrain is flat and mostly cropland. Very few trees exist in the park area. Access to Britton Park is good from County Road 2020 and fair from U.S. Highway 287. Access to this area will be free. Developed areas of the park will be managed and operated by TRA. Remaining lands will be handled by the Corps of Engineers.

d. Low Branch Park (no plate) - 155 acres.- Low Branch Park is located on the west side of the Mountain Creek arm of the lake and is bordered on the west by County Road 2020. The terrain is flat, and there are few trees. This site will be developed for interim wildlife use. Access is fair from U.S. Highway 287 by County Road 2020. Management by Corps of Engineers.

e. Estes Park (Plates VIII-4, VIII-5, VIII-6, VIII-7) - 1,030 acres.- This park is located at the tip of the peninsula created by Walnut Creek and Mountain Creek. The park is planned for future development, high-use recreation. Until demand warrants development, Estes Park will be treated as wildlife management lands. Management will be by the Corps of Engineers. As development occurs management will switch over to the Trinity River Authority. This park may prove to be attractive to large municipal or commercial endeavors, such as a resort complex, golf course, marina, or shoreline amusement park, to name a few. Proposals by responsible groups or individuals should be encouraged. Terrain is primarily flat or near flat with the exception of the western edge, which is very steep along the shoreline. The narrow strip along Walnut Creek is densely tree-covered. Much of the remaining area is in cropland. Access to this park will be by the proposed relocated road 2148. County Road 181 will provide access from both Interstate Highway 20 and U.S. Highway 67.

f. Loyd Park (Plates VIII-8 and VIII-9) - 791 acres.- Loyd Park will be a high-use recreational area with circulation roads, parking areas, waterborne toilets, swimming beaches, camp sites, trails, concessions and other facilities as shown on Plates VIII-8 and VIII-9. Loyd Park will have the highest amount of development of all the TRA parks. Facilities will be first class and reflect the current 'state of the art' for facility design and layout. In short, it will be considered a model park. It is located on the west side of the lake, south of Lynn Creek Park. The terrain is mildly undulating. Approximately 60 percent of the park is densely tree covered with the remaining acreage in undisturbed pasture. Access to Loyd Park will be provided by County Road 2017. Interstate 20 is approximately 6 miles to the north of the park, and U.S. 287 approximately 7 miles to the south. Proposed Highway 360 will be within 2 miles west of the park. Management and operation of Loyd Park will be by the Trinity River Authority.

g. Lynn Creek Park (Plates VIII-10 and VIII-11) - 784 acres.- Lynn Creek Park will have a high initial development along the shoreline with excavated marina, picnic facilities, beach and boat ramps. This park should be a high revenue producing facility for TRA. Development should be first class to assure this. Lynn Creek Park is located adjacent to the embankment on the northwest side of the lake. The terrain is flat. Tree cover comprises approximately 10 percent of the area, with the remaining 90 percent in croplands. Tree cover is primarily mesquite with scattered hardwoods. Undeveloped lands will be prepared for wildlife enhancement and managed by the Corps of Engineers. TRA will manage and operate all developed lands. Access will be good from the embankment road and proposed relocated Road 2148.

8-15. Historical features.- There are four properties at Lakeview that may be of value to recreation use. Two, the Penn and Anderson sites, contain buildings that may be incorporated into Lakeview Lake State Park. Another, the Loyd site is located in Loyd Park and may, after study, prove to be of interpretative value. The last site, surrounded by Lynn Creek Park, is a small cemetery that will be protected and restored.

SWDPL-R (28 Jun 79) 3d Ind

SUBJECT: Lakeview Lake, Mountain Creek, TX, Design Memorandum No. 11 (Revised)
Master Plan

DA, Southwestern Division, Corps of Engineers, 1114 Commerce Street,
Dallas, TX 75242

13 MAY 1981

TO: District Engineer, Fort Worth

1. Reference undated letter from Mr. W. Ellis Klett, Area Manager, Austin Area Office, Fish and Wildlife Service, a copy of which is inclosed.

2. The following comment is furnished:

Para 7-17, p VII-5. The paragraph recognizes the need for hunting in the area and the desires of the Fish and Wildlife Service that it be provided. However, hunting is precluded for several listed reasons. Normally, areas to be open to hunting are decided on a year-to-year basis, governed on circumstances, thus the Master Plan would not preclude hunting except in unusual situations. Unless the circumstances are such that hunting would never be feasible on the project, the discussion should be revised to recognize the anticipated limitations but recognize that hunting may be allowed, to some extent.

FOR THE DIVISION ENGINEER:

1 Incl
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2. as


BARRY C. ROUGHT, P.E.
Chief, Planning Division



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

300 East 8th St., Rm. G-121
Austin, Texas 78701

Brig. General Hugh Robinson
Division Engineer, Southwestern
Corps of Engineers
Main Tower Bldg, 1200 Main Street
Dallas, Texas 75202

Dear General Robinson:

It is our understanding that your staff is currently reviewing the Master Plan for Lakeview Lake, Texas (Design Memorandum No.11). We wish to bring to your attention that the text on page VII-5 of the document precludes hunting activities at the project.

Our Fort Worth Field Office has transmitted its concern about the hunting restrictions at Lakeview Lake to the District on February 18, 1981. The District staff responded with a suggestion that any changes in hunting restrictions could be addressed in a supplement to the master plan.

We are aware that the District desires to transfer responsibilities for management at Lakeview Lake to the project sponsor (Trinity River Authority). We agree that decisions regarding hunting restrictions at the project should include input from the sponsors and cities which may annex the project area in the future. However, the project lands will remain in Federal ownership, and will be used only to promote authorized project purposes.

The District has done a commendable job of acquiring most of the project lands in fee simple, pursuant to the 1962 Joint Land Acquisition Policy between our two departments. The agreement was developed to assure public access to Federal property for recreation purposes, which include hunting. The upper reaches of Lakeview Lake are in a rural area, where legal harvest of game species should be allowed.

In regards to the hunting issue, we request that your approval of the Lakeview Lake Master Plan be subject to a reanalysis of the hunting issue, pursuant to the concerns of this agency. If you have any questions regarding this request, please do not hesitate to contact me.

Sincerely,

Ellis Klett
Area Manager

cc: FWS, Fort Worth, TX (ES)
TPWD, Dallas, TX

SWDPL-R (SWFED/PR/SWFED-DC 28 Jun 79) 1st Ind
SUBJECT: Lakeview Lake, Mountain Creek, Texas, Design Memorandum No. 11,
Master Plan

24 SEP 1979

DA, Southwestern Division, Corps of Engineers, Main Tower Building,
1200 Main Street, Dallas, TX 75202

TO: District Engineer, Fort Worth

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SWDPL-R (SWFED-PR/SWFED-DC 28 Jun 79) 1st Ind
SUBJECT: Lakeview Lake, Mountain Creek, Texas, Design Memorandum No. 11,
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h. Para 8-14, Park Descriptions. A sentence should be included in each park description as to who will be responsible for the development and/or management.

i. Plate VIII-3, Britton Park. Since this boat ramp is the only free access point on the lake, it is questionable that 60 car-trailer parking spaces will be adequate. Consideration should be given to expanding the amount of parking.

j. Para 9.04, 9.05, 9.08 - should be 9-04, 9-05 and 9-08 for consistency.

k. Para 9-03, Siting. All buildings requiring heat or domestic hot water should be sited to utilize solar systems.

l. Para 9-07, Roads. This paragraph needs to be expanded to discuss access and circulation roads between parks, and the parks and the proposed visitor center especially from Lynn Creek and Webb Parks. In addition, the District needs to consider a road across the top of the dam in reference to the excellent view of the lake and access to the proposed recreational features.

m. Para 9-08.6, Parking Space. The dimensions for 45 degree car-trailer spaces appear to be in error.

n. Table X-1, Initial Development. The 30 and 31 Accounts do not include the \$148.5 for Account 30 and \$132.5 for Account 31 that is shown in the 3rd and 4th lines of estimate on page X-4. (Also, the \$844.6 for the 31 Account on page X-5 is not in agreement with \$944.6 shown in second 31 Account on page X-4). On page X-5 the total initial development is shown as \$29,112.7. It should be \$29,393.7 with the 148.5 E&D and 132.5 S&A added as mentioned above. This would agree plus or minus with the sum of:

Table X-16	2,069.0
Table X-19	12,434.7
Table X-20	14,890.0
	<u>29,393.7</u>

SWDPL-R (SWFED-PR/SWFED-DC 28 Jun 79) 1st Ind
SUBJECT: Lakeview Lake, Mountain Creek, Texas, Design Memorandum No. 11
Master Plan

There are too much cost data and figures in this section, There should be some way to display this with less confusion.

o. Para 12-4, Park Areas, Reference is made to ER 1105-2-835, It is believed that the regulation should be ER 405-2-835. This paragraph also references ER 405-2-12; there is no such regulation,

p. Para 15.04.d., Grazing/Burning/Haying, It is indicated that controlled grazing may be allowed by short-term lease or permit systems. The Corps has no authority to allow grazing by permit, therefore, reference to permit in this paragraph should be deleted.

q. Para 17-08.e.3, Grazing. Same comment as p. above.

FOR THE DIVISION ENGINEER:



BARRY G. ROUGHT, P.E.
Chief, Planning Division

1 Incl
as

SWFED-DC/SWFED-PR (28 Jun 79) 2d Ind
SUBJECT: Lakeview Lake, Mountain Creek, Texas, Design Memorandum No. 11
(Revised) Master Plan

DA, Fort Worth District, Corps of Engineers, PO Box 17300, Fort Worth,
Texas 76102

5 FEB 1981

TO: Division Engineer, Southwestern

1. Submitted for review and approval are nine copies of Design Memorandum No. 11, Master Plan (Revised). The revised Design Memorandum incorporates the public road across the dam, change of the name of Webb Park to Loyd Park and Mountain Creek Park to Estes Park, and changing Lynn Creek Park to initial development and Estes Park to future development.

2. Responses to comments in preceding 1st indorsement are presented in the following paragraphs.

a. Paragraphs 3a, 3b, 3c, 3d, 3e, 3g, 3h, 3j, 3k, 3l, 3m, 3n, 3o, 3p, and 3q.- Concur, see revised Design Memorandum inclosed.

b. Paragraph 3f.- The data presented in Table V-5 were extracted verbatim from the Texas Outdoor Recreation Plan (TORP) of 1975. It is impossible for us to verify the accuracy of the TORP because of the trade-offs inherent in its formulation. However, we do not believe that the Table is contradictory. Fishing facilities and swimming beaches are not considered as urban recreation type activity in the TORP and, therefore, no needs are shown for these activities. There is an additional need for recreation water to meet the needs of the urban users; however, there is sufficient water to meet the needs of the people who reside in the rural area.

c. Paragraph 3i.- This comment questions the adequacy of 60 car-trailer parking spaces at the Britton Park boat ramp. This boat ramp has more than twice the ratio of car-trailer parking spaces per launching lane than other launching facilities at the project. This is thought to be more than adequate according to current standards.

3. This Master Plan envisions that the Trinity River Authority (TRA) will only have operation and maintenance responsibilities in areas where recreation facilities are provided. We have proposed to TRA that they assume operation and maintenance responsibilities for all project lands other than those identified for project operations use, as shown on the Land Use Allocation Plan, Plate VII-1. This action is being taken because it will minimize the Corps operation and maintenance responsibilities and, thereby, reduce Federal cost and personnel requirements. If we are successful in getting TRA to assume additional management responsibilities, then this requirement will be included in the forthcoming supplement which will make the Texas Parks and Wildlife Department's (TPWD) Master Plan an appendix to our plan. The TPWD's Plan was expected in January 1981 but is currently scheduled for completion in July 1981.

SWFED-PR (28 Jun 79). 2d Ind

5 FEB 1981

SUBJECT: Lakeview Lake, Mountain Creek, Texas, Design Memorandum No. 11
(Revised) Master Plan

4. The assumption of additional management responsibilities by TRA will not necessitate a change in the plan of recreation facility development from that envisioned in this plan. Approval of this Master Plan will allow us to proceed with the more detailed recreation design as required for the Recreation Feature Design Memorandum and will help to assure that the recreation facilities are complete when the project becomes operational.



DONALD J. PALLADINO
Colonel, CE
District Engineer

1 Incl (9 cys)
as

Trinity River Basin, Texas
Design Memorandum No. 11
Master Plan (Revised)
For
Lakeview Lake
Mountain Creek, Texas

This report, prepared in the Planning Branch of the Engineering Division, Fort Worth District, has been coordinated with the Real Estate Division and the Operations Division and is recommended for approval.

Michael B. Cottrell

Chief, Real Estate Division

Alvin Malone

Chief, Operations Division

Summary

1. This master plan is intended as a comprehensive guide for the orderly and coordinated development and management of the land and water areas of the project. The Corps of Engineers will jointly develop recreation facilities with the Trinity River Authority of Texas and the Texas Parks and Wildlife Department under the authority of Public Law 89-72.
2. The project's authorized purposes are flood control, water supply, recreation, and fish and wildlife conservation.
3. The project is located on Mountain Creek (river mile 11.2) a tributary of the West Fork of the Trinity River approximately 10 miles southwest of Dallas, Texas. The dam and lake areas lie in portions of Dallas, Tarrant, and Ellis Counties. It is a temperate region of long, warm summers and short, mild winters. The lake will be principally situated in the Blackland Prairie, an area characterized by flat, mature valleys. The lake will inundate 7,470 acres at its conservation pool elevation of 522.0 msl.
4. The project is currently under construction and is scheduled for completion in 1985.
5. In order to maintain the quality of the recreational experience, the capacity of the land and the water to sustain such use have been analyzed, and limitations have been imposed. The optimum capacity was estimated to be 6,300,000 recreation days annually.
6. All or portions of four parks will be developed initially to accommodate 3,800,000 recreation days annually. The initial recreation development will include, but not be limited to, roads, parking areas, boat launching ramps, sanitary facilities, and public camping and picnic areas.

TRINITY RIVER BASIN, TEXAS

DESIGN MEMORANDUM NO. 11 (REVISED)

MASTER PLAN
FOR
LAKEVIEW LAKE
MOUNTAIN CREEK, TEXAS

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TRINITY RIVER BASIN, TEXAS

MOUNTAIN CREEK
TRIBUTARY TO
TRINITY RIVER, TEXAS

LAKEVIEW LAKE

STATUS OF DESIGN MEMORANDA

Design:	:	:	:
Memo :	:	Date :	SWD : OCE
No. :	Title	Submitted:	Approval : Approval
1	Hydrology	24 Oct 68	10 Dec 68 20 Feb 69
	Supplement No. 1	17 Nov 69	19 Dec 69 19 Mar 70
	Supplement No. 2	13 Sep 74	13 Feb 75 Not Req'd
	Supplement No. 3	11 Jan 79	9 Feb 79 Not Req'd
	Supplement No. 4	9 Oct 79	1 Nov 79 Not Req'd
2	Site Selection	Included in General	
3	Availability of Materials	28 Feb 69	26 Mar 69 22 Apr 69
4	General (including Site Selection)	8 Dec 69	12 Mar 70 22 Jun 70
	Supplement No. 1	26 Oct 70	5 Apr 71 9 Jul 71
	Supplement No. 2	12 Sep 74	24 Oct 74 5 Dec 74
	Supplement No. 3	26 Mar 79	31 May 79 Not Req'd
5	Land for Construction and Reservoir Areas	19 Dec 69	28 Jan 71 17 May 71
6	Land Requirements Plan - Public Use	16 Jan 70	19 Mar 70 15 Jun 70
7	Project Buildings, Overlook and Access Road	30 Nov 70	25 Mar 71 Not Req'd
7	Project Buildings, Overlook, Access Road and Recreation Facilities (Rev)	11 Jan 79	10 Apr 79 Not Req'd
8	FM Road 1382 Relocation	22 Jul 71	18 Sep 74 Not Req'd
	Supplement No. 1	6 Oct 78	31 Oct 78 Not Req'd
9	Embankment and Spillway Relocations, Dam Construction Area	9 Apr 80	9 Jun 80 Not Req'd
10	Recreation Master Plan	31 Mar 75	18 Apr 75 Not Req'd
11	Recreation Master Plan (Revised)	28 Jun 79	
12	Relocate TESCO Electric Lines - Lake Area	This Report	
		Jun 84*	
13	Relocate DP&L Electric Lines - Lake Area	Jul 83*	
14	Relocate SW Bell Telephone Lines - Lake Area	Jul 84*	
15	Relocate TP&L Electric Lines - Lake Area	Mar 84*	
16	Relocation of City Streets and County Roads	30 Apr 80	6 Aug 80 Not Req'd

STATUS OF DESIGN MEMORANDA (CONT'D)

Design:	:	:	:
Memo :	:	DATE :	SWD : OCE
No. :	:	Title :	Submitted : Approval : Approval
19		Southern Pacific Railroad Relocation	Mar 81*
20		Mobil Oil Pipe Line Relocation	12 Dec 80 12 Jan 81 Not Req'd
21		Lone Star Gas Pipe Line Relocation	31 Dec 80
22		Relocation FM 661	31 Jan 80 12 Mar 80 Not Req'd
23		Clearing and Sedimentation and Degradation Ranges	Jun 83*
24		Outlet Works Supplement No. 1 - Initial Embankment	27 Nov 78 22 Jan 79 Not Req'd 16 Feb 79 26 Mar 79 Not Req'd
25		Recreation Facilities	Feb 82*
26		Sewage Treatment Plant Relocation	Jun 83*

*Scheduled Submission Date

TRINITY RIVER BASIN, TEXAS

LAKEVIEW LAKE

PERTINENT DATA

Location: The Lakeview damsite is located at river mile 11.2 on Mountain Creek, tributary to West Fork of the Trinity River, near Grand Prairie. The damsite is located in Dallas County, about 10 miles southwest of the city of Dallas; the reservoir will extend from Dallas County into Tarrant and Ellis Counties.

Purposes: Flood control, water supply, recreation, and fish and wildlife.

Authorization: River and Harbor Act of 1965, approved 27 October 1965 (Public Law 89-298) in accordance with the plan of improvement as outlined in House Document 276 (89th Congress, 1st Session).

<u>Drainage areas*:</u>	<u>Square miles</u>
Above mouth Mountain Creek	304
Above U.S.G.S. gaging station at Grand Prairie	298
Above Mountain Creek Dam	295
Above U.S.G.S. gaging station near Grand Prairie (discontinued)	267
Above proposed Lakeview Damsite	232
Above U.S.G.S. gaging station near Cedar Hill	119
Above U.S.G.S. gaging station near Mansfield (on Walnut Creek)	62.8

*Drainage areas shown in this report are either as published in Circular No. 63-01, "Drainage Areas of Texas Streams," prepared by the Texas Water Commission in cooperation with the U.S.G.S. dated February 1963 or adjusted to agree with area as given in that circular.

Estimated annual runoff under existing conditions at Lakeview Damsite
for the period 1 January 1924-30 September 1966:

	<u>Acre-Feet</u>	<u>Inches</u>
Maximum	176,300	14.25
Minimum	6,500	.52
Average	59,050	4.77

Floods at Mountain Creek Reservoir Peak inflow (c.f.s.) (1)

May 1969	36,000
December 1928	35,900 (2)
April 1966	33,500
April 1942	29,300
April 1957	25,400
March 1945	23,100
February 1949	19,200
May 1930	18,800 (2)
May 1946	18,500

- (1) Estimated from changes in reservoir contents and releases from Mountain Creek Reservoir, unless otherwise noted.
(2) Observed at Grand Prairie gage (discontinued) at river mile 5.5.

Spillway:

Length at crest (net)	50 feet
Type	Broadcrested
Control	None

Outlet works:

Flood control conduit:

Type	1 gated conduit
Dimension	10'6" diameter
Intake invert elev. at intake structure	466.0
Control	Two - 4'9" x 10'6" gates

Low-flow outlets (emptying into flood control conduit)

Number	4
Intake dimensions	3' x 5'
Control	One 3' x 5' manually operated slide gate at each intake to wet well and one 2' x 4' manually operated gate in wet well with intake invert elevation 483.0.

Intake invert elevations:

Level No. 1	513.0
Level No. 2	504.0
Level No. 3	495.0
Level No. 4	486.0

Probable maximum flood:

Duration of storm	48 hours
Total volume of rainfall	32.58 inches
Average infiltration rate	0.05 in/hr
Total volume of runoff	30.36 inches
Total volume of runoff	375,600 acre-feet
Peak inflow to full lake	346,200 c.f.s.
Maximum outflow (lake level 559.4)	
Spillway	11,900 c.f.s.
Outlet works	<u>0 c.f.s.</u>
Total	11,900 c.f.s.

Reservoir:

Feature	Elevation :(feet msl)	Area :(acres)	Acre-feet	Equivalent runoff (inches)
Top of dam	564.5	-	-	-
Maximum design water surface	559.4	18,600	642,400	51.92
Spillway crest	541.0	12,470	362,700	29.31
Top of flood control	536.0	10,940	304,000	24.57
Top of conservation pool	522.0	7,470	176,900	14.30
Maximum tailwater (at damsite)	471.6	-	-	-
Streambed	456.0	-	-	-

Lakeview Lake



I INTRODUCTION

TRINITY RIVER BASIN, TEXAS
MOUNTAIN CREEK, TEXAS
DESIGN MEMORANDUM NO. 11
MASTER PLAN
FOR
LAKEVIEW LAKE

I - INTRODUCTION

1-01. Project authorization. Congressional authority for the construction of Lakeview Lake, a unit in the plan of development for the Trinity River Basin, Texas, is contained in the Public Works - Rivers and Harbors Act approved 27 October 1965 (Public Law 89-298, 89th Congress, 1st Session). Formulation of the proposed Lakeview Lake project includes the following purposes: flood control, water supply, recreation, and fish and wildlife conservation. Basic authority for the provision of recreation facilities is contained in the Flood Control Act approved 22 December 1944 (Public Law 534, 78th Congress, 2d Session), as amended by subsequent acts. Basic authority for fish and wildlife conservation is contained in the Fish and Wildlife Coordination Act of 1958, as amended, Public Law 85-624 (72 Stat. 563). The Federal Water Project Recreation Act of 1965 (Public Law 89-72) modifies Public Law 534 by imposing requirements of non-Federal cooperation and cost-sharing for developing recreation facilities at Corps of Engineers projects.

1-02. Purpose of the master plan. The purpose of the master plan is to provide a conceptual but comprehensive plan to develop, improve, and manage the resources at Lakeview Lake in accordance with current policy and philosophy. This plan will be concerned with effective conservation, protection, development, use, and management of visitors, water, land, vegetation, and wildlife on the lake and land area by the Corps and local interests, the Trinity River Authority (TRA), and Texas Parks and Wildlife Department (TP&WD) on a cost-sharing basis. The master plan also includes proposals for management, operation, and maintenance of the recreation facilities which will be the responsibility of TRA and TP&WD. The Corps of Engineers will retain the right to review and approve all management, operation, and maintenance policies. Detailed plan of the recreation facilities will be presented in DM No. 25, Recreation Facilities.

1-03. Scope of this report. This master plan presents a description of the project. Described herein are the environmental and recreational resources of the project, the factors influencing and restricting resource management and development, and the methods and techniques for the development, improvement, and management of these resources. The plan of development integrates appropriate uses and allocations into a well balanced plan to serve as a flexible guide for the administration, development, and coordinated management of land and water resources and

recreation facilities in the best interest of the public. The general concepts of optimum utilization of project resources for public use, provision of recreational facilities, and the proper stewardship of the overall project are also presented in this text.

1-04. Project purposes. Authorized purposes for this project include flood control, water conservation, recreation, and fish and wildlife conservation.

1-05. Environmental impact statement. In accordance with section 102 of the National Environmental Policy Act of 1969, the final environmental statement for Lakeview was completed and filed on 2 November 1973 with the Council on Environmental Quality.

Lakeview Lake

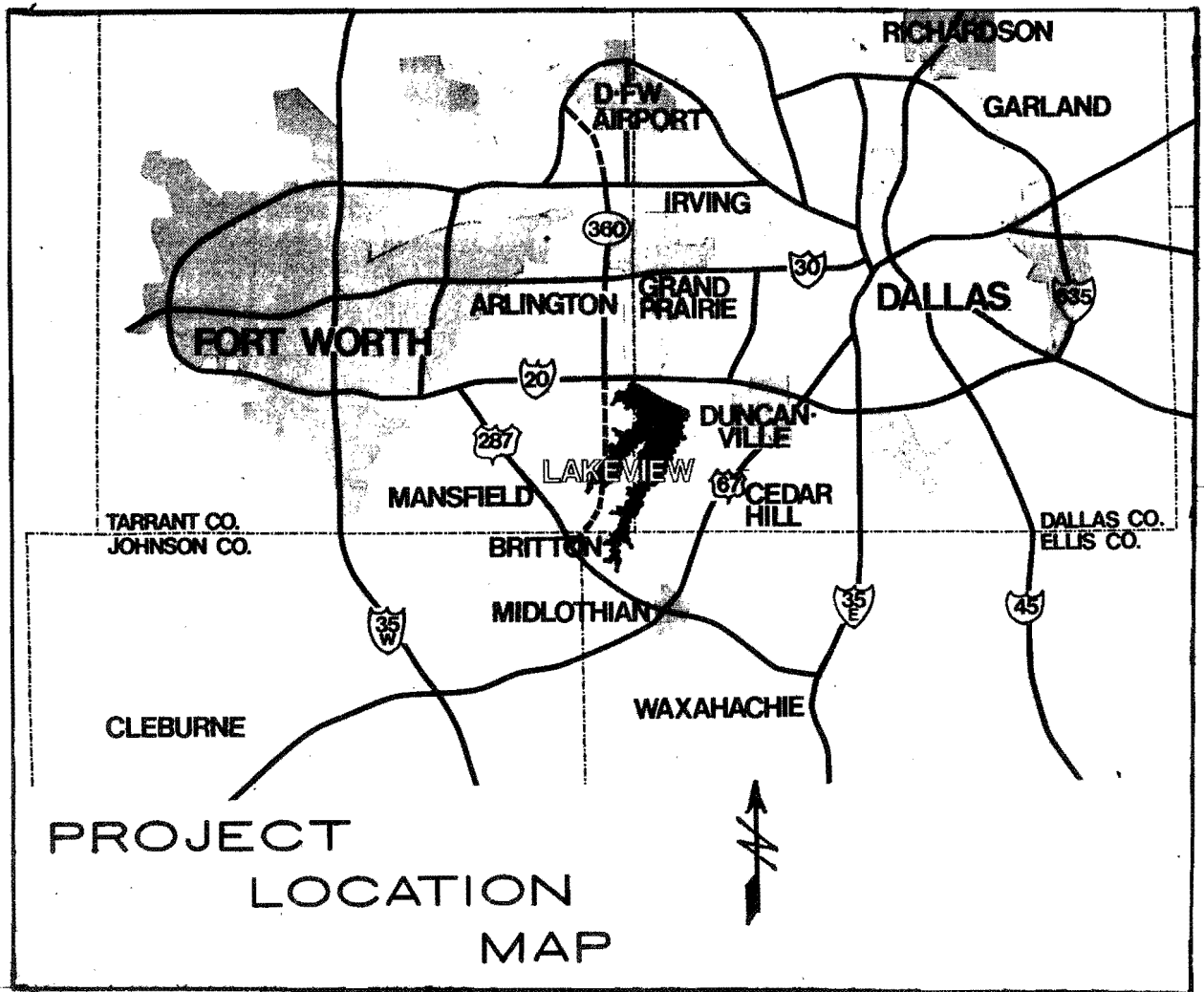


II PROJECT DESCRIPTION

II - DESCRIPTION OF THE PROJECT

2-01. Project location. The Lakeview dam site is located on Mountain Creek (river mile 11.2) a tributary of the West Fork of the Trinity River, about 10 miles southwest of Dallas, Texas. See Figure II-1. The dam site is located in Dallas County and the lake will extend into portions of Tarrant and Ellis Counties. Lakeview Lake is in the Mountain Creek Watershed located in the Upper Trinity River Basin. The watershed is southwest of Dallas, Texas, and portions of the cities of Dallas, Grand Prairie, Mansfield, Cedar Hill, and Midlothian lie within the watershed. The watershed with a length of about 37 miles and a total drainage area of 304 square miles lies within parts of Johnson, Ellis, Tarrant, and Dallas Counties. See Figure II-1. The Trinity River Basin is shown on Plate II-1.

FIGURE II-1



2-02. Basin hydrology and climate. The Lakeview Lake area has moderate to mild winters and comparatively long, hot summers prevail. The drainage area above the dam site is 232 square miles. Topographically, the area is one of moderate relief with gently rolling hills under extensive cultivation. Average annual inflow into the lake amounts to about 59,000 acre-feet.

a. Temperature. The mean annual temperature in the watershed is about 66 degrees Fahrenheit. January, the coldest month, has an average minimum daily temperature of about 34 degrees. August, the warmest month, has an average maximum daily temperature of about 96 degrees.

b. Precipitation. The mean annual precipitation over the Mountain Creek Watershed is about 33.4 inches. Extremes in annual precipitation recorded at Dallas adjacent to the watershed have ranged from a minimum of 17.91 inches in 1963 to a maximum of 59.53 inches in 1888.

c. Winds. Southerly winds prevail during the spring, summer, and fall months. Northerly winds prevail during the winter months. The maximum recorded wind velocity (recorded mile) at Dallas, Texas was 77 miles per hour from the north in July 1936.

2-03. Project features and structures. Pertinent data for Lakeview Lake are given at the front of this report and summarized below. The dam consists of a rolled-earth fill embankment 22,180 feet long including a 50 feet uncontrolled broadcrested spillway, maximum height of dam above streambed is 108.5 feet. The outlet works will consist of gate-controlled conduit 10'-6" in diameter and 2 - 4'9" x 10'6" electrically-operated slide gates. At top of flood control pool, elevation 536.0 msl, the lake will contain 304,000 acre feet. The downstream channel will be maintained for project flood control releases, preservation and propagation of fish and wildlife, and public access to the river and recreational facilities. The general plan of embankment is shown on Plate II-2.

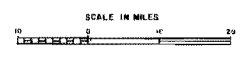
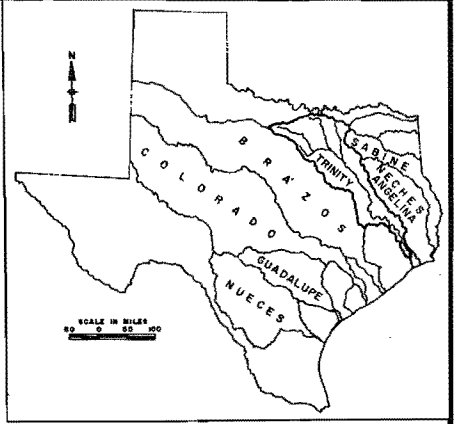
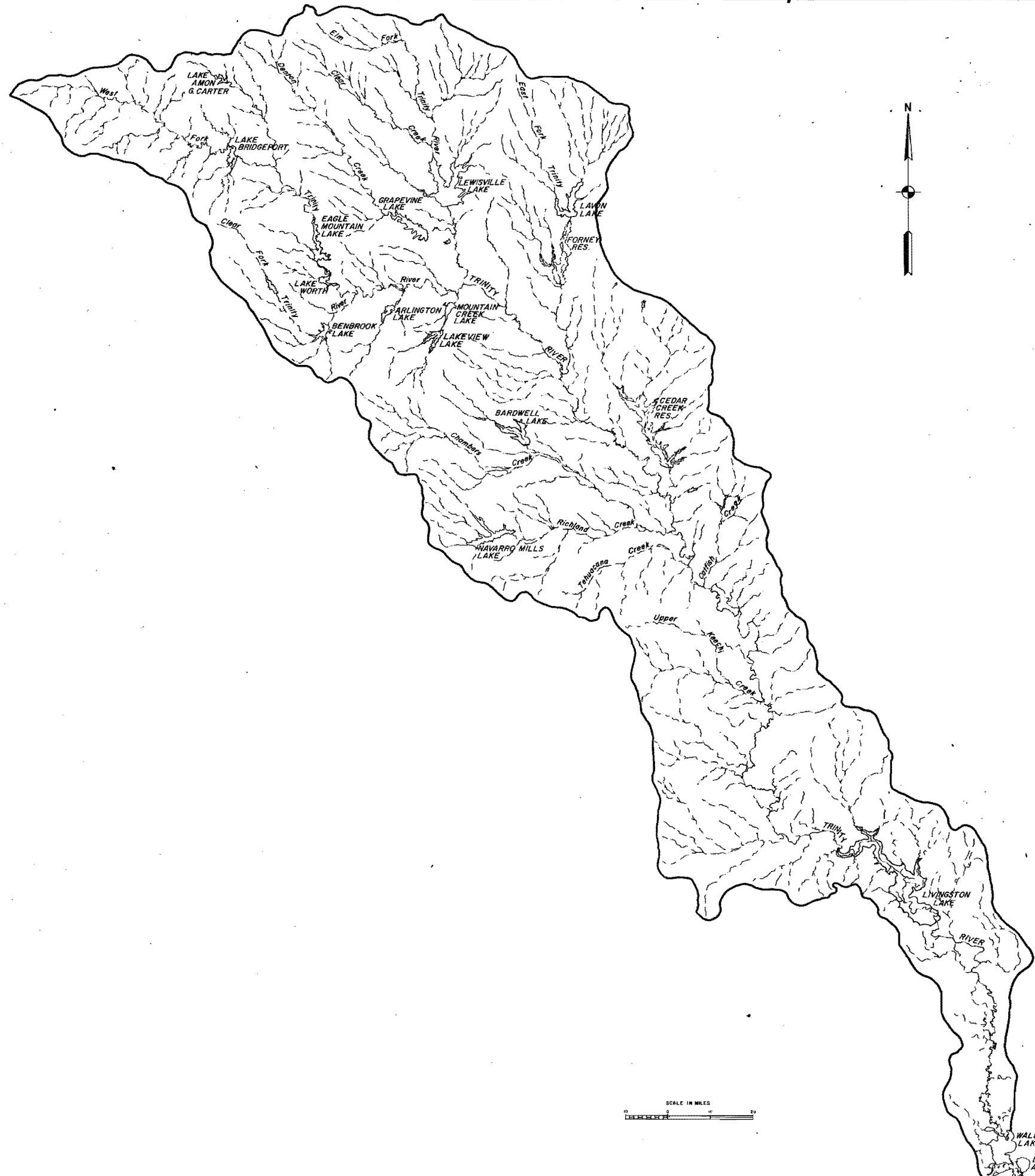
2-04. Lake description. The lake will consist of a conservation pool and a flood control pool. The conservation pool will have a surface area of approximately 7,470 acres at an elevation of 522.0 msl. The flood control pool extends from the top of this pool to elevation 536.0 msl and will total 10,940 surface acres of water.

The initial area and capacity curves and the capacity curve after 100 years of sedimentation are shown on Plate II-3.

According to the pool elevation probability and duration curves, as shown on Plate II-4, pool elevation can be expected to vary about 13 feet in an average 5-year period. As indicated by the duration curve, the top of conservation pool will be equalled or exceeded approximately 8 percent of the time. The average pool during the period

June through August (prime recreation season) is about 3 feet below the top of conservation pool. It will be equalled or exceeded 65 percent of the time. The pool level should equal or exceed the 5-year flood frequency (elevation 524.0 msl) only 2 percent of the time.

2-05. Cost-sharing features. The Federal Water Project Recreation Act of 1965 (Public Law 89-72) requires that before recreation development can be added to a project, a non-Federal public body must agree to cost-share in the development of the recreation facilities. A contract with the Trinity River Authority (TRA), and the Texas Parks and Wildlife Department has been signed to meet this requirement.



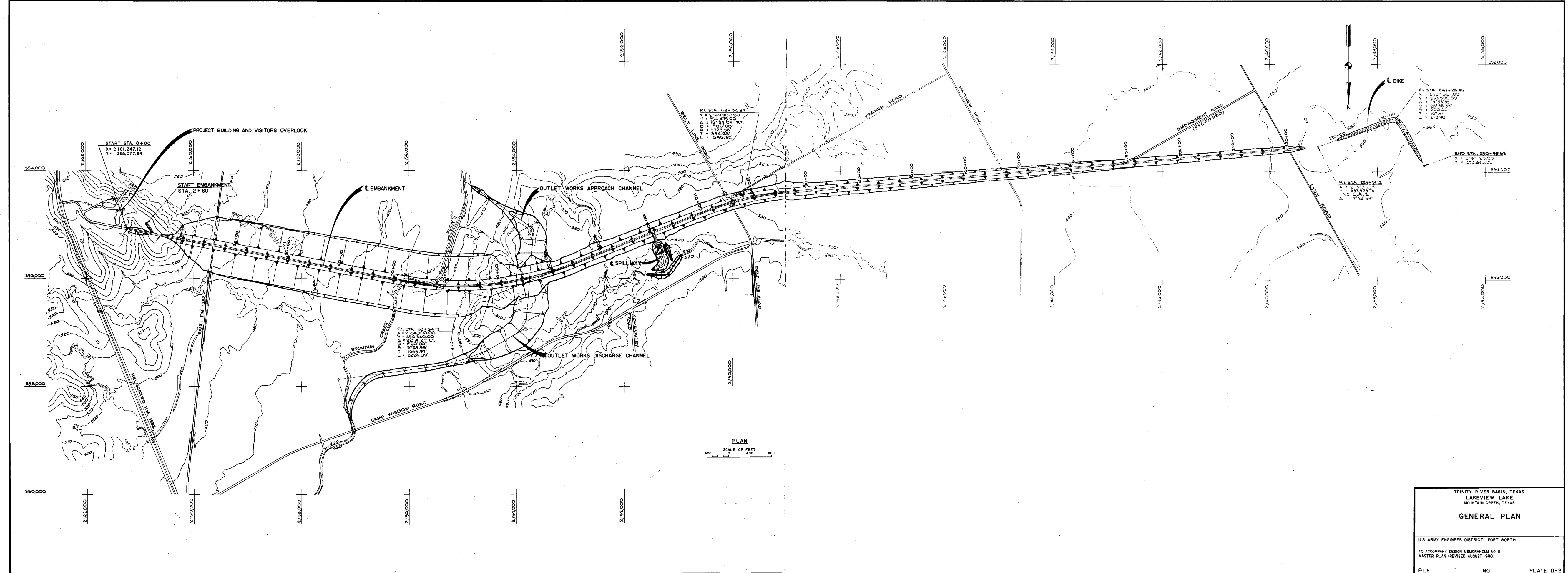
TRINITY RIVER BASIN, TEXAS
 LAKEVIEW LAKE
 MOUNTAIN CREEK, TEXAS

BASIN MAP

U.S. ARMY ENGINEER DISTRICT, FORT WORTH

TO ACCOMPANY DESIGN MEMORANDUM NO. 11
 MASTER PLAN REVISED AUGUST 1980

FILE. NO. PLATE II-1



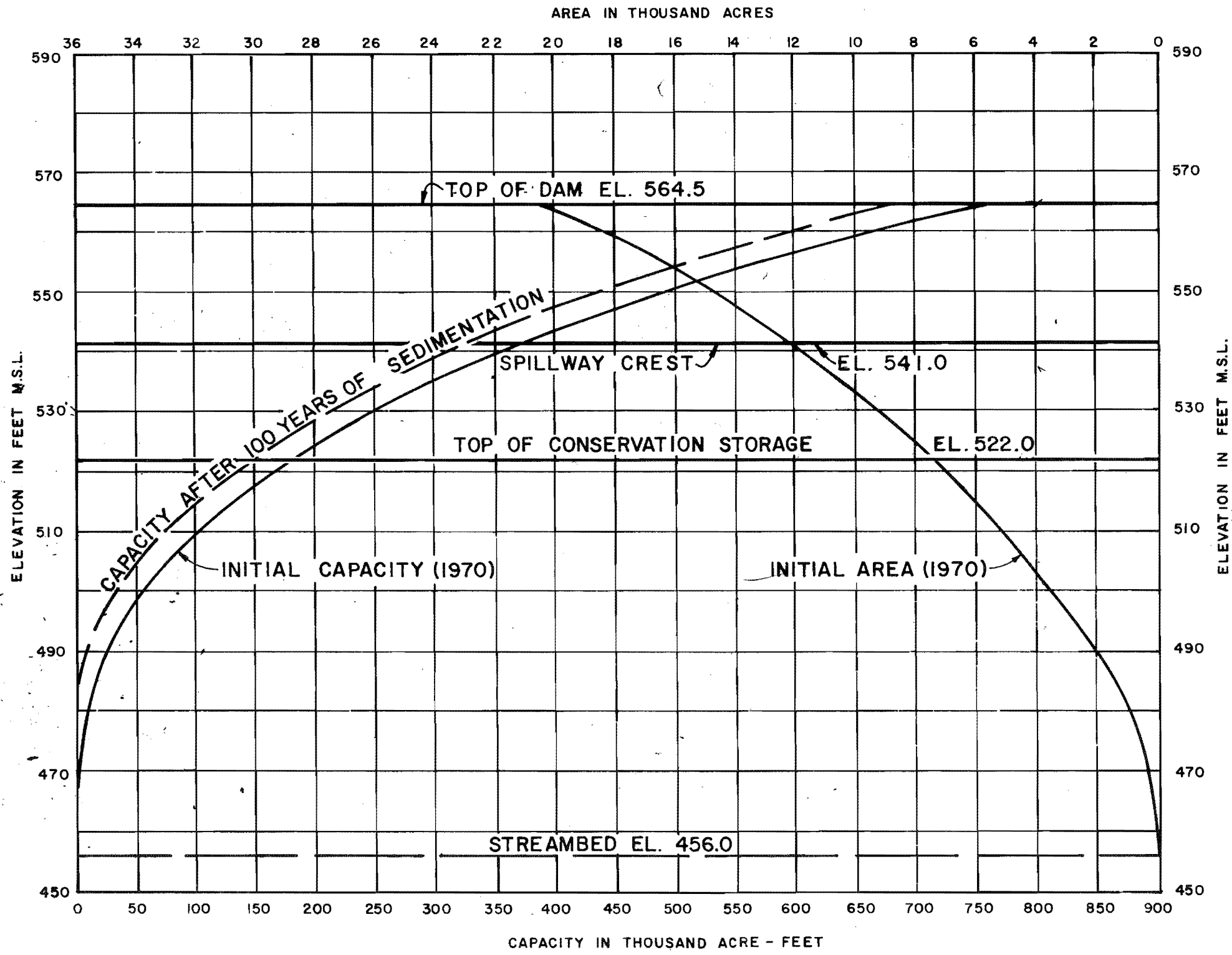
TRINITY RIVER BASIN, TEXAS
 LAKEVIEW LAKE
 MOUNTAIN CREEK, TEXAS

GENERAL PLAN

U.S. ARMY ENGINEER DISTRICT, FORT WORTH

TO ACCOMPANY DESIGN MEMORANDUM NO. 11
 MASTER PLAN (REVISED AUGUST 1960)

FILE NO. PLATE II-2

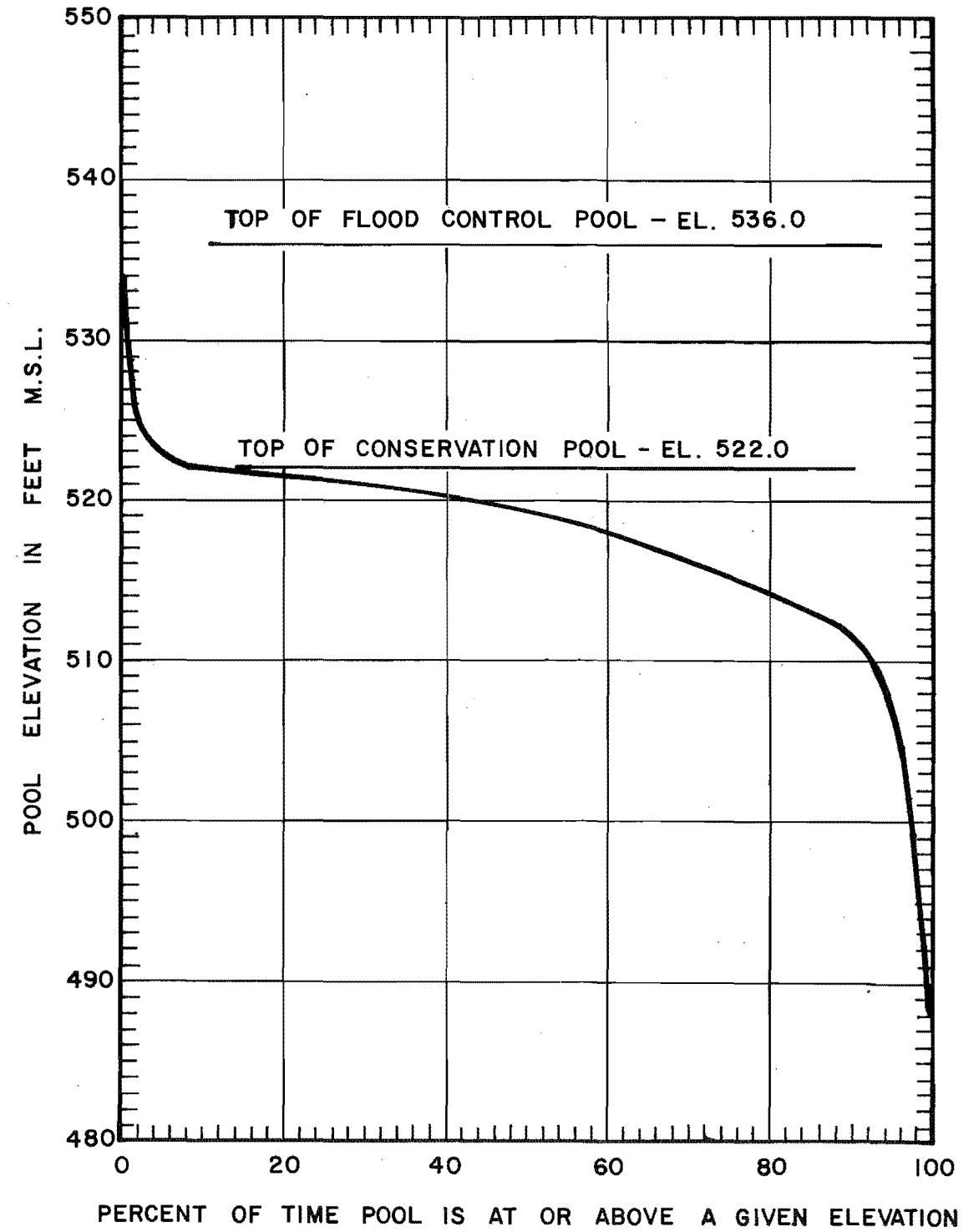
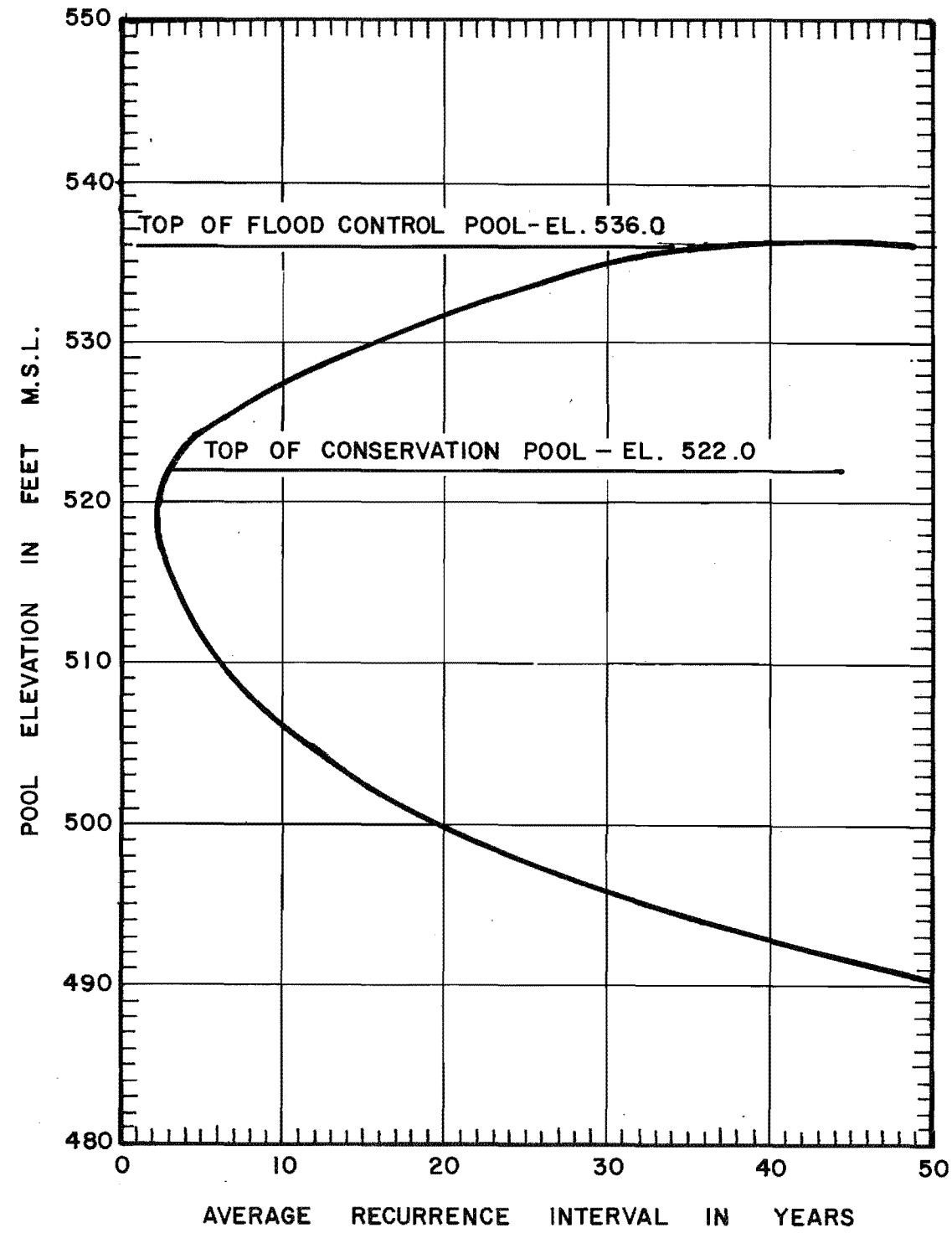


TRINITY RIVER BASIN, TEXAS
LAKEVIEW RESERVOIR
MOUNTAIN CREEK, TEXAS

AREA AND CAPACITY CURVES

U.S. ARMY ENGINEER DISTRICT, FT. WORTH
TO ACCOMPANY DESIGN MEMORANDUM NO. 11
MASTER PLAN REVISED AUGUST 1980

PLATE II-3



NOTES:

Curves based upon period of record
 1 January 1924 to 30 September 1966.
 Curves based upon hypothetical lake
 regulation after 100 years of sedimentation.

TRINITY RIVER BASIN, TEXAS
 LAKEVIEW LAKE
 MOUNTAIN CREEK, TEXAS
**POOL ELEVATION PROBABILITY
 AND DURATION CURVES**
 SCALES AS SHOWN
 U.S. ARMY ENGINEER DISTRICT, FT. WORTH
 TO ACCOMPANY DESIGN MEMORANDUM NO. 11
 MASTER PLAN REVISED AUGUST 1980



**III RECREATIONAL AND
ENVIRONMENTAL RESOURCES
OF THE PROJECT**

III - RECREATION AND ENVIRONMENTAL
RESOURCES OF THE PROJECT AREA

3-01. General physiography and geology.

a. General. The Lakeview dam site is located in the Gulf Coastal Plain Physiographic Province, at the eastern edge of the Eagle Ford Prairie subprovince. The major topographic feature in the area is the White Rock escarpment located one-half mile east of the dam site right (east) abutment. This escarpment trends north-northeast and forms the western edge of the Austin Chalk Outcrop. West of the White Rock escarpment are numerous remnants of a small cuesta which was formed by a resistant limestone bed of the Eagle Ford formation. This cuesta has been eroded into a series of subrounded hills rising 30 to 60 feet above the present Mountain Creek Valley.

b. Geology. Bedrock strata underlying the embankment and reservoir area consists of Upper Cretaceous units of the Eagle Ford group of formations. Lithologically, the Eagle Ford group includes a variety of rock types, but consists predominantly of clay shale. Outcrops of the group occur in a 15 mile wide belt striking approximately north-south through northeast Texas. The regional structure of these beds is monoclinal, resulting in a gentle dip to the Gulf Coast.

3-02. Soils. The proposed lake site lies principally in the Blackland Prairie region and is masked by Quaternary terrace deposits and Recent alluvial floodplain deposits which range in thickness from 10 to 55 feet and consist primarily of medium to highly plastic clay. The predominant soil types in the area are Houston black clay, Ellis clay, and Heiden clay, Ferris-Heiden, and Lewisville clay loam. For soil limitations see Table III-1. The project soils survey map is shown in Plate III-1.

TABLE III-1

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, DALLAS, ELLIS, AND TARRANT COUNTIES, TEXAS

SOIL RATINGS AND ADVERSE FEATURES AFFECTING:

Soil Series	Sewage Disposal			Traffic Ways	Camp Areas	Picnic Areas	Play-grounds	Paths & Trails	Wildlife Suitability	Range Sites, Production and Plant
	Filler Fields	Lagoons	Construction							
WILSON Silty Clay Loam 1	Severe: Very slow perme- ability	0-2% slopes slight 2-5% slopes- Moderate: slope	Low - pH 6.0- 7.8 Moderate: pH 5.6-6.0 corrosivity (concrete) Service-High shrink- swell potential	Severe: Highshine swell potential	Severe: Very slow perme- ability wetness	Moderate: Wetness, clayey texture	Severe: Very slow perme- ability	Moderate: Wetness, clayey texture	Openland & Rangeland Wildlife: Good Wetland Wildlife: Poor to very poor	Grassland - 3,000# - 6,000# * Excellent Condition: wide variety of grasses including little blue- stem, dropseeds, Indiangrass and sideoats grama. Pasture - Potential is medium to high for improved bermudagrass and kleingrass - 75.
2 Havo Clay Loam	Severe: perme- ability	Slight: 0-2% slopes Moderate: 2-7% slopes Severe: over 7% slopes	Severe: high shrink- swell high corrosivity uncoated steel	Severe: traffic supporting capacity high shrink- swell	Severe: perme- ability	Moderate: clay loam texture moderately well drained	Severe: perme- ability	Moderate: clay loam texture	Openland: well suited Woodland: suited	Grayland Site: 3,000# - 5,500# * Excellent Condition: big bluestem, little bluestem, switchgrass, in- diangrass, Florida paspalum, and sideoats grama. Pasture Group: Tight clayey upland adapted to such species as improved bermuda grass, weeping lovegrass, and kleingrass.
3 HOUSTON Black Clay	Severe: Very slow perme- ability	Slight: 0-2% slopes Moderate: more than 2% slopes	Severe: Very shrink-swell high corrosivity	Severe: Very poor traffic supporting capacity	Severe: clay texture, very slow perme- ability	Severe: clay texture,	Severe: clay texture, very slow perme- ability	Severe: clay texture,	Openland slight Woodland: severe, no Woodland:	Rolling Blackland: 6,000# - 10,000# Excellent Condition: big bluestem, little bluestem, Indiangrass, and switchgrass. Pasture Group: heavy clayey upland. Adapted species are improved bermudagrass and kleingrass.

III-2

TABLE III-1

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, DALLAS, ELLIS, AND TARRANT COUNTIES, TEXAS

SOIL RATINGS AND ADVERSE FEATURES AFFECTING:

Soil Series	Sewage Disposal		Construction	Traffic Ways	Camp Areas	Picnic Areas	Play-grounds	Paths & Trails	Wildlife Suitability	Range Sites, Production and Pl...
	Filter Fields	Lagoons								
HEIDEN Clay 4	Severe: permeability, 15-20% slopes	Slight: 0-2% slopes Moderate: 2-7% slopes Severe: 7-20% slopes	Severe: shrink-swell potential corrosivity, 8-20% slopes	Severe: shrink-swell potential, traffic supporting capacity	Severe: clay texture, very slow permeability	Severe: clay texture,	Severe: clay texture, very slow permeability more than 6% slopes	Severe: clay texture	Openland: clays, 0-15% slopes, suited; clays, 15-20% slopes, stony and gravelly clays suited Woodland: 0-15% slopes poorly suited, 15-20% slopes, stony and gravelly clays, poorly suited.	Rolling Blackland: 4,000# - 8,000# Excellent Condition: big bluestem, little bluestem, Indiangrass, switchgrass, sideoats grama, and forbs. Pasture Group: production potential high for improved bermudagrass or kleingrass with medium production o King Ranch bluestem and kleberg bluestem. Sloping, heavy clayey upland; medium potential for improved bermudagrass and kleingrass.

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, DALLAS, ELLIS, AND TARRANT COUNTIES, TEXAS

SOIL RATINGS AND ADVERSE FEATURES AFFECTING:

Soil Series	Sewage Disposal		Construction	Traffic Ways	Camp Areas	Picnic Areas	Play-grounds	Paths & Trails	Wildlife Suitability	Range Sites, Production and Plants
	Filter Fields	Lagoons								
<u>LEWISVILLE</u> Clay Loam 5	Severe: depth to bedrock	Severe: depth to bedrock	Moderate: 1-4% slopes moderate shrink-swell Severe: 4-8% slopes slope	Severe: plastic soil material depth to bedrock.	Slight: loam texture All others: Moderate: texture or course fragments	Slight: loam texture All others: Moderate: texture	Slight: loam texture 1-2% slopes Moderate: 2-6% slopes Severe: 6-8% slopes all others:	Slight: loam texture Moderate: all others	Openland: well suited 1-5% slope & Moderate: 5-8% slope suited: stony phases 1-8% slopes Woodland: well suited 1-5% slopes and 5-8% slopes suited strong phases 1-8% slopes	Deep Upland: 3,000# - 6,000# * Excellent condition: little bluestem, sideoats grama, big bluestem, indiagrass, switchgrass, tall dropseed, Texas wintergrass and scattered live oak motts. Pasture Group: Friable, clayey upland Medium to high production potential. Medium production potential for such species as bermudagrass and kleingrass.
<u>GOWAN</u> Clay Loam 6	Severe: subject to flooding	Subject to flooding Severe: flooding protected Moderate: permeability	Severe: subject to flooding	Subject to flooding Severe: flooded more often than once in 5 years	Severe: subject to flooding Moderate: texture if protected clay loam texture	Moderate: subject to flooding clay loam Slight: texture if protected loam texture	Moderate: subject to flooding, clay loam Slight: texture if protected loam texture	Moderate: subject to flooding clay loam texture Slight: texture if protected loam texture	Openland: protected - well suited frequently flooded - suited Woodland: protected - well suited frequently flooded - well suited	Bottomland Site: 6,500# - 9,000# * Excellent Condition: big bluestem, little bluestem, indiagrass, switchgrass, Eastern gamagrass, perennial wildrye, pecan, arid elm. Pasture and Hayland Group: friable, clayey bottomland; adapted species include improved bermudagrass, kleingrass, and johnsongrass.

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TABLE III-1

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, DALLAS, ELLIS, AND TARRANT COUNTIES, TEXAS

SOIL RATINGS AND ADVERSE FEATURES AFFECTING:

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Soil Series	Solid Waste Disposal		Construction	Traffic Ways	Camp Areas	Picnic Areas	Play-grounds	Paths & Trails	Wildlife Suitability	Range Sites, Production and Plant
	Filter Fields	Lagoons								
Ellis; Clay 9	Severe: permeability, 10-20% slopes	Slight: 1-2% slopes Moderate: 2-7% slopes Severe: 7-20% slopes	Severe: shrink-swell potential, corrosivity, 8-20% slopes	Severe: shrink-swell potential, traffic supporting capacity	Severe: clay texture, very slow permeability	Severe: clay texture,	Severe: clay texture, very slow permeability more than 6% slopes	Severe: clay texture,	Openland: suited Woodland: poorly suited, clay	Rolling Blackland: 4,000# to 7,000 Excellent Condition: little bluestem, Indiangrass, big bluestem, switchgrass, Florida paspalum, Eastern gama, Virginia wildrye, sideoats grama, Texas wintergrass, meadow dropseed, and perennial forb: Pasture Group: heavy, clayey upland High potential for improved bermudagrass and kleingrass. Medium potential for kleberg and King Ranch bluestem. Sloping, heavy, clayey upland. Medium potential for improved bermudagrass and kleingrass.
Ferris-Halden complex 10	Severe: permeability 10-20% slopes	Slight: 1-2% slopes Moderate: 2-7% slopes Severe: 7-20% slopes	Severe: shrink-swell potential corrosivity 8-20% slopes	Severe: shrink-swell potential traffic supporting capacity	Severe: clay texture very slow permeability	Severe: clay texture	Severe: clay texture very slow permeability more than 6% slopes	Severe: clay texture	Openland: suited Woodland: poorly suited clay	Rolling Blackland: 4,000# - 7,000# * Excellent Condition: little bluestem, indiangrass, big bluestem, switchgrass, Florida paspalum, Eastern gama, Virginia wildrye, sideoats grama, Texas wintergrass, meadow dropseed, and perennial forbs Pasture Group: heavy clayey upland-high potential for improved bermudagrass and kleingrass. Medium potential for kleberg and King Ranch bluestem.

TABLE III-1

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, DALLAS, ELLIS, AND TARRANT COUNTIES, TEXAS

SOIL RATINGS AND ADVERSE FEATURES AFFECTING:

Soil Series	Sewage Disposal			Traffic Ways	Camp Areas	Picnic Areas	Play-grounds	Paths & Trails	Wildlife Suitability	Range Sites, Production and Plant:
	Filter Fields	Lagoons	Construction							
Eddy Clay Loam 11	Moderate: permeability	Moderate: permeability 2-7% slopes Severe: over 7% slopes	Moderate: shrink-swell potential 4-8% slopes Severe: more than 8% slopes	Moderate: traffic supporting capacity 6-15% slopes Severe: more than 15% slopes	Moderate: clay loam surface texture 8-15% slopes Severe: 15-20% slopes	Moderate: clay loam surface texture 8-15% slopes Severe: 15-20% slopes	Severe: permeability	Moderate: surface texture	Openland: 1-5% well suited; 5-15% well suited; 15-20% suited	Loam Site: 3,000# - 6,000# * Excellent Condition: big bluestem, little bluestem, indiagrass, s grass, Virginia wildrye, Florida paspalum, and climax forbs. Pasture and Hayland Group: fria clayey upland with high product potential for improved bermuda grass, kleingrass, indiagrass, switchgrass and lovegrass.
Altoga Silty Clay 12	Severe: permeability	Slight: 0-2% slope Moderate: 2-5% slope slopes	Severe: shrink-swell potential corrosivity to uncoated steel	Severe: shrink-swell potential traffic supporting capacity	Severe: permeability, wetness	Moderate: wetness texture	Severe: permeability wetness	Moderate: wetness texture	Openland: well suited Woodland: suited	Grayland Site: 3,500# - 6,500# * Excellent condition: little bluestem, big bluestem, indiagrass, Virginia wildrye, vine-mesquite, Florida paspalum, sideoats grama, Texas wintergrass, silver bluestem, tall dropseed, hairy dropseed, plain lovegrass, forbs and sedges. Pasture Group: Tight, clayey upland medium to high producing grasses are bermuda and kleingrass. Medium producing grasses are Kings Ranch bluestem and kleberg bluestem.

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TABLE III-1

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, DALLAS, ELLIS, AND TARRANT COUNTIES, TEXAS

SOIL RATINGS AND ADVERSE FEATURES AFFECTING:										
Soil Series	Sewage Disposal			Traffic Ways	Camp Areas	Picnic Areas	Play-grounds	Paths & Trails	Wildlife Suitability	Range Sites, Production and Plant
	Filter Fields	Lagoons	Construction							
BRACKETT Loam 13	Severe: permeability 10-30% slopes	Moderate: less than 7% slopes permeable substrata more than 7% slopes	Severe: corrosivity more than 8% slopes	Moderate: traffic supporting capacity less than 15% slopes	Slight: permeability	Slight: 0-8% slopes Moderate: 8-15% slopes Severe: over 15% slopes	Moderate: permeability Severe: over 6% slopes	Moderate: texture and slopes Severe: over 25% slopes	Openland: poorly suited Woodland: suited	Adobe and Steep Adobe: 1,000#-3,000# Excellent Condition: little bluestem tall grama, tall dropseed, silver bluestem, low panicums, and sideoat: grama.
Sunny Clay Loam 14	Severe: depth to bedrock	Severe: depth to bedrock	Moderate: 1-4% slopes moderate shrink-swell Severe: 4-8% slopes slope	Severe: plastic soil material depth to bedrock.	Slight: loam texture All others: Moderate: texture or course fragments	Slight: loam texture All others: Moderate: texture	Slight: loam texture 1-2% slopes Moderate: 2-6% slopes Severe: 6-8% slopes all others:	Slight: loam texture Moderate: all others	Openland: well suited 1-5% slope & 5-8% slope suited: stony phases 1-8% slopes Woodland: well suited 1-5% slopes and 5-8% slopes suited strong phases 1-8% slopes	Deep Upland: 3,000# - 6,000# * Excellent condition: little bluestem, sideoats grama, big bluestem, indiagrass, switchgrass, tall dropseed, Texas wintergrass and scattered live oat motts. Pasture Group: Friable, clayey upland Medium to high production potential. Medium production potential for such species as bermudagrass and kleingrass.

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TABLE III-1

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, DALLAS, ELLIS, AND TARRANT COUNTIES, TEXAS

SOIL RATINGS AND ADVERSE FEATURES AFFECTING:										
Soil Series	Sewage Disposal			Traffic Ways	Camp Areas	Picnic Areas	Play-grounds	Paths & Trails	Wildlife Suitability	Range Sites, Production and Plant
	Filter Fields	Lagoons	Construction							
6-III Ovan Clay 15	Severe: slow permeability bedrock less than 40 inches	Severe: bedrock less than 40 inches	Severe: high shrink-swell potential high corrosivity	Severe: poor traffic supporting capacity shrink-swell potential	Severe: clayey texture	Severe: clayey texture	Severe: clayey texture	Severe: clayey texture	Openland: suited Woodland: suited	Deep Upland: 3,500# - 5,500# * Excellent Condition: little bluestem, sideoats grama, indiagrass, switchgrass, tall dropseed, big bluestem, and Texas wintergrass Pasture Group: friable clayey Upland adapted to improved bermuda grass, King Ranch bluestem, and johnsongrass.

VALUES FOR RATING DEGREE OF LIMITATION OF SOILS FOR SPECIFIED USES:

- None to slight: The soil has no limitation or no more than some limitation. The limitation is not serious and is easy to overcome.
- Moderate: The soil has moderate limitation to use. The limitation needs to be recognized, but it can be overcome or corrected by means that in general are practical.
- Severe: The soil has severe limitation. Use of the soil is questionable because the limitation is difficult to overcome.

* Pounds of estimated production of air dry herbage per acre per year.

3-03. Vegetation. That area lying upstream from the Lakeview Dam site is predominately cropland, accounting for about 60 percent of the area. The remaining 40 percent of the area is grazing land and idle land, about half of which is timbered. Timber occurs mostly in fringes along the stream courses with some mesquite and cedar on upland pastures. Willow, pecan, sycamore, cottonwood, cedar elm, ash, oak, bois d'arc (osage orange), and hackberry are the most common trees along the streams. The main crops are cotton and grain sorghums but there are occasional fields of small grains and corn. The floodplain below Lakeview Dam site is about half timbered and the remainder is cropland, hay meadows, and idle lands. Common shrubs include sumac and wild plum. Grasses common to the area include buffalograss, johnsongrass, bluestem, threeawns, switchgrass, Bermudagrass, and vine mesquite.

3-04. Wildlife.

a. Without the project. The area of influence on wildlife will consist of about 20,000 acres of land and water. About 15,000 acres lie above the proposed Lakeview Dam and include about 10 acres of farm ponds and a minor amount of stream area. Lakeview Lake will have no significant effect on wildlife downstream from Mountain Creek Reservoir.

Due to intensive cultivation and heavy human population in the area of influence, wildlife populations are rather sparse. Mourning doves, squirrels, bobwhites, cottontails, jackrabbits, raccoons, opossums, skunks, foxes, coyotes, and armadillos are present in the area. Numerous song, insectivorous, shore, wading, and raptorial birds occur in the area, principally in the Dallas County Audubon Wildlife Refuge area. Also, waterfowl occur in fair numbers during fall and spring migrations on Mountain Creek Reservoir and farm ponds. Mallards, pintails, green-wing teal, blue-winged teal, wood ducks, lesser scaups, canvasbacks, and redheads are the principal users of the area.

Hunting is light and is mostly for mourning doves, squirrels, rabbits, and bobwhites. There is some hunting with dogs for raccoons, foxes, and coyotes. No hunting is allowed on Mountain Creek Reservoir or on the Dallas County Audubon Wildlife Refuge, so there is no significant amount of hunting in the floodplain below Lakeview Dam site.

Bird watching and other forms of wildlife-oriented recreation occur throughout the area of influence but the principal use is on the Dallas County Audubon Wildlife Refuge. Dallas Baptist College, located adjacent to Mountain Creek Reservoir, also uses the Audubon Refuge occasionally for botanical, zoological, and ecological studies.

b. With the Project.- Lakeview Lake will permanently inundate about 7,470 acres of mostly low quality wildlife habitat and another 2,500 acres will be inundated occasionally by the flood control pool. However, flood pool lands and lands lying above the flood pool and acquired in fee title will support wildlife populations. Also, several hundred acres lying below the dam will be acquired for project purposes. It is estimated that lands acquired for project purposes above the conservation pool will amount to between 5,000 and 6,000 acres. The city limits of Cedar Hill, Arlington, Grand Prairie, Mansfield, and Dallas extend into the main body of the proposed lake area

The operation of Lakeview Lake will modify the ecology of the flood plain lying between the proposed dam and Mountain Creek Reservoir. The area will be changed from a flood plain to a protected river bottom, but no great changes in land use and vegetative composition are expected. Birds and mammals inhabiting this area will be benefited somewhat since flooding will be reduced. Flooding of Mountain Creek Reservoir also will be reduced, which also will benefit birds and mammals.

Because of many sorghum fields and other grainfields lying nearby, waterfowl may find Lakeview Lake somewhat attractive. However, the intensive human activities expected on and around the lake likely will discourage the birds.

3-05. Fisheries. The U.S. Fish and Wildlife Service reports that since Mountain and Walnut Creeks are intermittent, they have an insignificant existing fishery. However, those portions of Mountain Creek where water impounded by Mountain Creek Lake fills the creek support good fishing for catfish, bluegill, crappie, and white bass. Farm ponds in the area are privately owned and are posted. Fishing in these ponds is light. Impoundment of Lakeview Lake will create an aquatic environment capable of supporting a good quality warm water fishing. In early years (4 to 8 years following impoundment), fish production should be good and game fish abundant. In later years, less desirable fish species will be predominate unless good operational procedures and prudent fish management are practiced.

3-06. Archeological and paleontological resources.

An archeological and historical surface survey that was conducted under contract from the U.S. Army Corps of Engineers within the boundaries of the proposed Lakeview Lake has revealed the existence of 17 prehistoric sites and 25 historic locations. This survey, conducted in 1977-1978 by Southern Methodist University, did not include evaluative tests of the sites located, so little is known at present of the age or significance of the sites. Prehistoric sites are however, known

to date at least from the Archaic period (6000 B.C. - A.D. 800) through the Neoamerican (A.D. 800 - 1500), and may prove to extend back to the Paleo-Indian period (10,000 - 6000 B.C.) when the evaluations are completed.

Further testing and subsurface survey are necessary to evaluate the significance of the sites. After evaluation and determination of eligibility for the National Register of Historic Places, any adverse impact on the archeological sites will be mitigated through a program of preservation, surface collection, and/or excavation. This work will be coordinated with the State Historic Preservation Officer and the Advisory Council on Historic Preservation.

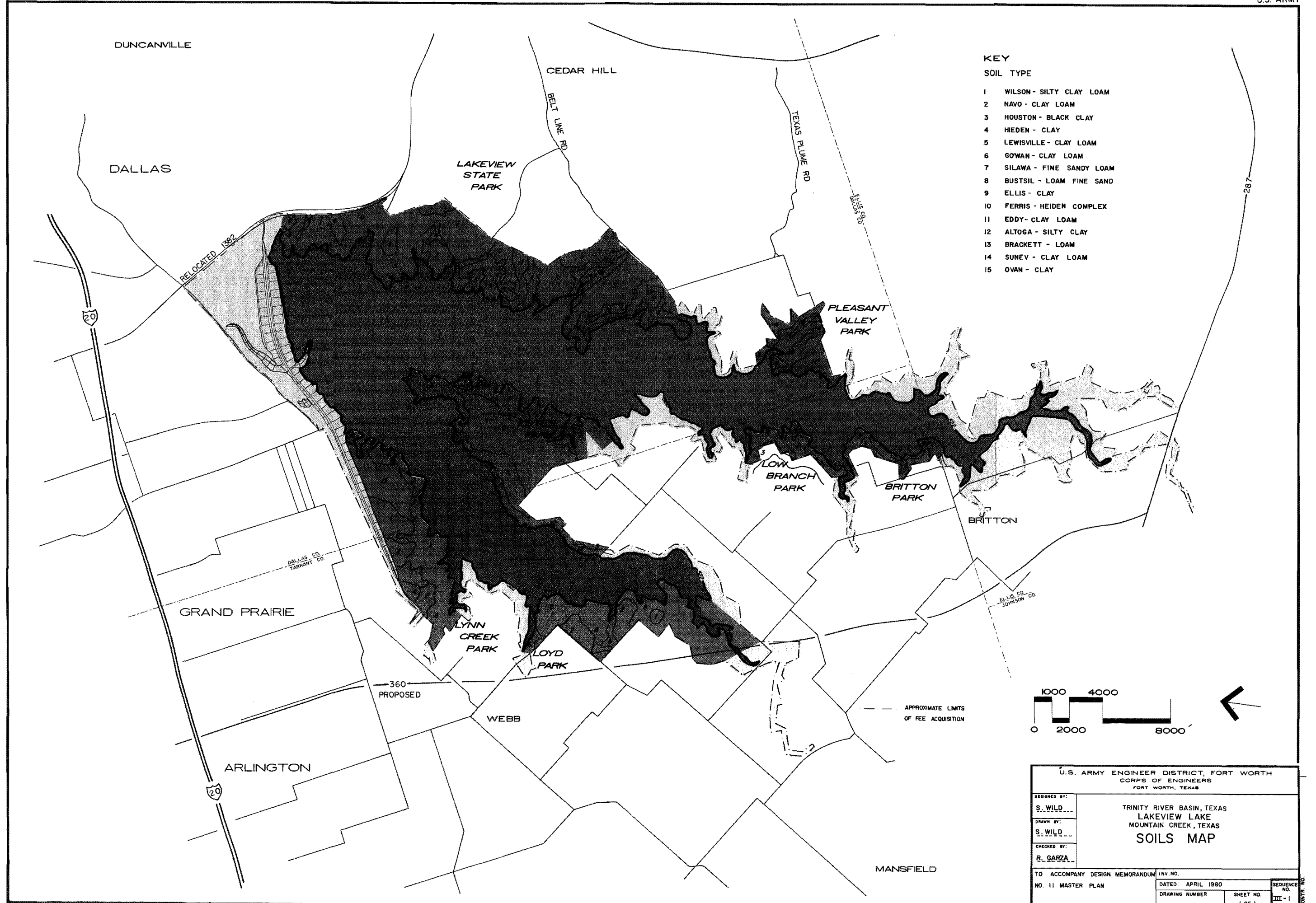
Paleontological resources exist within the lake area in the form of fossils within the Britton member of the Eagle Ford group, an Upper Cretaceous formation. Fossils found within this formation include invertebrates such as baculites, pelecypods, and ammonites, and vertebrates such as fish, several large varieties of sharks, mososaurs, and pleisosaurs. Additionally, large calcite geodes are found in the formation. The invertebrate fossils are exceptionally well preserved, and are noteworthy in that they retain their original iridescent mother-of-pearl covering. The vertebrate fossils may be present in rare, complete specimens measuring up to tens of feet in length. Excavations in the dam area may encounter these rare specimens. Paleontological excavations will be conducted to recover a sample from this potentially significant fossil locality.

3-07. Historical resources.

Most of the 25 historic localities now identified within the project area consist of houses built since 1848. Two sites were settled before 1850, three between 1850 and 1875, six from 1875 to 1900, and fourteen between 1900 and 1925. The sites span the range of the Pioneer Period, with an economy based on subsistence farming and hunting, the Initial Cash Crop Period when both cotton farming and the plantation system became widespread, the Tenant Farming Period which was characterized by an inexpensive labor supply with continued dependence on cotton, to the present with its increased emphasis on cattle.

b. Evaluation and testing will continue on the historic properties at Lakeview, with emphasis placed on an integration of archeology and history. The sites will be evaluated to determine eligibility to the National Register of Historic Places, and any adverse impact on the property as a result of the project will be mitigated appropriately, in coordination with the State Historic Preservation Officer and the Advisory Council on Historic Preservation.

3-08. Scenic resources. The major scenic resource of the project area will be the water provided by the proposed lake. Scenic resources upstream from the proposed damsite consist of undisturbed pasture lands with corridors of native grasses and some tree cover. Tree cover is dense, with medium to large trees, predominantly mesquite, but also contains other species such as pecan, hackberry, Bois d'arc, and oak. All scenic resources in the project area, although of comparatively moderate value, will be preserved where possible. In addition, enhancement of the scenic resources will be accomplished through beautification measures planned for the project.



U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY: S. WILD	TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS SOILS MAP	TO ACCOMPANY DESIGN MEMORANDUM	INV. NO.
DRAWN BY: S. WILD		DATED: APRIL 1980	SEQUENCE NO.
CHECKED BY: R. GARZA		DRAWING NUMBER	SHEET NO.
		1 OF 1	III-1



**IV FACTORS INFLUENCING AND
CONSTRICTING RESOURCE
DEVELOPMENT AND
MANAGEMENT**

IV - FACTORS INFLUENCING AND CONSTRAINING
RESOURCE DEVELOPMENT AND MANAGEMENT

4-01 General. The aim of the master plan is to balance the development of recreation facilities and the available project resources to insure the wise use of the project's resources in the best interest of the public. The formulation of this plan requires the determination, as far as possible, of project resources and the factors influencing and restricting their development and management. The interrelationship between the factors discussed in this section and the project resources discussed in section III is vital in determining the recreational use potential, the extent of project resource use, and the plans for resource development. Although various factors may be operative in particular situations, the factors presented in this section seem to be operative in general and to signify the greatest impact upon the development and management of project resources.

4-02 Socioeconomic characteristics.

a. Existing population. The day-use market area population increased from 1,533,417 in 1960 to 2,090,276 in 1970. The increase is due mainly to the growth of the urban centers such as Dallas and Fort Worth. Market area is within 25 road miles of project.

b. Projected population. Population growth in the market area is expected to make noticeable gains through 2040. The population growth was projected through only the year 2040 because the project is expected to reach its carrying capacity before 2040, and there was no need to project any further. The population now is distributed in the Dallas-Fort Worth metroplex. This distribution pattern will be maintained in the future, with a steady population increase predicted. The major population pattern change will be around the immediate vicinity of the lake. There is a steady demand for second homes, retirement homes, and even primary residences. Current market area population data for the years 1985 through 2040 are shown in table IV-1.

TABLE IV-1

PROJECT POPULATION IN MARKET AREA
(Series E Projections)

<u>Decade</u>	<u>Population</u>
1985	2,629,050
1990	2,852,000
2000	3,231,000
2010	3,564,700
2020	3,935,100
2030	4,344,400
2040	4,747,400

c. Changes in leisure time, travel, and income.

(1) Leisure time. The average workweek has declined considerably. In 1900, the average workweek was about 60 hours. Today the workweek has declined to about 40 hours. The net result has been increased leisure time. Although it is anticipated that there will be a continued gradual decline in the average workweek, leisure time will be most significantly changed by the recent trend to shift to a 4-day work week and later to a possible 3-day work week. This trend is expected to occur during the life of the project. With a larger block of leisure time available each week, it is expected that increased recreation participation will occur.

(2) Travel. The population is becoming more mobile. The enjoyment of almost every kind of outdoor recreation involves some travel. Transportation affects the enjoyment of outdoor recreation in three ways. First, the kind of transportation facilities available determines travel time and, therefore, the amount of outdoor recreation that most people can enjoy. Second, transportation affects outdoor recreation in terms of monetary cost. Third, transportation facilities influence the character of the recreation experience. There have been significant changes in the amount of travel per person and in the mode of transportation over the past 50 years. At the same time, there have been improvements in comfort and convenience. The excellent highway system traversing and paralleling the proposed lake area greatly enhances the area for potential recreational use. Although the full impact of the current fuel shortage is not known at this time, it is anticipated that recreation use will intensify at areas close to urban centers, and more rural areas will receive less use but the users will stay longer. In the future, public transportation should become increasingly important in influencing mass mobility. With the fuel shortage, it has become more important to provide recreational opportunities close to metropolitan areas.

(3) Income. Incomes are increasing. The trends are clearly upward and are expected to continue. Along with changes in average incomes, there are shifts in distribution of income which make it economically possible for more people to engage in different kinds of outdoor activity. A greater proportion of this higher income will be discretionary, a larger proportion for outdoor recreation than is true today. Finally, disposable income is increasing proportionately to obligated income, which further expands the opportunity for recreational pursuits.

TABLE IV-2

PROJECTED PER CAPITA INCOMES

1985	1990	2000	2010	2020	2040
\$5,700	\$6,400	\$8,400	\$11,100	\$13,300	\$16,700

Source: OBERS Series E Projections

d. Growth patterns. Since the 1940's, the general trend has been movement away from rural areas to the metropolitan areas. This trend has been evident in the day-use market area. It is expected to continue, but at a slower rate. Major changes have also taken place within the urban centers in the day-use market area. Because of increased income and sociological changes, the general population of the large urban centers has migrated from the centers of cities to suburban areas. The new result of this trend has been a large radial expansion and encroachment upon adjacent rural areas.

e. Interstate demand situations: Perhaps the largest recreation and tourism complex in the market area is the mid-cities cluster of amusements located in Arlington, Texas. This cluster consists of several major facilities such as Six Flags Over Texas, Texas Rangers baseball, and a large wax museum. The Six Flags Park has been the most popular tourist attraction in Texas for several years. All of these areas are major destination points of out-of-state travelers who would be passing through the Lakeview market area.

4-03 Changing trends in recreation. Beginning in the late 1950's and continuing through the present, a trend in outdoor recreation activities has been established that continues to grow every year. Camping, which used to be the activity of only a few rugged individuals and organizations such as the Boy Scouts, has become one of the major outdoor recreation activities in the United States. The improvements in camping equipment, self-contained campers and motor homes, and high cost motel, hotel, and restaurants have all contributed to this trend.

Developing along with the camping trend, but beginning earlier, is the outdoor activity of recreation boating. In the last few years, a new trend of bass fishing in the southern states has been established and continues to grow. Although it has always been a popular sport, new innovations by the tackle and boating industries have promoted the activity to a point that the pursuit of this one species of fish is a billion dollar industry in itself. An average bass fishing rig in the southern states costs in excess of \$4,000 and consists of a custom built boat, motor of 40 to 125 horsepower, foot operated trolling motor, and a fish locator. Tackle boxes can contain upward of 50 plugs that average more than \$1.00 each. Rods and reels, two or more per individual, cost upward of \$20.00 each.

4-04 Outdoor recreation activities desired by users. The 1970 recreation participation rates developed by the Bureau of Outdoor Recreation indicate that by the year 2000 participation in major forms of summertime outdoor recreation activities will be four times greater than in 1960. Of the 22 most popular summertime outdoor recreation activities ranked in the order in which projections indicate people will participate in them, the popularity of the major water oriented activities may be noted.

COMPARISON OF TEXAS RESIDENTS' OUTDOOR RECREATION PREFERENCES
WITH URBAN AND RURAL ACTIVITY RANKINGS

<u>Rank</u>	<u>Statewide Activity Preferences</u>	<u>Urban Activity Participation</u>	<u>Rural Activity participation</u>
1	Games and Sports	Driving for Pleasure ^a	Fishing
2	Fishing	Swimming	Camping
3	Swimming	Walking for Pleasure	Swimming
4	Picnicking	Games and Sports	Picnicking
5	Driving for Pleasure ^a	Children's Play	Driving for Pleasure ^a
6	Hunting	Picnicking	Sightseeing
7	Sightseeing	Sightseeing	Boating
8	Camping	Fishing	Horseback Riding
9	Boating	Regional Amusement Center	Hunting
10	Children's Play	Boating	Walking for Pleasure
11	Walking for Pleasure	Horseback Riding	Skiing
12	Horseback Riding	Camping	Hiking
13	Hobbies and Crafts	Skiing	Nature Study
14	Skiing	Nature Study	Games and Sports
15	Racing	Surfing	Children's Play
16	Hiking	Hiking	Racing
17	Nature Study	Racing	Sport Shooting
18	Rodeo	Sport Shooting	Surfing
19	Regional Amusement Center	Hunting	Rodeo
20	Sport Shooting	Rodeo	Archery
21	Surfing	Archery	Regional Amusement Center
22	Archery	Hobbies and Crafts	Hobbies and Crafts

a. Includes bicycling, riding, flying, driving for pleasure.

Source: Texas Outdoor Recreation Plan, Outdoor Recreation Activities in Texas, Volume VII, page 25.

4-05 Existing water oriented recreation resources. The Corps of Engineers has three lakes (Benbrook, Grapevine, and Lewisville) in the market area totaling 34,430 water surface acres at their normal pool elevations. In addition to the Corps of Engineers lakes, there are several other State, county, and municipal agencies providing lakes which are used to a certain extent for outdoor recreation as shown on (Table IV-3). The Corps of Engineers lakes in the area are approaching or exceeding optimum use, based on present recreational development. Even if the areas which are set aside for future recreational development were to be developed, the market area would still not have sufficient recreational development to meet the needs.

Lakes constructed by agencies other than the Corps of Engineers have made only limited provisions for recreational development. These lakes are built for specific purposes such as water supply, cooling water, power, or combinations thereof. Recreation is not considered a project purpose, and only limited development is provided. Primary and second home development around these lake shores inhibits the acquisition of additional lands for recreational development. The result is fairly exclusive use of the shoreline by adjoining landowners and limited public use of the water due to inadequate points of access. Table IV-3 presents data on lakes in the area. Major recreation attractions in the area are shown on plate IV-1.

TABLE IV-3
LAKES IN THE AREA

<u>Name</u>	<u>County</u>	<u>Administering agency</u>	<u>Project purpose</u>	<u>Surface acres</u>
Benbrook Lake	Tarrant	Corps of Engineers	Flood control Navigation	3,770
Grapevine Lake	Tarrant-Denton	Corps of Engineers	Flood control Water supply	7,380
Lake Arlington	Tarrant	City of Arlington and Texas Electric	Power Water supply	3,385
Lake Ray Hubbard	Dallas-Kaufman- Rockwall-Collin	City of Dallas	Water supply	22,745
Lake Worth	Tarrant	Tarrant County Water Board	Water supply	3,560
Mountain Creek Lake	Dallas	Dallas Power and Light Company	Power Water supply	2,940
White Rock Lake	Dallas	City of Dallas	Water supply Recreation	1,095
Lewisville Lake	Denton	Corps of Engineers	Flood control Water supply	23,280

4-06. Accessibility.- The proposed extension south of State Highway 360 will provide access to the south and west sides of the lake, with the utilization of existing county roads. FM Highway 1382 from Grand Prairie south to its intersection with U.S. Highway 67 provides access to the eastern portion of the lake. Interstate Highway 20, 2.5 miles north of the dam, will provide access to the project area from both Dallas and Fort Worth. The county roads in the area are all paved and of generally high standards. Since most of the lake area is or will be within the area cities corporate limits it is conceivable that some form of mass transit may be available to the area.

4-07. Water quality of pool.- The overall quality of the water impounded by Lakeview Lake should be well within the US Public Health Service criteria for surface water sources of public water supply. The water quality will be suitable for a variety of outdoor recreational activities.

4-08. Thermal stratification.- The anticipated summer thermal stratification condition of Lakeview Lake is shown in Figure IV-1. Since the outlet works at the dam will have the capability of selectively releasing water the quality of water of the releases is expected to meet stream standards. The thermal stratification of the lake is, therefore, expected to have limited or no adverse environmental effects on the downstream conditions and no significant impact upon recreation.

4-09. Pool fluctuations.- The top of conservation pool will be equalled or exceeded only about 8 percent of the time. The average pool elevation during the prime recreation season is about 3 feet below the top of conservation pool and will be equalled or exceeded about 54 percent of the time. The 5-year drawdown level will be equalled or exceeded about 90 percent of the time. The 5-year flood level will be equalled or exceeded only about 3 percent of the time.

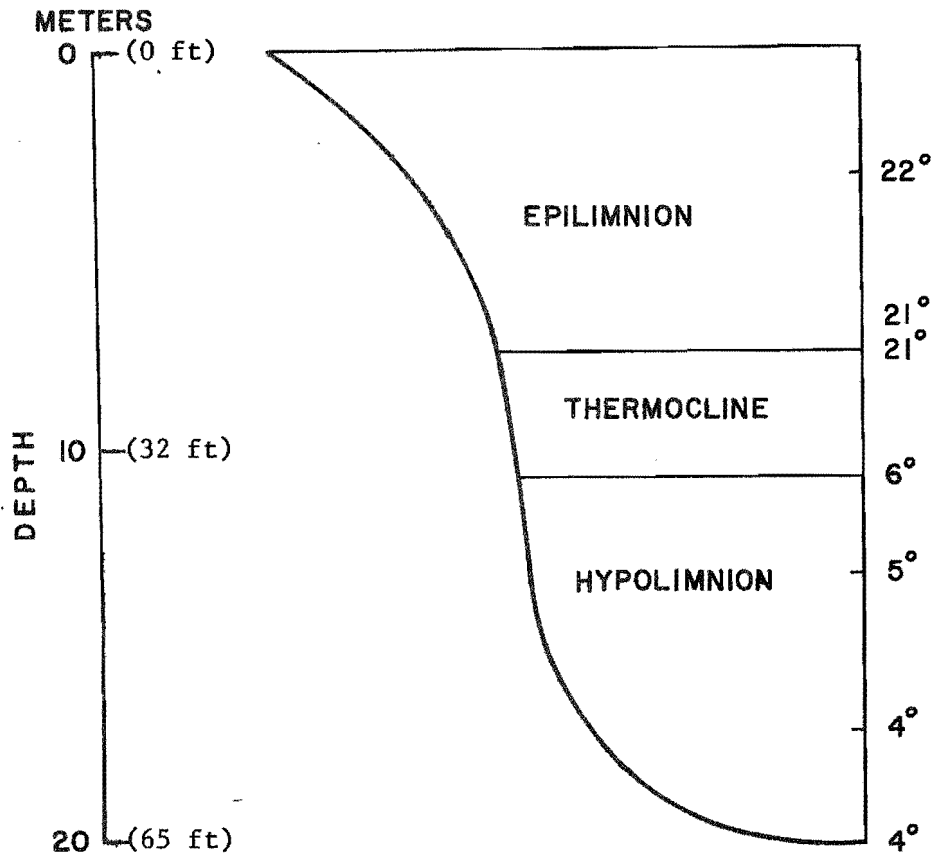
4-10. Lake Regulation.- The Corps of Engineers will be responsible for release of floodwater from the project. The flood control plan of operation is dependent upon the regulated release rate of the lake, on downstream channel capacities of the Trinity River, and on releases from other lakes on the Trinity River.

4-11. Drinking Water Standards.- The overall quality of the water impounded by the dam at Lakeview Lake should be good and should remain well within US Public Health Service criteria for surface water sources of public water supply.

4-12. Borrow Areas.- Due to a lack of lower plasticity clay soils, a portion of Estes Park is currently being considered as an alternate borrow area. In the event that this soil is used all effected areas will be revegetated, shaped and graded to be compatible with adjacent areas. All remaining borrow areas are below conservation pool.

FIGURE IV-1

Summer Thermal Stratification



Numbers at right represent the temperature conditions from one surface to bottom, expressed in degrees Centigrade. Various detailed values used, such as depths, temperature decline in the thermocline, and temperature distribution, differ in different lakes, but the essential features in this seasonal cycle remain the same.

Note: 4.0° Centigrade = 39.2° Fahrenheit
22.0° Centigrade = 71.6° Fahrenheit

KEY

RIVER RECREATION

- 1 WEST FORK
- 2 ELM FORK
- 3 CLEAR FORK
- 4 TRINITY RIVER, MAIN STEM

TRAILWAYS

- 5 BENBROOK TRAIL
- 6 FORT WORTH HIKE AND BIKE TRAIL
- 7 WILDERNESS WAY TRAIL
- 8 GREER ISLAND NATURE TRAIL

NATURAL AREAS

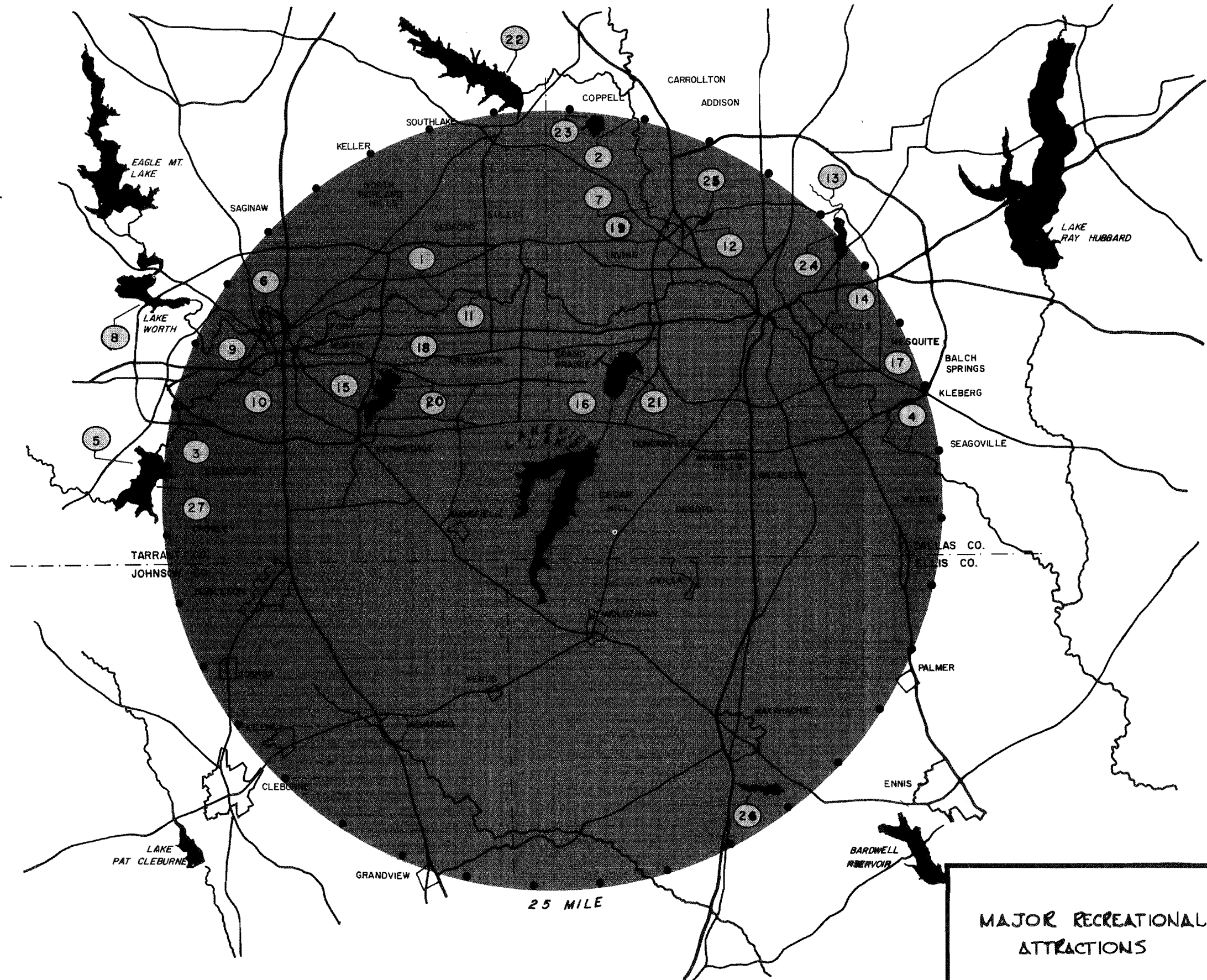
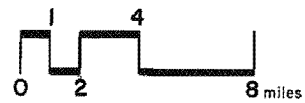
- 9 WEST FORK BOTTOMS
- 10 CLEAR FORK BOTTOMS
- 11 TRINITY BOTTOMS
- 12 BACHMAN CREEK
- 13 UPPER WHITE ROCK CREEK

MAJOR PARK SYSTEMS

- 14 DALLAS
- 15 FORT WORTH
- 16 GRAND PRAIRIE
- 17 MESQUITE
- 18 ARLINGTON
- 19 IRVING

LAKES

- 20 LAKE ARLINGTON
- 21 MOUNTAIN CREEK LAKE
- 22 GRAPEVINE LAKE
- 23 NORTH LAKE
- 24 WHITE ROCK LAKE
- 25 BACHMAN LAKE
- 26 LAKE WAXAHACHIE
- 27 BENBROOK LAKE



25 MILE

**MAJOR RECREATIONAL
ATTRactions**

Lakeview Lake



V OUTDOOR RECREATION ATTENDANCE AND FACILITIES

V - OUTDOOR RECREATION NEEDS AND FACILITIES

5-01. General.- Recreation use projections for Lakeview Lake follow the methodology used for predicting recreation attendance as instructed by ER 1120-2-403 dated 26 March 1970. The recreation prediction procedure utilizes the "similar project" concept. This technique involves using recreation use and attendance information from similar existing projects (Benbrook, Grapevine, Lavon, and Lewisville) to project attendance at a proposed project.

5-02. Day use market area.- The day use market area was determined from an analysis of project day use zones and per capita use rates on existing similar projects elsewhere. Analysis of influencing factors including competition from other recreation attractions in the area and time-distance use relationships. The principle day use area was determined to be approximately 25 road miles from the project. This market area includes Dallas, Tarrant, Johnson, and Ellis Counties.

5-03. Selection of initial per capita use rate.- In order to minimize the chance of an erroneous attendance based on a unique situation, recreation use data from similar projects were pooled to derive a per capita use curve. The selection of an initial per capita use rate curve for this project was made by adjusting and revising the per capita use curve to more nearly fit the prospective project. From the initial per capita use curve, the per capita use rate was computed to be 1.75.

5-04. Projected population of the day use market area.- The population within the day-use market area was projected from the base year 1985 through the year 2040. These projections were based on OBERS Series "E" projections. A summary of the projected populations by decade for the year 1985 through 2040 are shown in table V-1.

TABLE V-1
PROJECTED POPULATION IN THE MARKET AREA
(Series "E" Projections)

<u>Decade</u>	<u>Dallas County</u>	<u>Tarrant County</u>	<u>Ellis County</u>	<u>Total</u>
1985	1,706,250	862,800	60,000	2,629,050
1990	1,868,500	917,800	65,700	2,852,000
2000	2,151,200	1,004,200	75,600	3,231,000
2010	2,398,000	1,082,400	84,300	3,564,700
2020	2,674,400	1,166,700	94,000	3,935,100
2030	2,982,000	1,257,600	104,800	4,344,400
2040	3,325,000	1,355,600	116,800	4,797,400

5-05. Estimating total initial recreation needs. After the population and per capita use rate is determined, the per capita rate multiplied by the county population gives the expected initial recreation day-use for the base year 1985 from within the market area. It has been found that the initial recreation needs from within the market area will constitute about 90 percent of the total recreation use with approximately 10 percent originating from outside the market area. From the project survey data, overnight use is estimated to be 10 percent of the total use. The total initial recreational needs (base year 1985) are computed in table V-2.

5-06. Projection of potential recreation needs. An important part of the recreation analysis of the proposed project is the estimation of potential future recreation use. Although there are many factors that may affect recreation attendance projections, there are essentially two basic items to be considered: (1) anticipated increase in future per capita use rates, and (2) population projections. Because present recreation participation rates on existing projects are increasing and are predicted to continue increasing, the initial per capita rates must be adjusted to reflect the anticipated increase in per capita rates by decade.

TABLE V-2

INITIAL RECREATION NEEDS
(expressed in recreation days*)

<u>Decade</u>	<u>Population</u>	<u>Per Capita Use Rate</u>	<u>Day-Use Market Area 90%</u>	<u>Day-Use Outside Market Area</u>	<u>Total Day-Use</u>	<u>Overnight Use</u>	<u>Total</u>
1985	2,629,050	1.75	4,600,837	511,204	5,112,041	511,204	5,623,245

*Recreation-day - a standard unit of use consisting of a visit by one individual to a recreation development or area for recreational purposes during any reasonable portion or all of a 24-hour period.

The initial per capita use rate was adjusted by the factors presented in table V-3.

TABLE V-3

ADJUSTMENT FACTORS FOR PER CAPITA USE RATES

1985 - 1.00

1990 - 1.08

2000 - 1.33

2010 - 1.48

2020 - 1.62

2030 - 1.74

2040 - 1.84

Then the adjusted per capita use rates were applied to the population projections to arrive at the projected unsatisfied recreation needs (see table V-4).

5-07. Initial recreational use.- Using this recreation-use prediction method, the total initial use would be 5,623,245 recreation-days annually. Because of the concerns expressed by Congress that the recreation cost and benefits were too high, it was administratively decided, during the restudy analysis, that the initial use would be kept under 4,000,000 recreation days.

5-08. Optimum capacity (optimum use).- Optimum capacity is a measure of project capability. It is based on many of the physical and environmental resource factors affecting the project but must also consider population in the market area, access to the project, and user needs and preferences. Standards for maximum crowding in the project must be determined to conform with optimum visitation criteria which have been established. For lakes these standards are keyed to a maximum boat density desirable for the project. A standard of 4.0 acres per boat was chosen as the overall space requirement needed to accommodate a mix of boating activity at the desired density standard. Additional variables are as follows:

3 persons per boat

1/4 boats active at one time

Calculations:

6,920 water acres * $\frac{1}{4}$ - acres/boat \approx 1,730 boats on lake at one time
1,730 x 4 (1/4 boats active) \approx 6,920 boats (total boats)
6,920 x 3 persons per boat \approx 20,760 persons on lake at one time
20,760 x 3 (2:1 ratio of the number of land users compared to the
number of water users) \approx 62,280 design day load
62,280 x 26 weekend days \approx 1,619,280 summer weekend users \div .60
summer weekend use rate \approx 2,698,800 summer visitation \div .43 summer
visitation rate - 6,276,279 optimum use. Rounded to 6,300,000.

*The water acres represent the average surface acreage during the prime recreation season.

Many features of a lake site can also affect recreation potential. This figure (6,300,000) is a reflection of the aspects of size, location sustained ecological balance, and other characteristics of the project including but not limited to topography, soil, vegetation, accessibility, climate, selection of recreation areas, and water quality. A brief summary of these features, except size, which is discussed above, is as follows.

(1) Location. Lakeview Lake is situated near the densely populated Dallas-Fort Worth metropolitan area, a region of intense industrial and commercial development which has a projected growth rate above the national average. This location provides an excellent opportunity to develop, close to the people, a lake project with a variety of outdoor recreational opportunities.

(2) Sustained ecological balance. Man's influence on the ecosystems of the Lakeview project area constantly changes the balances which might exist between components. The presence of wild animals, mammals, birds, reptiles, amphibians, fish, insects, and other invertebrates adds to the local color of the area. Types of vegetation and their proportions add to or detract from the esthetic quality of the site. It is very important to have an acceptable plant and animal balance.

(3) Topography. The Lakeview Lake site is desirable for recreation because its topography will allow recreationists to be at the water's edge. The lake will have sufficient depth for recreational activities, and the drawdown will be small so that no large mud flats will be created during periods of drawdown.

(4) Soil. Soil is the basic factor used for determination of land use planning and land carrying capacity. Certain soil characteristics impose slight to severe limitations on recreational development, engineering, and land management. The soil conditions at Lakeview are presented in table III-1.

TABLE V-4

PROJECTED RECREATION NEEDS
(expressed in recreation-days)

<u>Decade</u>	<u>Population</u>	<u>Per Capita Use Rate</u>	<u>Day-Use Market Area 90%</u>	<u>Day-Use Outside Market Area</u>	<u>Day-Use</u>	<u>Overnight Use</u>	<u>Total</u>
1990	2,852,000	1.89	5,390,280	598,920	5,989,200	598,920	6,588,120
2000	3,231,000	2.33	7,528,230	836,470	8,364,700	836,470	9,201,170
2010	3,564,700	2.59	9,232,573	1,025,841	10,258,414	1,025,841	11,284,255
2020	3,935,100	2.84	11,136,333	1,237,370	12,373,703	1,237,370	13,611,073
2030	4,344,400	3.06	13,293,864	1,477,096	14,770,960	1,477,096	16,248,056
2040	4,797,400	3.27	15,687,498	1,743,055	17,340,553	1,743,055	19,173,608

(5) Vegetation. The type of vegetation has an influence on the general esthetics of the lake. The Mountain Creek arm of the lake is characterized by medium to dense tree cover. The Walnut Creek arm has medium to sparse tree cover. The area has a very warm climate, and the presence of shade producing trees is very important. The tree cover will serve as a natural screening between camp or picnic sites and thus allow for more development without apparent crowding.

(6) Accessibility. Access to the lake is exceptionally good because of the abundance of roads in the area. The recreational potential of the lake is increased because people can easily get to the lake.

(7) Climate. Lakeview Lake is situated in a region characterized by a relatively mild climate and long summers with high day and moderate night temperatures. The warm climate is favorable for water oriented recreation, particularly water contact recreation. The longer the warm season, the longer the recreation season will be.

(8) Selection of recreation areas. Several variables were analyzed in the selection of the areas for recreation development. These variables include, but are not limited to, the following:

- (a) Widest possible distribution of use around the lake.
- (b) Maximum accessibility to the water surface at all pool levels.
- (c) Potential for multiplicity of activities.
- (d) Access to existing roads.
- (e) Topography of the area.
- (f) Existing vegetation.
- (g) Existence of scenic areas.
- (h) Degree of shelter for boats and water depths for swimming beaches and boat ramps.

(9) Water quality. Water in Lakeview Lake should be of good quality. The project will support a water environment suitable for a variety of outdoor recreational activities.

5-09. Resources requirements. The recreation market area for Lakeview Lake includes all or portions of Texas Outdoor Recreation Plan (TORP) planning regions 9, 10, and 11. However, since only one county in the market area (Ellis) is in planning region 9, the resource requirements from this region are not included in this discussion. Table V-5 presents a summary of the estimated 1980 and 2000 urban and rural resource requirements for recreation facilities in the Lakeview market area.

TABLE V-5

SUMMARY OF RESOURCE REQUIREMENTS FOR RECREATION FACILITIES IN TORP REGIONS 10 AND 11

<u>Recreation Resource</u>	<u>Measure</u>	<u>Rural Resource Requirement</u>		<u>Urban Resource Requirement</u>	
		<u>1980</u>	<u>2000</u>	<u>1980</u>	<u>2000</u>
Park Land	Acre	5,057	13,735	24,064	81,045
Hunting Land	Acre	207	295	---	---
Camping	Sites	455	560	---	---
Picnicking	Table	3,739	9,533	734	2,611
Boat Ramps	2 Lanes/Ramp	96	274	76	279
Fishing Facilities	Lin Yd	472	727	---	---
Swimming Beaches	Sq Yd (000's)	1,855	6,530	---	---
Bicycle Trails	Mile	3	11	214	671
Horseback Riding Trails	Mile	131	413	---	---
Walk, Hike, and Nature					
Study Trails	Mile	41	108	385	1,056
Recreation Water	Acre	0	2,016	3,008	17,212
Baseball/Softball	Field	5	43	1	187
Football/Soccer	Field	---	---	291	645
Tennis	Court	---	---	4,046	13,759
Basketball	Court	---	---	200	548
Golf	Hole	0	0	1,701	5,845
Playgrounds	Acre	61	214	358	2,323

Source: Regional Summary Volume, TORP, Pages 72 and 78.

Note: Dashes indicate not applicable.

5-10. Recreational facilities analysis. The recreation facilities analysis in tables V-6 and V-7 was used to determine the recreation facilities required to support the initial and optimum recreation attendance demands.

5-11. Real estate required over and beyond other project needs. The public use land requirements are based on the project visitation. Visitation is projected to increase over the life of the project which will require an equal increase in the amount of public use

land needed to accommodate the projected visitation. Participation rates are combined with space standards and associated planning decisions to derive the most accurate estimate of land requirements for Lakeview Lake. The final result is the gross acreage requirement necessary to accommodate the design day load. The space requirements thus determined, over and beyond other project needs, are 1,475 acres for public use.

TABLE V-6
RECREATION ANALYSIS

Total annual attendance: 3,800,000 (initial)

Design day load

3,800,000 total annual attendance x .43 visits during summer months
x .60 which occurs on weekends = 980,400 total number of
weekend users

Total number of weekend users ÷ 26 weekend days = 37,708 design
day load

Picnicking

Design day load x .25 of total are picnickers = number of picnickers
No. of picnickers x .40 of picnickers requiring facilities = number
of picnickers requiring facilities

No. of picnickers requiring facilities ÷ turnover rate of 2 ÷ 3
persons per vehicle = 628 picnic units required

Camping

Design day load x .10 of total are campers = number of campers
No. of campers ÷ 5 persons per campsite = 754 camping units required

Boat ramps

Design day load ÷ load factor of 3 = number of vehicles
No. of vehicles x .25 of vehicles with boats = number of boats
No. of boats ÷ 50 launchings per day = 63 boat launching ramps
required

Beaches

Design day load x .30 swimmers = number of swimmers
No. of swimmers x .60 swimmers on beach = number of beach users
No. of beach users ÷ turnover rate of 3 = number of users on beach
at any one time
No. of users on beach at same time x 50 square feet of beach per
person = 2.60 acres of land area required for sand beach

No. of swimmers x .30 are swimmers in water = number of swimmers
in water

No. of swimmers in water ÷ turnover rate of 3 = number of swimmers
in the water at any one time

No. of swimmers in the water at any one time x 100 square feet of
water surface per user = 2.60 acres water surface required

10% of swimmers need no additional land

TABLE V-7

RECREATION ANALYSIS

Total annual attendance: 6,300,000 (optimum)

Design day load

6,300,000 total annual attendance x .43 visits during summer months
x .60 which occurs on weekends = 1,625,400 total number of
weekend users

Total number of weekend users ÷ 26 weekend days = 62,515 design
day load

Picnicking

Design day load x .25 of total are picnickers = number of picnickers

No. of picnickers x .40 of picnickers requiring facilities = number
of picnickers requiring facilities

No. of picnickers requiring facilities ÷ turnover rate of 2 ÷ 3
persons per vehicle = 1,042 picnic units required

Camping

Design day load x .10 of total are campers = number of campers

No. of campers ÷ 5 persons per campsite = 1,250 camping units required

Boat ramps

Design day load ÷ load factor of 3 = number of vehicles

No. of vehicles x .25 of vehicles with boats = number of boats

No. of boats ÷ 50 launchings per day = 104 boat launching ramps
required

Beaches

Design day load x .30 swimmers = number of swimmers

No. of swimmers x .60 swimmers on beach = number of beach users

No. of beach users ÷ turnover rate of 3 = number of users on beach
at any one time

No. of users on beach at same time x 50 square feet of beach per
person = 4.30 acres of land area required for sand beach

No. of swimmers x .30 are swimmers in water = number of swimmers
in water

No. of swimmers in water ÷ turnover rate of 3 = number of swimmers
in the water at any one time

No. of swimmers in the water at any one time x 100 square feet of
water surface per user = 4.30 acres water surface required

10% of swimmers need no additional land



**VI COORDINATION WITH
OTHER AGENCIES**

VI - COORDINATION WITH OTHER AGENCIES

6-01. General. During the development of this master plan, input was requested from agencies at the Federal, State, and local levels having collateral interest in the project. This section contains the listing of the coordination effort and the comments of those who have provided input into the recreation planning for Lakeview Lake. This master plan will be forwarded for review and comment to appropriate agencies after review by SWD.

6-02. History of project coordination prior to development of the master plan.

a. Public hearings.

(1) Originally, public interest was solicited for comments concerning improvements of the Trinity River basin. Eleven public hearings were held at various cities and towns in the basin between 1946 and 1958 to obtain points of interest on navigation, flood control, water quality control, drainage, irrigation, hydroelectric power, fish and wildlife, recreation, and other purposes involved in the project. Prior to development of the comprehensive plan, nine hearings were held in the upper part of the basin in the general vicinity of Dallas and Fort Worth. Two hearings were held at Liberty, Texas, in the lower basin. A subsequent public meeting was held at Fort Worth, Texas, to present the features of a preliminary plan to local interests.

(2) The Trinity River Authority of Texas, prior to preparation of its master plan in 1958, held public hearings for each of the 17 counties within its jurisdiction to determine the views of local interests with respect to improvements desired.

(3) In 1960, the United States Study Commission held public meetings in Huntsville and Corsicana, Texas, to obtain the estimates of local interests concerning present and future water requirements throughout the basin.

(4) The Lakeview Lake Project was covered in a general public hearing held at Fort Worth, Texas, on 20 December 1961. The hearing was held in order to provide an opportunity for all interested parties to be informed and to express their views concerning an investigated multiple-purpose plan of development for the Trinity River basin.

(5) The Lakeview Lake Planning Council sponsored and held a public meeting on 22 January 1969, in Duncanville, Texas, to discuss the Lakeview Lake Project. The objective of this council was to gather, assimilate, and distribute to all interested entities, particularly to affected chambers of commerce and governmental units, all available information concerning the development of Lakeview Lake and its effect on surrounding counties and communities.

(6) The results of the proposed 1973 restudy revisions to Lakeview Lake were presented to both the public and to other agencies during the May 1974 public hearing which was held in Grand Prairie, Texas. The purpose of the hearing was to obtain public response to the proposed plan for Lakeview Lake. Public and interagency comments were requested by mail and were received during and after the meeting.

(7) A real estate public meeting was held in July 1977 to provide general information to property owners and other parties interested in policies and procedures of the Government concerning the acquisition of real estate interests for Lakeview Lake.

b. Heritage Conservation and Recreation Service (formerly Bureau of Outdoor Recreation). The general design memorandum was forwarded on 1 October 1969 to the Heritage Conservation and Recreation Service (HCRS) for review and comment. HCRS was unable to comment on the project at that time because of schedule and budget restrictions. A copy of that agency's letter was included in Supplement 1 to the GDM. In response to the direction of the OMB, in March 1971 HCRS prepared a report on the general recreation aspects of the Lakeview Lake Project. The HCRS was notified of the proposed changes in the scope of the project by the April 1974 public meeting announcement. No written or oral statements were received regarding the modified project. Subsequent to the public meeting in May 1974, the recreational aspects of the project plan were informally coordinated with staff representatives of HCRS.

c. U.S. Fish and Wildlife Service. The general design memorandum was forwarded on 13 February 1970 to the Bureau of Sport Fisheries and Wildlife (now U.S. Fish and Wildlife Service) for review and comment. A copy of that agency's letter response is included in Supplement I to the GDM. In April 1970, the draft fish and wildlife report was received and subsequently reviewed, with comments forwarded to the Fish and Wildlife Service on 6 May 1970. On 22 May 1970, the final fish and wildlife report was received, with the recommendations being essentially the same as in the draft report. A copy of the report was included in Supplement I to the GDM. The U.S. Fish and Wildlife Service was notified of the proposed changes in the scope of the Lakeview Lake Project by means of the public meeting announcement. No written or oral statements were received from the USFWS regarding the

modified project. During the preparation of the Restudy Report, informal discussions were held with the U.S. Fish and Wildlife Service in regard to the man-days of sport fishing and hunting on the modified project.

d. Texas Parks and Wildlife Department. The general design memorandum was forwarded on 8 April 1970 to the Texas Parks and Wildlife Department (TP&WD) for review and comment. In a letter dated 27 April 1970, the TP&WD concurred with the GDM project plan as presented. A copy of the agency's letter was included in Supplement I to the GDM. In response to the notice of public meeting (May 1974), the TP&WD requested that three nursery ponds and eleven public fishing piers be constructed in conjunction with the project. An interagency meeting was held with the TP&WD on 4 September 1974 to discuss these features and ways of incorporating them into the project.

6-03. Summary of project coordination since the initiation of the master plan.

a. Public meeting. The Lakeview Lake Planning Council sponsored and held a public meeting on 15 August 1978 in Grand Prairie, Texas, to collect public input on recreation development at Lakeview Lake. This early stage meeting provided the public with a forum to make suggestions and recommendations regarding the recreation development of the lake and served as a source of information to be provided to the Trinity River Authority, Texas Parks and Wildlife Department, and the Corps in developing the master plan for recreation development. A synopsis of the information received at the meeting is presented on pages VI-18 and VI-19.

b. As a follow-up to this meeting, letters were sent to local governmental entities to get their ideas and suggestions. In response to this letter, the Grand Prairie Parks Department hosted a meeting with park directors of the cities around the lake. This meeting was held in Grand Prairie on 31 August 1978. All representatives present expressed an interest in the development of the lake primarily in two areas: (1) additional water oriented recreation opportunities close to the people and (2) setting a State park close to the people in the metro area.

c. U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department. The district requested the cooperation of these agencies in appraising the fish and wildlife potentialities of the project. Pursuant to this request, a field reconnaissance was made with representatives from these agencies, Trinity River Authority and Corps in February 1979. Informal discussions are continuing; however, no formal report has been received. When this report is completed, and any changes to the vegetative and wildlife management plans, these changes will be made by supplement to this plan. Coordination is continuing.

d. Numerous discussions have taken place with the Trinity River Authority concerning the recreation plans for the park areas for which they have cost sharing and management responsibilities. They have informally agreed to the plan presented in this report and will be asked to do so officially after formal review.

6-04. Coordination to be accomplished.

a. A public meeting will be held on the master plan after receipt of the master plan for the State Park. This plan will be prepared by the Texas Parks and Wildlife Department and is expected to be complete in January 1981

b. The complete master plan will be sent to interested Federal, State, and local governmental agencies for review and comment.

c. Wastewater treatment design and other pollution abatement plans will be coordinated with the Environmental Protection Agency upon completion of the feature design memorandum on recreation.

6-05. Comments received since initiation of the master plan. To facilitate finding certain comments of particular agencies, organizations, or individuals, a cross index is presented in Table VI-1.

TABLE VI-1
COORDINATING AGENCIES

Agency	Page No.
Federal:	
Heritage Conservation and Recreation Service	VI-6
State:	
Texas Parks and Wildlife Department	VI-7
County:	
Dallas County Department of Public Works	VI-8
City:	
Arlington Parks and Recreation Department	VI-9-10
Cedar Hill City Manager	VI-11
Duncanville Parks and Recreation Department	VI-12
Fort Worth Parks and Recreation Department	VI-13
Mesquite Parks and Recreation	VI-14-15
Other:	
Trinity River Authority	VI-16
(Letter from Grand Prairie Bicycling Association)	VI-17
Lakeview Reservoir Planning Council	VI-18-19
North Central Texas Council of Governments	VI-20-22
No comments received from:	
City of Dallas	
City of Mansfield	
City of Midlothian	
Ellis County	
Johnson County	



United States Department of the Interior

HERITAGE CONSERVATION AND RECREATION SERVICE
SOUTH CENTRAL REGION

5000 MARBLE AVENUE, N.E., ROOM 211
ALBUQUERQUE, NEW MEXICO 87110

IN REPLY REFER TO:

6783

October 11, 1978

Mr. Arthur D. Denys
Chief, Engineering Division
Fort Worth District
Corps of Engineers
P. O. Box 17300
Fort Worth, Texas 76102

Dear Mr. Denys:

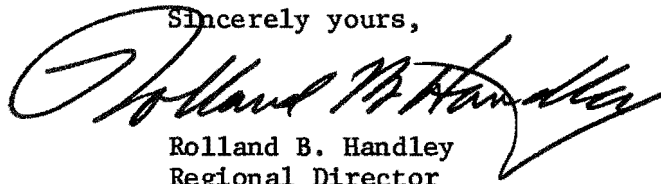
In response to your letter dated August 31, 1978 concerning the preparation of a master plan for the Lakeview Lake project, the National Park Service now has the responsibility for "Level C" water planning efforts. The program is aimed at planning for site-specific projects such as the Lakeview project. I suggest you contact Mr. Wayne Cone, Associate Regional Director of NPS in Santa Fe. His phone number is FTS 476-1385.

The Texas Parks and Wildlife Department, through the Texas Outdoor Recreation Plan, has data on the supply and demand of recreation opportunities in Dallas and Tarrant Counties. The plan should be of benefit for your purposes.

During FY 1979, we expect to be working closely with the Trinity River Authority in assisting them to develop greenbelts along the River in Dallas and Tarrant Counties. As we begin to approach the question on what needs to be done along the River and the involvement of agencies we will be contacting your office for assistance.

We look forward to working with you in developing water-oriented recreation opportunities in the Metroplex.

Sincerely yours,



Rolland B. Handley
Regional Director

VI-6

TEXAS
PARKS AND WILDLIFE DEPARTMENT

COMMISSIONERS

PEARCE JOHNSON
Chairman, Austin

JOE K. FULTON
Vice-Chairman, Lubbock

JOHN M. GREEN
Beaumont



HENRY B. BURKETT
EXECUTIVE DIRECTOR

4200 Smith School Road
Austin, Texas 78744

COMMISSIONERS

LOUIS H. STUMBERG
San Antonio

JAMES R. PAXTON
Palestine

PERRY R. BASS
Fort Worth

August 23, 1978

Mr. Arthur D. Denys
Department of the Army
Fort Worth District, Corps of Engineers
P. O. Box 17300
Fort Worth, Texas 76102

Dear Mr. Denys:

Thank you for your letter of August 10, 1978 concerning our development on the proposed Lakeview Reservoir. The current development schedule for the Department's portion of the Lakeview Project is as follows:

- a. Planning Phase: September 1980 - January 1981
- b. Construction Document Preparation Phase: January 1981 - December 1981
- c. Construction Phase: January 1982 - May 1983

We appreciate your offer to provide us information on expressed desires and needs of the project. Please coordinate this valuable planning input with Clarence E. Ham, Head of my Parks Master Planning Branch. His phone number is (512) 475-4841.

Sincerely,

Handwritten signature of Henry B. Burkett in cursive script.
HENRY B. BURKETT
Executive Director

HBB:CEH:fg

DALLAS COUNTY

DEPARTMENT of PUBLIC WORKS

Area Code 214 - 749-8151
161 East Commerce
Dallas, Texas 75207

September 13, 1978

Mr. Arthur D. Denys
Chief, Engineering Division
Department of the Army
Forth Worth District
Corps of Engineers
P. O. Box 17300
Fort Worth, Texas 76102

Dear Mr. Denys:

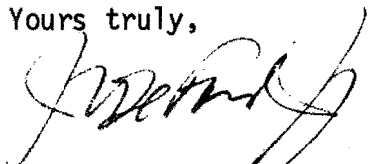
Thank you for your informative letter of August 21, 1978.

Dallas County now has an Open Space Task Force Committee appointed by the Commissioners' Court. At this time a subcommittee is interviewing consultants with the idea of having a consultant prepare an Open Space Master Plan for Dallas County.

After completion and acceptance of the Plan, the County will probably begin acquisitions that relate to the Plan, to protection of critical areas, and to minimum maintenance. The County Plan should compliment your proposals for Lakeview Lake.

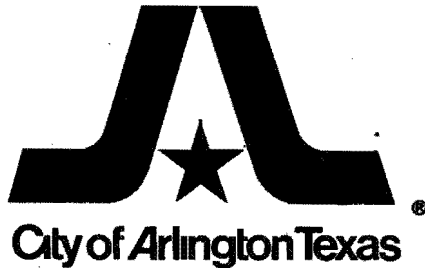
I have already had a telephone conversation with Mr. Bud Horsman and I anticipate further communications with your planning personnel.

Yours truly,



J. V. DEFORD, JR., P.E.
ASSISTANT DIRECTOR OF PUBLIC WORKS

JVD:is



Box 231
Zip Code 76010
Arlington Phone
(817) 275-3271
Dallas Phone
(214) 262-4660

October 3, 1978

Mr. Arthur D. Denys
Chief, Engineering Division
Department of the Army
Fort Worth District, Corps of Engineers
P. O. Box 17300
Fort Worth, Texas 76102

Dear Mr. Denys:

Sorry to be late in answering your letter, but we do appreciate the information you sent to us regarding the park development around the new Lakeview Lake, and appreciate the opportunity to offer suggestions regarding this project.

Several Park Directors in this area met in early September with Mr. Horsman and Mr. Garza. The information that they provided us was very enlightening and just the thought of such a future development was very exciting. We appreciate the time they spent with us and the first hand information they shared with us about this project.

In regard to our plans for the future in the area west of Lakeview, we plan to acquire and develop six (6) neighborhood parks of approximately ten (10) acres each and one community park of about 75 acres. These parks will be located from one to three miles west of Lakeview and will be developed to primarily serve the residents of the immediate neighborhood. Development will consist of: 1. Playgrounds 2. Athletic fields 3. Swimming pools 4. Recreation centers 5. Tennis courts 6. Picnic areas.

Concerning the development of the park areas around Lakeview Lake, we would ask that you give consideration to the following:

1. Development of a camping area for tourist, with facilities to accommodate recreational vehicles, travel trailers and tent camping. This is a type of development that most cities cannot afford because of the needs and demands of the local taxpayers. I also believe that a good camping facility would be a good source of revenue.

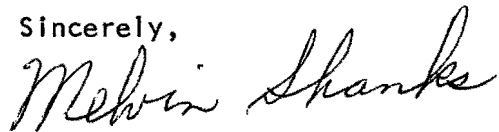
Page 2

Mr. Arthur D. Denys

2. Development of facilities for water oriented recreation; boat launching ramps, boat docks and fishing piers.
3. Picnic area development and related facilities.
4. Nature - hiking trails.
5. Development of a golf course. (I realize this is a low priority item; therefore, I have listed it last.)

Again, I would like to thank you for the opportunity to express our views concerning the development of the Lakeview project. If we can ever be of service to you, please do not hesitate to call upon us.

Sincerely,



Melvin Shanks
Director of Parks and Recreation

MS/mg

COUNCILMEN

T. W. CANNADY

EUGENE "JIM" HAMMITT

JIMMY MOBLEY

JIM STRICKLAND

H. D. (DOUG) CULLEN

FRANK TIDWELL, MAYOR PRO-TEM

City of Cedar Hill

P. O. BOX 96

CEDAR HILL, TEXAS 75104

PHONE 214/291-4211

MARK J. BIELAMOWICZ

Mayor



September 18, 1978

Mr. Arthur D. Denys
Chief, Engineering Division
Department of the Army
Ft. Worth District, Corps of Engineers
P. O. Box 17300
Ft. Worth, Tx. 76102

Dear Mr. Denys:

In reference to your letter dated August 21 and addressed to Kenneth Elliott, the City of Cedar Hill will cooperate with you and other agencies in the development of recreational areas on Lakeview Lake.

We suggest a meeting with your staff and pledge full co-operation with them wherein it affects the City of Cedar Hill.

We have not made any definite plans to date, because we are not fully aware of where we will be in relation to the Lake.

Please have your representative contact me. My card is attached for your convenience.

Sincerely,

A handwritten signature in cursive script, appearing to read 'W. W. Cox'.

W. W. Cox
City Manager

WWC/fl

Attachment



CITY OF DUNCANVILLE

P. O. BOX 280

DUNCANVILLE, TEXAS 75116

PARK & RECREATION DEPT.

September 6, 1978

Arthur D. Denys
Chief, Engineering Division
Department of the Army
Fort Worth District Corps of Engineers
P. O. Box 17300
Fort Worth, Texas 76102

Dear Sir:

Thank you for the opportunity to voice Duncanville's input to the recreational viewpoint of Lakeview Lake.

Duncanville currently has plans underway for playgrounds and athletic areas on several sites in town. Duncanville currently has eighteen lighted tennis courts.

We have very little water related facilities. Picnic, bike and hike trails, and playgrounds are a few of the facilities that would well serve the public. Athletic facilities can be supplied by the various surrounding municipalities.

Having met with your people in Grand Prairie was sufficient at this point. As was expressed in that meeting however, we would like to see the plans as they near the completion stage.

We in Duncanville are proud of Lakeview Lake and the opportunity to participate in its planning process.

Sincerely,

Larry Shaw, Director
Parks and Recreation

LS/sh

CITY OF FORT WORTH, TEXAS



**PARK AND RECREATION DEPARTMENT
1000 THROCKMORTON
FORT WORTH, TEXAS 76102
335-7211, EXT 641 / AREA CODE 817**

September 7, 1978

Arthur D. Denys
DEPARTMENT OF THE ARMY
Fort Worth District, Corps of Engineers
P.O. Box 17300
Fort Worth, Texas 76102

Dear Mr. Denys:


On behalf of the City of Fort Worth Park and Recreation Department, I wish to express my appreciation to the Corps of Engineers for discussing some of the proposed development details of Lake Lakeview at Grand Prairie City Hall on August 31, 1978. James Toal, of the Fort Worth City Planning Department and I were able to make some of our requests known at that time.

Two major items for which we expressed concern were:

1. Accessibility - With such a large number of people who live in the East and Southeast portion of Fort Worth and Tarrant County good travel routes are of major importance. This may be by way of US 287 or I-20.
2. Diversity of Development - Water orientated parks are needed in the Southeast area of Tarrant County therefore any and all parks should be planned for development that will disburse people for a more efficient use of the facility.

We appreciate the opportunity to have input in the project and request that he be kept informed as the Lakeview Lake development progress.

Sincerely,


David Nivens,
Assistant Director - Facilities
Park and Recreation Department

DN:wf



CITY OF MESQUITE

September 21, 1978

Mr. Arthur D. Denys, Chief
Engineering Division
Corps of Engineers
P. O. Box 17300
Fort Worth, Texas 76102

Dear Mr. Denys:

It was indeed gratifying to witness the Corps' approach to the Lakeview Project and we wish to commend you for your efforts of including the desires of the public at the outset of the recreational and resource management planning of the project. As one of the stated objectives of AIP's community involvement is to promote and encourage good planning, we recognize that such has been your approach thus far.

To further assist you in the development of this project, we are submitting the following guidelines and proposals for your review and use. Obviously, two resources will be created by the construction of the lake-a water supply to be shared by surrounding cities and a recreational area to be used by the citizens of the region.

Initially, it must be recognized that the lake development will be on a site of unique and valuable resources. These items should be preserved and undoubtedly will be enhanced by the project. Of the multitude of resources in the area, perhaps none is more profound than the White Rock Escarpment. The fragility of the escarpment could be lost with indiscriminate "bulldozer" utilization. Therefore, extreme attention is urged when developing this area.

It is apparent that the park master planning effort intended to include part of the White Rock escarpment as Lakeview park land. The open space recommendation would be to increase the Texas Parks and Wildlife acquisition to include most of the escarpment initial areas. The purchase should begin at the top, 200 feet from the edge, and extend all the way down the fragile hillside. The Texas Parks and Wildlife Department, as caretakers of this property, will be able to preserve for the citizens of the State, an extraordinary park investment. While the citizens around Dallas-Fort Worth have many lakes developed for active recreation, they have none with large areas devoted only to passive recreational activity. This extension of the project would be in keeping with the need to provide a variety of recreation that appeals to urban people and, at the same time, the project would preserve the area's natural resources.

The first step toward preserving the escarpment is for State acquisition in combination with other levels of government. For example,

VI-14

Mr. Arthur D. Denys, Chief
September 21, 1978
Page -2-

Dallas County has expressed an interest in the escarpment as an Open Space Area. Also, in a recent study made by the Federal Heritage Conservation and Recreation Service, the escarpment was one of the areas noted for its special open space value. Thus, funds from the conservation service and the Dallas County Bond Program could supplement State money.

The second step is to take precautions during the construction of the lake and the active recreational facilities. The major hazard is potential erosion of the escarpment (during construction). The best way to prevent erosion is by saving the hillside trees and grasses. If these are cleared for road and other facility construction, straw mulching or fast growing grasses should be put down. Other protective measures would include:

- o fencing off stands of trees to be saved near construction sites
- o aligning roads to minimize runoff
- o building pedestrian and bike trails through the escarpment, thereby deemphasizing vehicular travel

The third step toward the goal of protecting the escarpment is to keep the type of recreational development to what the land will tolerate. Since the escarpment will not handle intense activity, assign to it the center for nature study, tent camping at the base, hiking trails, light picnicking and other passive pursuits. The urban-type recreation centers and the traditional corps recreational facilities should be located on the west side of the lake and along the water's edge of all sides of the lake because by the time the lake is scheduled to be finished, it will be in bike riding distance of many of Grand Prairie's, Duncanville's and Cedar Hill's newest neighborhoods and by the year 2000, it will be another White Rock Lake, totally surrounded.

Again our hardest congratulations go out to you and we wish to recommend that special environmentally sound construction techniques are followed when the lake and its facilities are constructed. We further encourage that as much of the escarpment as possible come under public protection and considerate use.

Sincerely yours,



Thom Busam, AIP
Director - North Central Texas Section,
American Institute of Planners



TRINITY RIVER AUTHORITY OF TEXAS

NORTHERN DIVISION OFFICE

SUITE 302 ARLINGTON DOWNS TOWER - 2225 E. RANDOL MILL ROAD
ARLINGTON, TEXAS 76011
TELEPHONE: (AREA CODE 817) 265-2481

DANNY F. VANCE
REGIONAL MANAGER

ROBERT T. McMILLON
ASSISTANT REGIONAL
MANAGER

WARREN N. BREWER
MANAGER, ADMINISTRATIVE AND
TECHNICAL SERVICES

*

THE NORTHERN DIVISION
SERVES THESE COUNTIES
IN THE
AUTHORITY'S AREA

ANDERSON
DALLAS
ELLIS
FREESTONE
HENDERSON
KAUFMAN
NAVARRO
TARRANT

2490

September 22, 1978

Mr. Bud Horsman
Department of the Army
Fort Worth District
Corps of Engineers
P.O. Box 17300
Fort Worth, Texas 76102

Dear Bud:

Enclosed is a letter received this date from Joan Longorio, Vice-President of the Grand Prairie Bicycling Association, concerning their interest in preserving facilities for bicyclists in the Lakeview Lake area.

Please include this information with other information received concerning Lakeview Recreation and give it due consideration in the development of the project.

Sincerely yours,

DANNY F. VANCE,
Regional Manager

cc: Ms. Joan Longorio

Attachment

DFV/cs

1705 Clifton
Grand Prairie, Texas 75051
August 31, 1978

Lakeview Reservoir Planning Council
P.O. Box 36
Duncanville, Texas 75116

Dear Sirs:

Thank you for your attention and interest at the Recreational Planning meeting held last week at South Grand Prairie High School.

Grand Prairie Bicycling Club feels it speaks for the other bicycle clubs in the area (Arlington Bicycling Association, Oak Cliff Bicycling Assn., Fort Worth Bicycling Association, and Richardson Bicycle Touring Club) which regularly ride the roads to be closed when the Lakeview Lake is built. We are interested in keeping open as many roads as possible, as it is obvious that many of our set routes will be closed.

Most serious adult cyclists are not very fond of bicycle paths or trails for two main reasons: we ride at least 20 and often 50 or 60 miles at a time, and we go too fast (12-20 mph) to safely share a trail with joggers or child bicyclists. We use our bicycles as transportation, and prefer to ride on roads. The many country roads which comb the area south and west of Grand Prairie have provided regular routes for our clubs to utilize to schedule rides.

When the lake is built, many of these routes will be under water. We understand and accept this, but wish to point out that a new Highway 1382 will not substitute -- no 4-lane, divided highway is safe for bicyclists unless wide shoulders marked as bicycle paths are provided.

We recognize the need for charging fees into the parks, but also wish to point out that a bicyclist who enters at one end and exits an hour or so later at another end of the park should not have to pay the same fee as the overnight camper or all-day boater.

The main reason for my appearance before your committee and this letter is to make you aware that the lake area already provides recreation for many people, including bicyclists, and that the lake will be restricting, not increasing, our recreational opportunities. Because of this, we ask that all bridges on flood plain roads be kept in repair, that some of the country roads be marked as bicycle trails, and that new roads built in the flood plains or park areas have adequate shoulders. In some cases, such as on tight curves, a white stripe painted between the roadway and the shoulder could serve to give protection to the cyclist.

Sincerely yours,

Jean Longorio

Jean Longorio
Vice-president, Grand Prairie Bicycling Assn.

Synopsis of
Lakeview Planning Council
Public Hearing On Recreation
Warrior Coliseum
South Grand Prairie High School
15 August 1978 7:30 P.M.

INTRODUCTORY REMARKS

By David Clayton, President, Lakeview Reservoir Planning Council

The purpose of this meeting is to receive suggestions and recommendations from the public regarding recreation development of Lakeview Lake. This meeting will serve as a source of information to be provided to the Trinity River Authority and the Corps of Engineers in developing a master plan for recreation at Lakeview.

RECREATION FACILITIES RECOMMENDED/SUGGESTED
BY CORRESPONDENCE AND BY THOSE ATTENDING

Mr. Jess Kirk, Secretary Lakeview Planning Council, read 3 letters submitted by Dr. Sam Thompson, Mr. Roy S. Lee, and Mrs. John Burst. The facilities suggested in these letters included, boat ramps, beaches, picnic and camping facilities, play areas, playground equipment, marinas, asphalt jogging trails, physical fitness areas, fishing piers, and bike trails.

Suggestions by attendance:

George Keith, State Director of the National Campers and Hikers Association. There are about 1,000 families in the Dallas-Fort Worth area that is about 4,000 to 4,300 members. Their function is promoting family interest. They recommend controlled areas, and are in agreement that people who use the facilities should pay for their use.

Carlyle Smith, State Representative District 33-J, suggested specific lake zoning of marinas, skiing, fishing, boating, and swimming in order to allow the majority of the lake to be utilized on a more positive basis. Land areas such as white rock escarpment be left for hiking, picnicking, or light backpacking. Trails around the lake perimeter for walking, jogging, and bicycling.

Chas. Meeks, Sailing enthusiast, suggests - avoid overhead electric service lines around boat launching areas.

Jerry Freeman, suggested speed limits around fishing areas, swimming areas, and skiing areas.

Grady Smithey, Chairman of Park Board, Duncanville, Texas, suggestions approved by the City Council, designated swimming areas and skiing areas and prohibiting anything else in these areas, speed limits by areas, non-motorized bike trails. Fees be reasonable to meet financial standards of all citizens.

Joan Longorio, Bicyclist, member of Grand Prairie Bicycle Association, rides constantly three or four times a week to Cedar Hill, Duncanville, Button, Webb, and to Mansfield. What kind of roads will be left to bicycle to these areas? What kind of fees will they charge to bicyclists? Should they pay same fee as to camp overnight? Suggest roads with wide shoulders instead of bike paths.

John Sellers, Assistant Director of Parks and Recreations, City of Grand Prairie. Express their willingness to assist in anyway possible. The Planning Council, Corps, TRA, and Texas State Parks and Wildlife Department in the planning and management of recreation resources.

Don Hunsinger. Suggests adequate parking for boats in camping areas.

John L. Martin. Should consider proper type of fishing pier on account of the fluctuating lake level.

Eve Shults, Chairman, Mansfield Parks and Recreation Board, suggested garbage receptacles be recessed at ground level, launching and docking areas available to Mansfield Fire Department for the purpose of training and/or rescue operations, camping facilities, boat launching ramps in Mountain Creek, Low Branch, and Button Parks. Recommend Visitor Center and/or Nature Center be keyed to Educational with rooms for films, instructions, etc. Provide bicycle and hiking trails, fishing piers, or enclosed fishing facilities. Not in favor of an amphitheater.

A. R. Goodman. Suggested travel trailer hookups close to lake.

Gary Fulquist. Suggested sand beaches instead of grass beaches.

Jerry Vincent, served in Dallas Park Board, recommends zoning as the possible solution to control water oriented and land use facilities. Suggested not to overlook security which is a very expensive item, and believes that there should be a place for everyone at this lake including radio controlled airplane buffs and believes in user's fee.

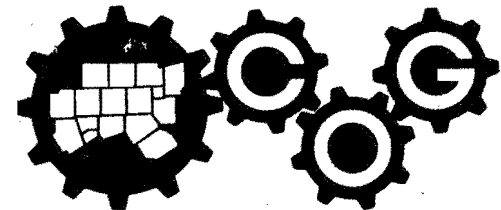
Gary Freeman. Thinks that charging "user's fee" will become a problem. Suggests policing of the lake is very important.

Arthur Blackwood. Believes in user's fee if the areas are zoned for proper use and also provide security.

Tony Sanders. Suggests proper zoning for fishing and skiing.

Grady Smithy. Concerned about stocking the lake by Parks and Wildlife since intensive stocking is needed to maintain a good fishing lake.

The preceding information was submitted by Jess V. Kirk, Secretary-Treasurer, Lakeview Reservoir Planning Council.



September 20, 1978

Mr. Arthur D. Denys
Chief, Engineering Division
Ft. Worth District Corps of Engineers
P. O. Box 17300
Ft. Worth, Texas 76102

Dear Mr. Denys:

This letter is in response to your letter requesting public input into the recreational planning for the proposed Lakeview Reservoir. I will be answering from the "208" perspective, including the subjects of: Areawide lake use preferences, Land Use consideration in locating recreation facilities, Protection of Water Quality in Lakeview and downstream, Preservation and enhancement of unique natural resources and other environmental considerations. The basis of my recommendations is that it is possible to learn from the effects that population expansion have or will have on area lakes in order to approach the development of this lake differently.

In response to Question "a" the EPA has entrusted to this agency, NCTCOG, and, especially, the Environmental Resources Department the responsibility for planning for clean water in the upper basin of the Trinity River and its lakes. Our National goal of "Fishable, Swimmable Waters" is one that we also hope to achieve here for Lakeview Reservoir when it is completed and through its life-time.

From a 208 perspective, the area of "recreation" is an element of our planning program. To partially satisfy this requirement last year's NCTCOG Urban Area Citizens Survey asked two questions about recreational use of our region's lakes and river segments. The data was analyzed and published in a report which I am enclosing in part as an appendix to this letter. This report summary might be helpful for establishing your recreational priorities. In the questionnaire, the activity choices were: swimming, fishing from boat, fishing from shoreline, motorboating, bicycling/walking along shoreline and picnicking. Unfortunately, camping and nature walks were not listed. It is assumed that people who engaged in those activities signified by indicating "other". Of the choices *given, these are the recreational preferences in order of popularity:

1. picnicking (28%)
2. swimming (20%)
3. fishing from shoreline (17%)
4. fishing from boat (18%)
5. bicycling/walking along shore (12%)
6. motorboating (10%)
7. sailing (4%)

*multiple choices were permitted.

Based on this lake use survey, a few suggestions come to mind for incorporation into the Corp's "Recommended Plan of Recreation Development". The plan's designation of picnic areas in five parks is in keeping with the outcome of the survey. The number of proposed boat ramps seems to be very adequate for the projected fishing and motorboating segment on the lake.

While camping and nature trails are provided for at two proposed park sites (each at a different one) swimming beaches and sailing facilities were not designated. There should be nearly as many beaches as there are picnicking areas due to its popularity. A nature trail system through the wooded parks and areas of scenic beauty and unique plant and wildlife should be laid out giving pedestrian or bike access to these resources. The rugged and scenic escarpment, for example, would be an ideal location for trails. Auto access should be limited on the east side or at least relegated to the areas where it can be carefully planned for and access controlled. Light camping and consumptive wildlife activities would also be suitable for the escarpment side of the lake. Since it is unlikely hunting could be safely permitted at this lake, the wildlife habitat in the escarpment area should be enhanced to develop a system of trails for wildlife and nature observations, painting and photography.

High intensity development in the State Park especially in the steep sloped area north of Baggett Branch to the vicinity of the dam could endanger this existing resource. On the other hand, the westside of the lake has the best potential for high intensity visitation patterns which predictably will be where the highest urban development patterns will also occur. That is, this is where the land, adjacent to the park property, is more easily accessible with its flatter and wide open, gently rolling cleared fields. The western parks will be more easily reached by the residents of the region when Hwy. 360 is extended to connect I-20 with Hwy. 287. With good street connections to Hwy. 360, residents from the more densely populated Tarrant and Dallas Counties would have quick access to the high intensity developments such as, group picnic areas, fishing and sailing harbors, sports fields, and camping areas for recreation vehicles. An equestrian trail system is better suited for the more level western shore parks than the eastern side where the action of horse hooves would erode the fragile hills. Bike routes could be planned for providing non-motorized access from one park area to the next. Bike routes, if designed in accordance with soil and terrain limitations, could be built completely around the lake.

Question "b" leads to the subject of the secondary impacts which will be brought about by the lake itself and the effects of recreational facility construction on the lake's water quality.

First, the soils where the lake is to be constructed are highly erodible and second, reservoir construction could dump a considerable amount of sediment into the river or the lake down stream. A case in point is Lake Worth which was filled with sediment as early as the mid-thirties due in large part from the construction of Eagle Mountain Lake and Lake Bridgeport. Therefore, before one can address the potential water quality problems of the new lake, steps should be taken during construction of Lakeview Reservoir to inhibit excessive silting of Mountain Creek Reservoir as well as the West Fork of the Trinity River.

Arthur D. Denys
September 20, 1978
Page 3

It might be unnecessary to mention methods for protecting the erosion-prone escarpment during construction of the lake; however, the fragility of the escarpment cannot be under-emphasized. There is a possibility of creating a potentially unstable situation by the indiscriminate cutting of roads and the removal of trees and prairie grasses that hold the escarpment's soil in place. Roads and other facilities should be built in such a manner to reduce runoff both during construction and after. If recreational facilities are constructed after water impoundment had begun the inclusion of sediment ponds and check dams during the construction of park facilities would reduce the amount of sediment getting into the lake. The practice of shortening the time that soil is exposed and quick revegetation are other good water quality control practices.

If Lake Ray Hubbard* is any indication, the type of bridge constructed across the arm of a lake can make a difference in the quality of the water in the arm vs. the main body of the lake. A mixing was prohibited between the Rowlett Arm and the rest of the lake by the constriction created by a diked bridge that extended over the lake. Assuming at least one bridge will be constructed across the shallow end of Lakeview Lake, any new bridges should be constructed in a manner to allow the phenomena of "wind mixing" to take place unhampered by dikes. This mixing will prevent eutrophication in the shallowest portions of the new lake.

Other environmental considerations are "air", "energy", and "non-point pollution" from future enveloping suburbanization. The latter impact would have to be handled by local governments instituting run-off control practices during and after subdivision construction. Local runoff and sediment from minor tributaries could be managed by constructing retention/detention devices on park sites.

While driving for pleasure is a long-standing custom in Texas, it is not particularly good for air quality as long as hydrocarbon and NO_x emissions from tail pipes are problems. Of late EPA has noted that the car is contributing the most pollution at "cold starts". Based on that and gas conservation concerns, it would be practical to concentrate or cluster activities to minimize extensive driving. Hence, centrally located, accessible parking lots could be built (with runoff retention) to permit the visitor's car to "stay-put" while the visitor may walk/bike to a variety of options.

Finally, I wish to thank the Corps of Engineers for the opportunity to respond to their initial planning effort. Once your responses have come in and the recreational planners have had a chance to develop the second draft of the park plan, then a meeting of invited respondents should be called. I feel a meeting would be useful to the planners to get positive feedback on how they implemented the suggestions as well as perhaps generating a few new ideas from those who did not write letters.

Sincerely yours,



Patricia A. Lewis
Senior Planner

PAL:cf

*Lake Ray Hubbard Study

VI-22

Technical Report Series

Dallas-Fort Worth Urban
Area Citizens Survey
1977

Data Analysis

10

CHAPTER VIII

WATER QUALITY

In order to formulate the region's water quality plan, it was considered desirable to sample the attitudes of its residents. To the professional water quality investigator, it is obvious that, so far, the water quality in area lakes is better than the river. The general public may not find this as obvious and may not support, for example, development controls around area lakes if such are found necessary.

Another issue is the value that is placed on the clean water of the lake or river segment that is used for some recreational activity. It was considered desirable by water quality planners to determine the connection between water use and the acceptability of current water quality.

Ultimately, the decision-makers must decide how improvements are to be financed. Public perception of the various methods of financing water quality improvements would obviously be an important element in the decision-making process.

Five questions were included in the 1977 Urban Area Survey concerning water resources. Two questions addressed current recreational uses; two were designed to determine public attitudes on the acceptability of current water quality; and the final question identified financial preferences for water quality improvements.

LAKE AND RIVER VISITATION AND USE

Of the five water quality questions, two questions were asked regarding lake and river recreational use, and were stated in such a way as to allow multiple responses.

35. Do You Presently Use Any Of The Lakes In The Area Or The Trinity River For Any Of These Activities? (3 responses possible)

Swimming _____ Motorboating _____
Fishing from boat _____ Bicycling/walking along shoreline _____
Fishing from shoreline _____ Picnicing _____

35a. (If Yes to Question 35) Which Of The Following Lakes Or Rivers Do You Visit Most Frequently For Each Of The Activities You Mentioned? (3 responses possible for each activity identified in previous question)

Lake Worth _____ Lake Arlington _____
Lake Benbrook _____ Lake Lewisville _____
Grapevine Lake _____ Lake Ray Hubbard _____
Lake Lavon _____ Other (Specify) _____
White Rock Lake _____ Trinity River _____

Over half of the 1,158 respondents (53 percent) use either area lakes or the Trinity River for recreation. This degree of lake and river use seems to indicate that good water quality is important to the recreational activities of many people. In viewing responses by demographic variables, it appears that lake and/or river usage is a function primarily of age, as Figure VIII-1 indicates. The pursuit of water recreational activities is highest among the youngest age groups, particularly those between the ages of 16 and 29. Some difference was also noted between males and females, with 59 percent of the males and 47 percent of the females indicating lake or river usage. Differences in responses between racial groups was minimal, and while no clear pattern of usage emerged as a function of income, Figure VIII-2 reveals that the lower-income groups are least likely to use lakes and rivers for any of the activities mentioned.

The activity mentioned most frequently as being pursued at area lakes was picnicing, with 28 percent of the respondents indicating this activity is pursued. Other activities which ranked high among responses were swimming (20 percent

FIGURE VIII-1
LAKE USERS BY AGE GROUP

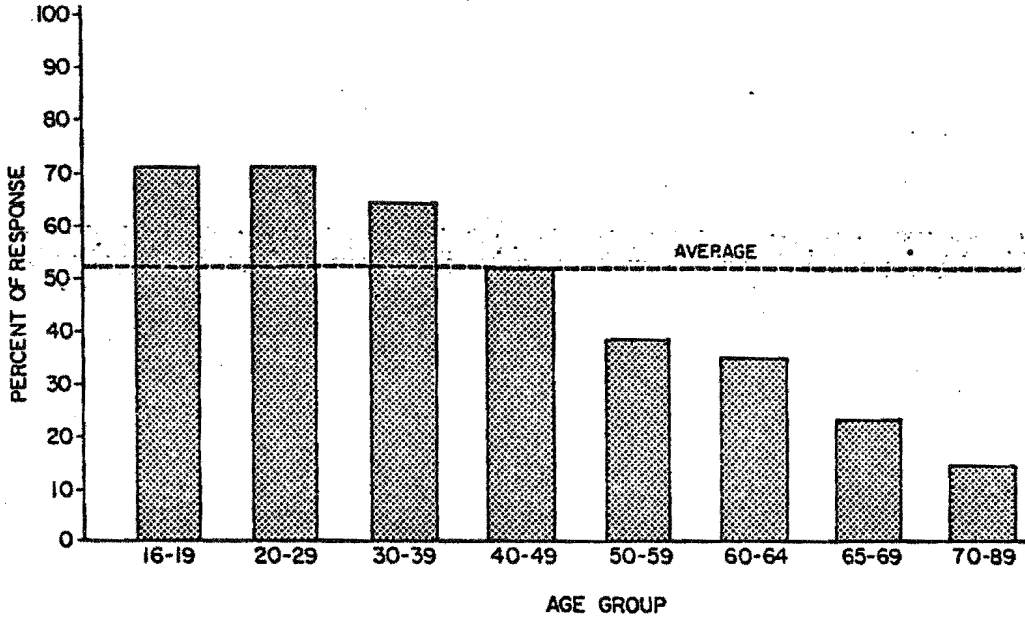
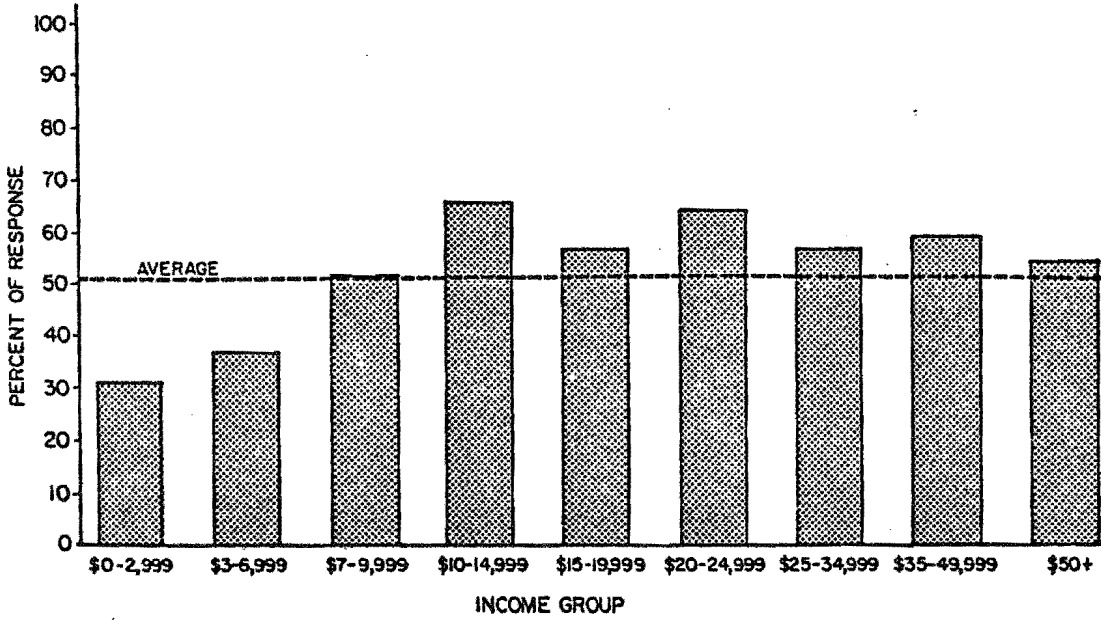
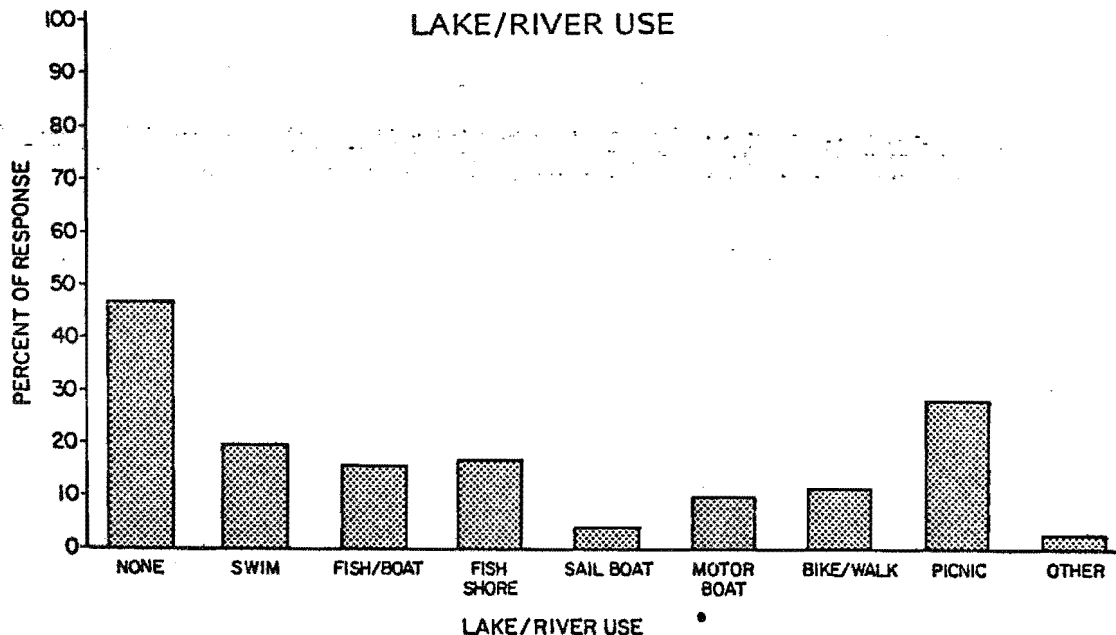


FIGURE VIII-2
LAKE USERS BY INCOME GROUP



of total sample), fishing from a boat (16 percent), and fishing from shoreline (17 percent). Figure VIII-3 provides a graphic comparison of the popularity of various activities at area lakes and the Trinity River.

FIGURE VIII-3

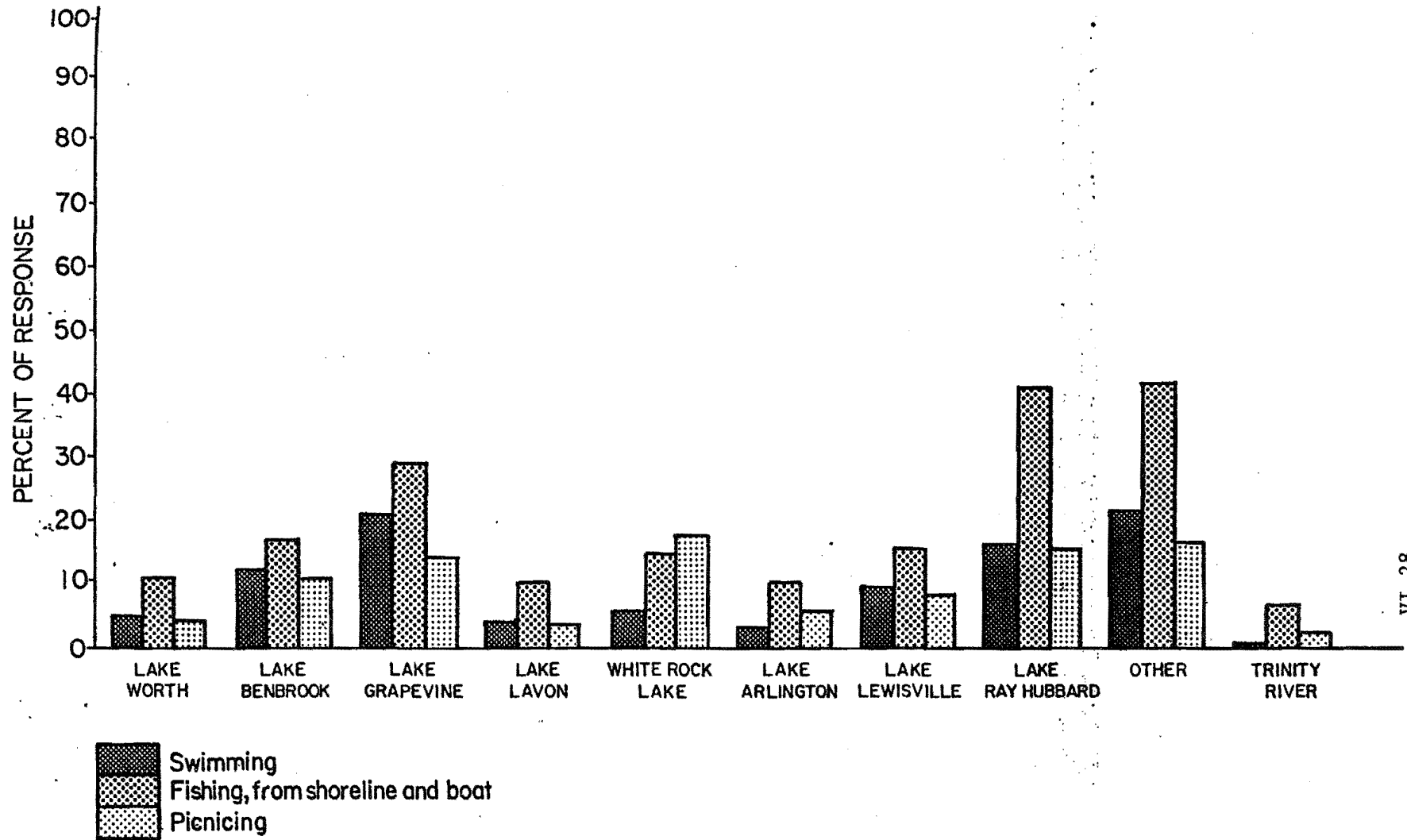


Lake-By-Lake Use Within Planning Area

The nine water bodies identified in the questionnaire were cross-tabulated with the list of activities to indicate which lakes are used most for each activity. Of the lakes identified, the five lakes in the planning area identified by respondents as used most frequently are Lake Ray Hubbard, Lake Grapevine, White Rock Lake, Lake Benbrook, and Lake Lewisville, respectively.

When rating lake visitation among respondents, the lakes in the area that are most frequently used for swimming are Grapevine Lake, Lake Ray Hubbard, Lake Benbrook, and Lake Lewisville, respectively, as Figure VIII-4 indicates.

ACTIVITIES BY LAKE



Out-Of-Region

Many respondents enjoy water-related recreation outside of the planning area. In the question of which lakes the respondent uses most frequently, approximately 18 percent of the responses were in the lake category described as "Other". The majority (64 percent) of swimming and the combined fishing activities are pursued at "Other" lakes. Sixty-two percent of these lakes are out of the survey area and in a nonurban setting. Of these, the most frequently mentioned lakes are Cedar Creek, Lake Tawakoni, Lake Granbury, Lake Whitney, Lake Bridgeport, Lake Texoma, and Possum Kingdom.

Analysis Of Lake Patron Residency

As expected, proximity seems to dictate lake choice. Tarrant County residents preferred Lake Worth, Lake Benbrook, Lake Arlington, the Trinity River, and Lake Grapevine. Dallas County residents preferred Lake Lavon, White Rock Lake, Lake Lewisville, Lake Ray Hubbard, Lake Grapevine, and the Trinity River. Even though the survey does not show Lake Lewisville to have the highest patronage, it is the most evenly balanced among uses. Specifically, the five activities mentioned most frequently for Lake Lewisville were picnicing, 23.7 percent; swimming, 20.9 percent; fishing from a boat, 16.9 percent; fishing along the shoreline, 11.9 percent; and motorboating; 11.3 percent,

LAKE WATER QUALITY ACCEPTABILITY

The region's lakes are generally upstream from urban development and few experience pollution from sewage treatment plants and urban runoff. The major exception is Lake Ray hubbard which receives the effluent from two sewage treatment plants. The lakes, as well as being a water supply, are also where the majority of the water-oriented recreation takes place. They, as the results of recent studies, are determined to have fairly high water quality.

32. The question asked to determine lake water quality acceptability was:
In Some Areas Of The Country, Water Quality Is Also A Concern. In The Dallas-Fort Worth Area, Do You Find The Quality Of Water In The Lakes Acceptable?

Yes _____

No _____

Not Sure _____



**VII LAND AND WATER USE
DEVELOPMENT**

VII - LAND AND WATER USE PLAN OF DEVELOPMENT

7-01. General.- The land and water use plan of development is based on a concept of integration of authorized uses of the project land and water areas into a balanced development plan for the best use of all project resources in the best interest of the public throughout the life of the project. The intent is to present a plan of development which is flexible enough to meet the present and future needs of the project but keeping in consonance with the land capabilities and the esthetics of the project. The objectives of this plan are to: (1) present a complete zoning and land use allocation plan which offers specific recommendations for the ultimate use and possible interim use to which all land and water should be dedicated; (2) serve as a resource management guide for the comprehensive use of all project land and water areas through planned use of designated areas; and (3) present the concept and objectives for management of all project resources.

7-02. Land use allocation.- The allocation of project lands is shown on plate VII-1. This land has been allocated in accordance with the policy set forth in ER 1120-2-400. Project lands are allocated for specific purposes only after considerable research to determine the highest and best use. The objective of the land use allocation plan is to provide stewardship of the project lands and its resources through prudent land use designation and management. It has been necessary to allocate certain lands for both interim and ultimate use. Land areas will be marked according to designated use as indicated on the land use allocation map. Table VII-1 presents a summary of the land use acreages. An explanation of the various allocated land areas follows.

7-03. Project operations. Project operation lands were acquired for the necessary construction and operation of the project for its authorized purposes. This category allocates a portion of this land to be managed for the safe, efficient operation and maintenance of the project office, embankment, pertinent works, and spillway. Agricultural use of these lands will be permitted only on an interim basis when not in conflict with the designated use.

7-04. Recreation - High Use.- A portion of the land acquired for project operation needs was allocated for management as developed public use areas (park) for intensive recreational activities by the visiting public, including areas for concessions and quasi-public development. Fishing will be permitted except in restricted areas such as beach areas. No agricultural uses are permitted on these lands except on an interim basis for maintenance of open space and scenic values. Portions of high use recreational lands may be designated as wildlife management lands on an interim basis. When the need for future recreational lands and facilities occurs the interim wildlife management lands may be used.

TABLE VII-1
 LAND USE ACREAGE
 LAKEVIEW LAKE

<u>Land Use Allocation</u>	<u>Acres</u>
Project Operations	580
Recreation - High Use	2,697
Recreation/Wildlife Management - Low Density Use	5,195
Specific Recreation Land	1,475
Conservation Pool	7,470
Total Fee	17,417
Total Flowage Easement	275
Total Project Lands	17,692

The total acreage is in accordance with the project cost estimate PB-3 effective 1 October 1978.

7-05. Recreation Low-Density Use/Wildlife Management.- Because these two uses are compatible, this land will be acquired for project operational needs and allocated for the purposes of multiple-low-density recreation activities and as a wildlife management area. All project lands other than those designated as Project Operations or recreation - high use are considered as recreation low-density use/wildlife management areas. This land is suited for primitive camping, nature study, and hiking while providing suitable habitat for the propagation and preservation of native species of wildlife. On some portions of this land, agricultural uses may be permitted as a management tool on an interim basis.

7-06. Recreation Land.- This land was acquired for recreation purposes and allocated to multiple purpose recreation use. No agricultural uses are permitted on this land except on an interim basis for maintenance of open space and scenic values.

7-07. Water Use Plan.- Water areas are planned to minimize safety hazards while allowing maximum utilization of all available water areas. The water areas will be marked with buoys according to corresponding uses, restrictions, and rules as indicated on the water use Plate VII-2. A description of these areas is presented in the following statements.

7-08. Swimming Area.- Beaches and swimming areas will be identified by signs and buoys. Only swimming and related activities are to be allowed in these areas. No boating or fishing will be permitted.

7-09. Water Skiing and High-speed Boating Areas.- Only cleared areas having sufficient water depth and the necessary space will be designated and managed as a water skiing and high-speed boating area.

7-10. Low-speed Boating Areas.- Areas designated as low-speed boat areas will include shallow water and areas in proximity to beaches, boat docks, marinas, and ramps. Skiing will not be allowed in these areas. Appropriately marked buoys will be placed limiting the speed of watercraft to 5 miles per hour.

7-11. Uncleared Areas.- Uncleared (timbered) areas exist where surface and subsurface debris create a hazard to any type of boating activity. No effort will be made to restrict these areas from public use; however, they will be marked to alert the public. The details of the clearing plan will be presented in DM No. 23, Clearing.

7-12. Shallow Areas.- Areas that are intermittent with shallow and deep water will be managed as shallow water areas in the interest of public safety. Floats advising the public of these areas will be maintained at the entrance or perimeter of the areas, as conditions warrant.

7-13. Restricted areas. To insure visitor safety, the water area within 300 radial feet of the outlet and intake structures will be restricted from public use. Project personnel will classify any additional areas requiring extra safety restrictions. Buoys will be installed to indicate restricted areas.

7-14. Low pool hazards. Low pool hazards are subsurface structures such as old bridges and embankments, which become hazardous to boaters when the lake level is below the normal pool elevation. These areas will be identified by appropriate markers.

7-15. Off-road recreation vehicle areas. In accordance with ER 1130-2-405 and Executive Order 11644, dated 9 February 1979, project lands were evaluated for the possibility of setting aside a specific area for off-road vehicle use. It has been determined that the use of off-road vehicles would be in conflict with the management goals established for this project. Therefore, this master plan does not propose an area for off-road vehicle use.

7-16. Collateral and interim use.

a. Agricultural leases. Agricultural leases for short term grazing, establishment of erosion-controlling ground cover and hay production and harvesting by mechanical means may be employed to manage project resources.

b. Nonprofit groups and private clubs.- The recreational needs of nonprofit groups and private clubs will be accommodated on a nonexclusive, first-come-first-served, or short-term reservation basis. Groups requiring additional recreation facilities will be assigned to a specific location within the high-use recreation areas.

c. Easements. All outgrants, including easements for roads and utility lines, will be processed on an individual basis. The policy of attempting to have private roads and utility lines located on non-Government land will be adhered to as much as possible. Lands will be acquired in flowage easement to allow for possible inundation, and no buildings for human habitation will be constructed on these lands. The written consent of the District Engineer or his authorized representative shall be obtained for the type and location of any structure and for appurtenances thereto now existing or to be erected or constructed on flowage easement lands.

7-17. Hunting restrictions. During development of this master plan consideration was given to the U.S. Fish and Wildlife Service's recommendation based on the Texas Outdoor Recreation Plan (TORP) of providing opportunities for hunting and other wildlife oriented activities. According to the TORP such opportunities are in short supply for residents of the Dallas and Fort Worth urban areas. During the evaluation process it was determined that allowing hunting on the land and water areas associated with Lakeview Lake would be unwise, and therefore should not be permitted for the following reasons:

a. At this time a major portion of the project area is within the existing corporate limits of the cities of Dallas, Grand Prairie, Arlington, Cedar Hill and Mansfield. Because these cities comprise a portion of the Dallas-Fort Worth metroplex, one of the fastest urbanizing areas in the United States, their corporate limits can be expected to expand yearly. This expansion is therefore expected to enclose the project before it becomes operational. Some of the corporate boundaries will be inside the project boundaries. Since these boundaries will, in some cases, be difficult to keep monumented on project lands, and since hunting and the discharging of firearms within the corporate limits of the cities are forbidden, there will be continual problems with enforcement.

b. With or without the expansion of corporate limits, all adjacent lands are destined to become residential sub-divisions. With an average distance between the shoreline and the project boundary of one-half mile there will always be potential for hunters causing safety problems for homeowners on adjacent lands.

c. Interim use of project lands for hunting would create a use pattern which would be difficult to change. Such changes require extensive coordination with the public and usually causes large expenditures of time and funds. The results would be the same, closure of project lands to public hunting and an unhappy hunting public. Lakeview Lake offers a unique opportunity for the development of the renewable resources for non-consumptive uses. Such uses could be taken advantage of by the numerous elementary, middle, and high schools, by the many institutions of higher learning and by organizations which are interested in observing, studying, photographing, painting or drawing of landscapes and their related organisms which exist in this ecological transition area of the north-central Texas prairie. The loss of hunting man-days with or without the project would be minimal.

7-18. Fishing. Fishing in accordance with State laws and regulations will be permitted for all fish species on all water areas except in swimming areas and other restricted use areas shown on the water use map.

7-19. Management of environmental and recreational resources.

a. General. The concept underlying the management of project resources is to conserve, improve, and manage the resources for their best use and proper stewardship for the benefit of the general public. The intent of this section is to present the objectives for management of each project resource. It will serve as a guide until a more detailed resource plan can be developed. These objectives will be met by employing the most modern resource management techniques available. This will include, but not be limited to, controlling soil erosion, enhancing the vegetative cover for erosion control, providing wildlife habitat, increasing forage production, and providing for high quality public use. Specific management plans for the various resources will be developed by the project office following an on-site survey; they will be submitted as an appendix to this master plan.

b. Archeological and historical. The objective of an archeological and historical management program is to protect and preserve the archeological and historical resources associated with the project. During the development of the program, the Corps of Engineers will seek cooperation from the National Park Service, State universities, and State and county historical societies and commissions. In addition, the Corps of Engineers will exert every effort to develop an archeological and historical program agreeable to all cooperating agencies so that the maximum benefits can be obtained.

c. Scenic. In developing the scenic resources, the purpose is to provide sensory pleasure to the majority of the visitors. Since a water resource project of this type greatly modifies the environment, the primary objective will be to minimize the impact of the project on the environment by protecting existing resources. In addition, a landscaping and beautification program will be initiated to harmonize facility development with its environs; it will be designed to emulate as far as practical the esthetically pleasing "natural" environment presently existing within the project area.

d. Soils. The primary objectives in developing a soil resources management program will be conservation, improvement, and enhancement. Improvement and development of the soil resources will be accomplished by controlling erosion on graded and disturbed areas, stabilizing gullies, and establishing and maintaining desirable vegetative cover.

e. Vegetation. The basic objective of a vegetative management program is to provide stewardship of the land and resources through protection, improvement, and management of vegetative cover. This will be accomplished by planting, maintaining, and improving desirable trees and grasses. It is essential that desirable trees and

grasses be established and maintained during the early development stages of the project. Cultivation of row crops will be phased out as rapidly as practicable. Areas where tree or grass cover is already established will not be disturbed unless a more desirable plant species can be planted to benefit the area. Plantings and simple drainage features will be used to control rapid runoff. Suitable tree species will be established along the shoreline, where desirable, and on public use areas where needed. Chapter XV presents a concept plan for the development and management of the vegetative resources.

f. Fisheries. A fisheries management program will be provided for the purpose of conservation of species and derivation of maximum benefit from the fisheries resources. In managing the fisheries resources, the primary objective will be to increase the quality and quantity of the desirable game fish population. Such a program includes, but is not limited to, methods of controlling rough fish populations, stocking game fish, and buoying known areas of fish concentration points to facilitate their harvest by anglers. Although the responsibility of the fisheries resource is essentially that of the Texas Park and Wildlife Department, the Corps of Engineers will supply all possible aid and assistance to insure an adequate fisheries program.

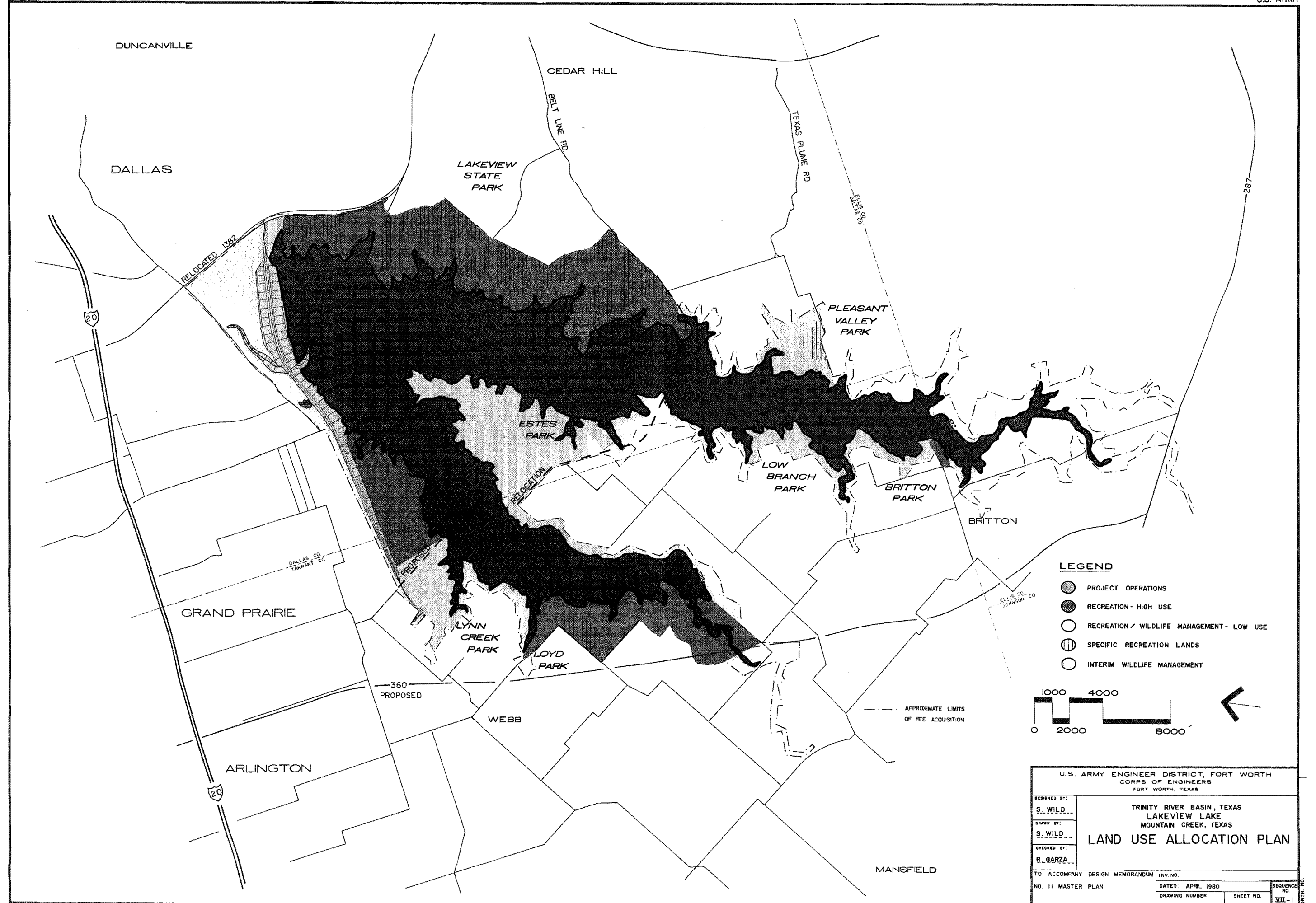
g. Wildlife. In order to obtain the greatest benefit from the wildlife resources, a scientifically based wildlife management program should be provided. The fundamental objective in managing this resource will be to attract the greatest variety of wildlife species. This objective can be accomplished by providing a cover restoration program using plants which will provide both food and cover and create an edge effect. Grazing will be controlled, and artificial aids such as nesting platforms will be used when necessary. A concept for a fish and wildlife management plan is presented in chapter XVII.

h. Clearing. The general objectives for clearing of land and water areas will be to: (1) clear only to the extent required to minimize public health, safety, and operational hazards; (2) to maximize practicable benefits to fish and wildlife; (3) to eliminate pollution; and (4) to achieve a good general appearance and improve the esthetics of the area. During clearing operations, esthetically desirable and water tolerant trees at and above the 522.0 contour will be left. These trees will be selected by district personnel to remain after clearing. Areas above the upper clearing contour containing adequate trees and grass cover will not be disturbed. Clearing will be kept to the minimum required to meet the above objectives.

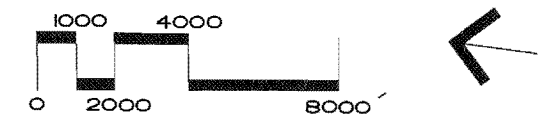
7-20. Turfing and landscaping the public use areas. Landscape planting including trees, shrubs, vines, perennials, annuals, and turf establishment will be an integral component in the design of the recreation sites, areas, and facilities. The objectives of the beautification program include, but are not limited to: harmonizing development

with the surrounding environment, provisions of shade, reduction of undesirable wind, noise; dust, and erosion, and enhancement of structures. Each public use area has been analyzed to determine what natural resources are available, which should be preserved, and how recreational facilities should be blended with the surroundings to best complement the area. A first class landscape treatment should be implemented at the beach and surrounding picnic and parking areas at Lynn Creek and Loyd Park. Landscaping throughout the remaining park areas will be complete, yet simple and functional. Plant species will be limited to those proven hardy and tolerant to specific site conditions. Generally, plantings will be naturalistic. A landscape plan for the recreation-intensive use areas will be presented for approval when completed.

7-21. Seaplane operations.- Title 36 has been amended to allow seaplanes to land on Corps of Engineers lakes except in restricted areas established by the District Engineer. A final decision has not been made on seaplane landings at Lakeview and this decision is being deferred until the project becomes operational.

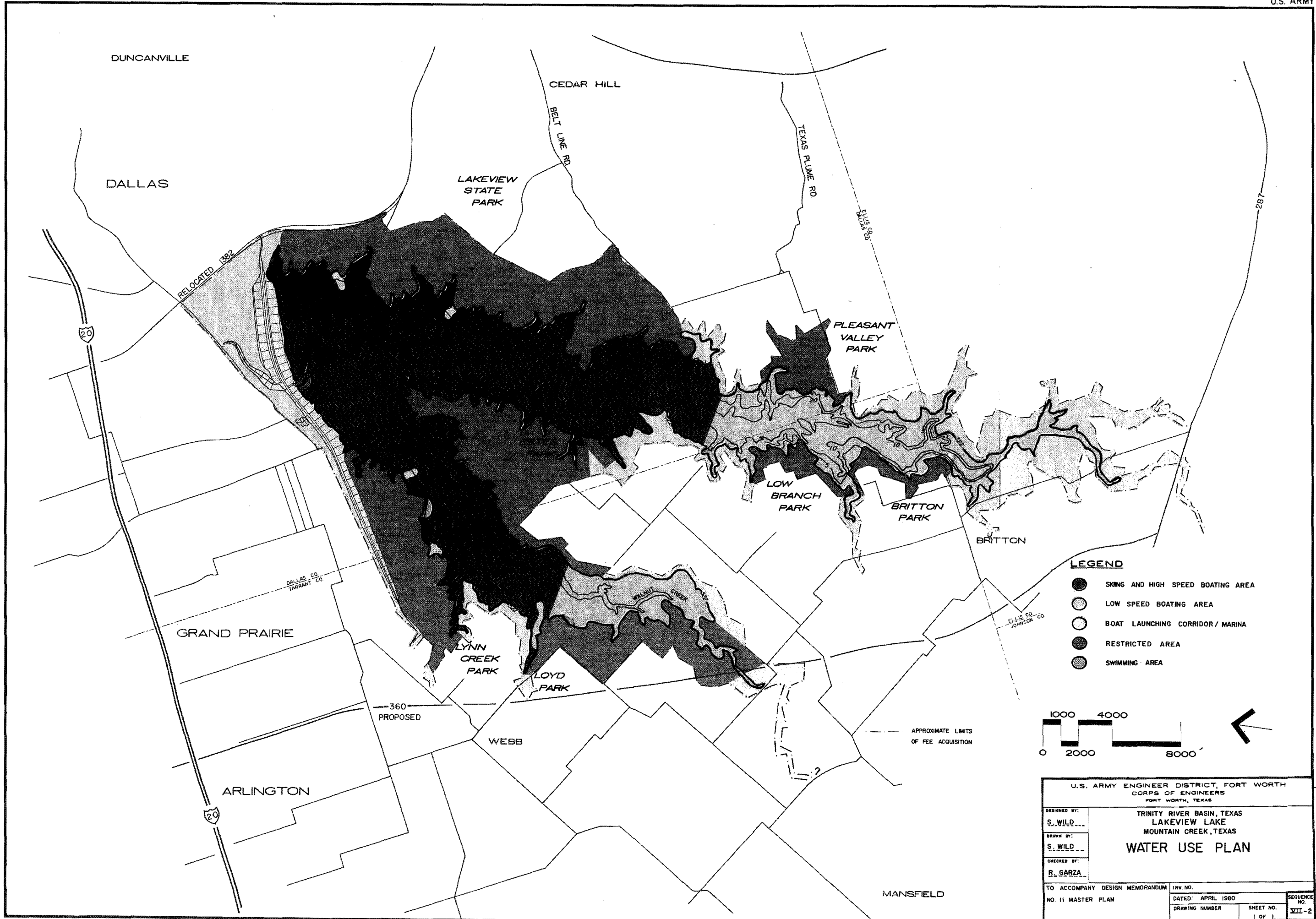


- LEGEND**
- PROJECT OPERATIONS
 - RECREATION - HIGH USE
 - RECREATION / WILDLIFE MANAGEMENT - LOW USE
 - ▨ SPECIFIC RECREATION LANDS
 - INTERIM WILDLIFE MANAGEMENT



U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: S. WILD	TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS LAND USE ALLOCATION PLAN
DRAWN BY: S. WILD	
CHECKED BY: R. GARZA	
TO ACCOMPANY DESIGN MEMORANDUM	
NO. 11 MASTER PLAN	DATE: APRIL 1980 DRAWING NUMBER: VII-1 SHEET NO. 1 OF 1



LEGEND

- SKIING AND HIGH SPEED BOATING AREA
- LOW SPEED BOATING AREA
- BOAT LAUNCHING CORRIDOR / MARINA
- RESTRICTED AREA
- SWIMMING AREA

0 1000 2000 4000 8000

APPROXIMATE LIMITS OF FEE ACQUISITION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: S. WILD	TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS WATER USE PLAN
DRAWN BY: S. WILD	
CHECKED BY: R. GARZA	
TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN	

INV. NO.	SEQUENCE NO.
DATED: APRIL 1960	VII-2
DRAWING NUMBER	SHEET NO.
	1 OF 1

CONT'D



**VIII RECREATION PLAN
OF DEVELOPMENT**

. VIII - RECREATION PLAN OF DEVELOPMENT

8-01. General. The purpose of the recreation plan of development is to delineate the areas selected for public use, to determine the type of use to which they should be put, and to present a conceptual plan of how the selected public use areas could be developed and managed. This plan is intended to serve as a guide for recreation development while being flexible enough to meet the changing conditions and future variations in public demands. All public use areas and associated facilities will be located on land under the jurisdiction of the Corps of Engineers.

8-02. Basis for selection of public use areas. The preliminary selection of the public use areas is described in Design Memorandum No. 4. The location of the sites selected for public use are shown on Plate VIII-1. Several variables analyzed in the selection of these areas include, but are not limited to the following:

- a. Access to existing roads;
- b. Topography of the area;
- c. Existing vegetation in the area;
- d. The existence of scenic areas;
- e. Availability of shoreline access for recreational activities;
- f. Degree of shelter for boats; and
- g. Water depths for swimming beaches and boat ramps.

8-03. Recreation use allocation plan. The intent of this section is to present a balanced recreation plan that offers the greatest variety of outdoor recreation experiences within the limits of the recreation resource and its authorized purposes. Experience at completed projects in the Fort Worth District and at similar projects elsewhere indicates a significant demand for land managed for the specific role of shaping public understanding of the environment. While some persons consider areas under-utilized when every acre is not packed with people, as is usually found in high intensive-use areas, it is considered that a higher quality experience is obtained when conditions are less crowded. Certain types of outdoor recreation activities, such as hiking, bird watching, nature study, and primitive camping can only be experienced in areas receiving relatively light use. The Walnut Creek nature trail and surrounding area is well suited for these activities. Low Branch, Pleasant Valley, and Estes Parks will be used initially as interim wildlife management areas. If future recreational demands increase, these areas may be used as high-use recreation parks. Lynn Creek, Loyd, and Britton Parks will have areas of high-use recreation development. Un-developed areas within these parks will be treated for wildlife enhancement.

8-04. Management of the public use areas.

a. Recreation: low-density parks.- Management of the low-density (primitive) parks will be designed to protect, maintain, and enhance existing environmental and recreational values. The primary objective will be to provide opportunities for outdoor recreation activities, such as hiking, bird watching, nature study, photography, and primitive camping. To achieve this objective, it will be necessary to take the following action:

(1) All camping areas will be sited in the field by district personnel and local sponsors. Attention will be focused on the proper distribution and use of the area to protect the natural resources and to enhance the recreational experience.

(2) A carrying capacity will be determined and implemented for each primitive camping area. The carrying capacity is the ability of a site to absorb outside influence and still retain its quality.

(3) The "fallow campground" concept, which requires camping areas to be rested from use periodically, will be employed.

(4) Simple comfort stations will be provided for recreation users. These toilets will be designed and located so that they are in harmony with their surroundings, and easily operated and maintained.

(5) Motorized land travel, except that required by project personnel to protect and maintain the parks, will be prohibited.

b. Recreation: high-use parks: The management of high use parks shall give primary emphasis to providing the optimum number of recreation facilities for the continued enjoyment and maximum sustained use by the visiting public consistent with the carrying capacity and the esthetic and biological values. This requires a balanced approach to facility development which must take into consideration both the recreational and environmental goals in order to achieve an equilibrium between conservation of the natural environment and development for public use.

8-05. Schedule of recreation facility development. Initial recreation facility development will be completed by the time the project is placed in useful operation. The facilities developed will include, but not limited to, roads, parking areas, boat launching ramps, sanitary facilities, water supply facilities, public camping and picnic areas, beaches, trails and essential informational and directional signs required in connection with these facilities.

8-06. Design criteria for recreation facilities. Engineering design of the recreation facilities will be in accordance with criteria outlined in ER 1110-2-400, "Design of Recreation Sites, Areas, and Facilities," and EM 1110-2-400, "Recreation Facilities Planning and Design Criteria." Only approved criteria will be used in the construction of recreation

facilities. The specific design criteria information for this project is outlined in chapter IX.

8-07. Recreation facilities plan of development. This section translates the land and water use plan into specifics for actual facility development and cost as required for the life of the project. Proposals for facilities and associated sign layout for the initial public use development will serve as the basis for preparation of plans and specifications. Table VIII-1 presents pertinent acreage data for each of the seven public use areas.

TABLE VIII-1

ACRES AVAILABLE IN PUBLIC USE AREAS

<u>Public Use Areas</u>	<u>Above Conservation Pool El. 522.0</u>	<u>Above Flood Control Pool El. 536.0</u>
Lakeview State Park	2,016	1,666
Pleasant Valley Park	224	101
Britton Park	129	32
Low Branch Park	155	58
Estes Park	1,030	641
Loyd Park	791	198
Lynn Creek Park	784	595
Total acres	<u>5,129</u>	<u>3,291</u>

8-08. Hiking trails. Since many areas within the project are well suited for nature study, plant and animal photography, and primitive camping, a system of hiking and nature trails are planned to provide access to these areas. The proposed locations of the hiking trails are shown on Plate VIII-1. The final location of the hiking trails will be determined by district and project personnel in the field.

8-09. Area below the embankment. The area immediately below the embankment is proposed as a low-density day-use area with a parking area, toilet, and a site for a fishing platform. Access is provided by Camp Wisdom Road which connects with Farm to Market Road 1382. This road will be utilized for permanent access to the outlet works, stilling basin, and downstream areas.

8-10. Marina sites.- Marina sites have been located in Estes Park, Lynn Creek, and south of Lakeview State Park (East Shore Marina). Lynn Creek and East Shore Marinas are planned for initial development while Estes Park Marina will be developed in the future, should the need arise. The Lynn Creek Marina location will be excavated initially under both recreation funds and road relocations contracts. All marinas will be operated under a lease agreement with TRA (local sponsor). Actual design of all marina locations will be done in the recreation feature design memorandum. Plan views in Plates VIII-6 and VIII-10 are only representative of location and approximate size.

8-11. Administration and maintenance building. The project building will be on the east abutment about 400 feet from the start of the main embankment and south of the east abutment access road. The administrative section will consist of offices, visitors' center, men's and women's restrooms, and a snack bar. The maintenance section contains the mechanical equipment room, office, locker room, shop, and storage areas.

8-12. Visitors' overlook. The visitors' overlook facility will be located adjacent to the project building. It will overlook the reservoir, outlet works tower, and embankment. Public toilet facilities will be nearby, opposite the entrance to the project building. The parking area for the overlook facility is to be located a short distance from the structure to encourage visitors to leave their automobiles to fully utilize the facilities.

8-13. Visitors' center. The Lakeview Visitor Center will be an addition to the project building. It will be the purpose of the visitor center to provide the public with the opportunity to become informed about the project, its benefits and cost, and the role of the Corps of Engineers. The exhibits will present a complete project story and direct the visitor to other project facilities where a greater depth of knowledge can be acquired. The basic visitor experience may be supplemented by guided tours during periods of high visitation if personnel resources are available.

8-14. Park descriptions.

a. Lakeview State Park (Plate VIII-2) - 2,016 acres. Lakeview State Park has a designation of an intensive recreation use area with circulation roads, parking areas, waterborne toilets, and other facilities as shown on Plate VIII-2. The park is located on the east side of Lakeview Lake near the dam site. There are many densely wooded areas. Terrain consists of moderately undulating to rolling

hills. Tree species are medium to large and include mesquite, pecan, hackberry, Bois d'arc, and oak. Access to Lakeview State Park from FM Road 1382 will be excellent. Final plans will be submitted by the State in January 1981. Operation and maintenance of this park will be the responsibility of Texas State Parks and Wildlife.

b. Pleasant Valley Park (no plate) - 224 acres.- Pleasant Valley Park is located on the east side of Lakeview Lake. This park is designated as an interim wildlife area, managed by the Corps of Engineers. Major terrain features are moderately undulating to rolling hills. There are no densely tree-covered areas of any size. Approximately 25 percent of the area is scattered mesquite. Access to Pleasant Valley Park is good from U.S. Highway 67.

c. Britton Park (Plate VIII-3) - 129 acres.- Britton Park is located on the southwest side of Lakeview Lake adjacent to the city of Britton. Recreational use will comprise the conversion of the abandoned T&NO Railroad trestle into a fishing pier, a waterborne toilet, a two lane boat ramp, a trailer turnaround, and parking areas for fishing and boating. The area north of Road No. 1 will be used for interim wildlife management. The terrain is flat and mostly cropland. Very few trees exist in the park area. Access to Britton Park is good from County Road 2020 and fair from U.S. Highway 287. Access to this area will be free. Developed areas of the park will be managed and operated by TRA. Remaining lands will be handled by the Corps of Engineers.

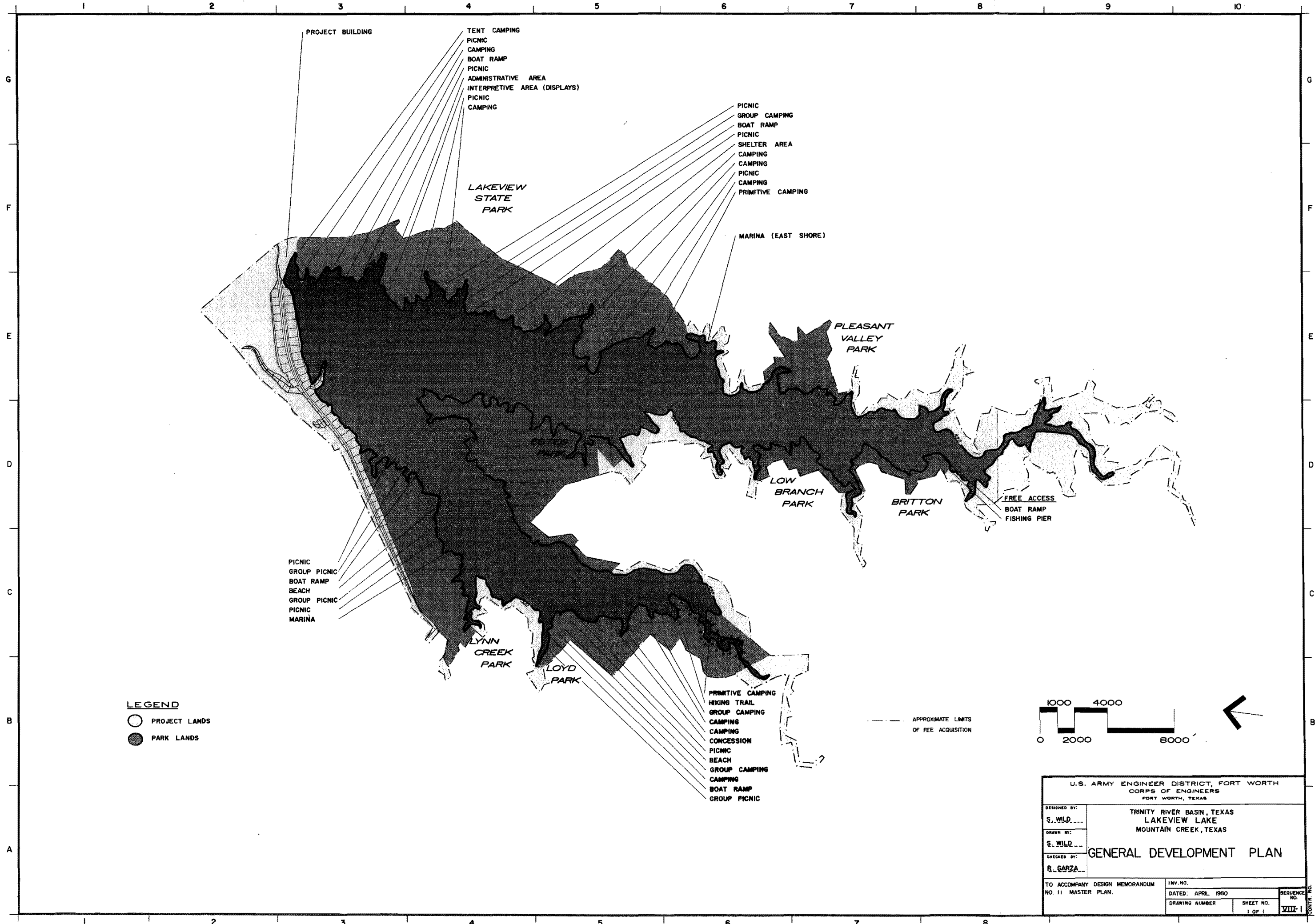
d. Low Branch Park (no plate) - 155 acres.- Low Branch Park is located on the west side of the Mountain Creek arm of the lake and is bordered on the west by County Road 2020. The terrain is flat, and there are few trees. This site will be developed for interim wildlife use. Access is fair from U.S. Highway 287 by County Road 2020. Management by Corps of Engineers.

e. Estes Park (Plates VIII-4, VIII-5, VIII-6, VIII-7) - 1,030 acres.- This park is located at the tip of the peninsula created by Walnut Creek and Mountain Creek. The park is planned for future development, high-use recreation. Until demand warrants development, Estes Park will be treated as wildlife management lands. Management will be by the Corps of Engineers. As development occurs management will switch over to the Trinity River Authority. This park may prove to be attractive to large municipal or commercial endeavors, such as a resort complex, golf course, marina, or shoreline amusement park, to name a few. Proposals by responsible groups or individuals should be encouraged. Terrain is primarily flat or near flat with the exception of the western edge, which is very steep along the shoreline. The narrow strip along Walnut Creek is densely tree-covered. Much of the remaining area is in cropland. Access to this park will be by the proposed relocated road 2148. County Road 181 will provide access from both Interstate Highway 20 and U.S. Highway 67.

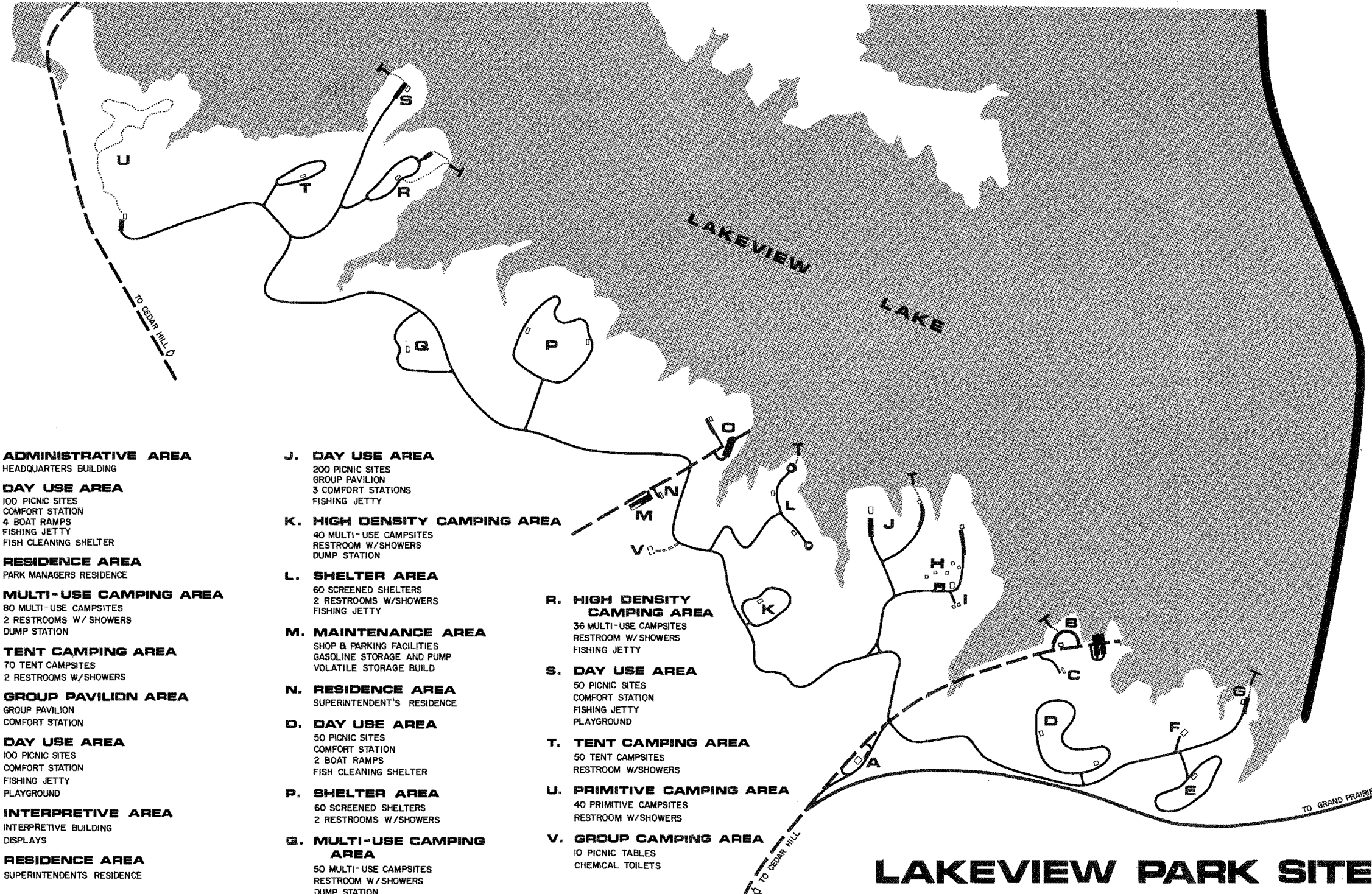
f. Loyd Park (Plates VIII-8 and VIII-9) - 791 acres.- Loyd Park will be a high-use recreational area with circulation roads, parking areas, waterborne toilets, swimming beaches, camp sites, trails, concessions and other facilities as shown on Plates VIII-8 and VIII-9. Loyd Park will have the highest amount of development of all the TRA parks. Facilities will be first class and reflect the current 'state of the art' for facility design and layout. In short, it will be considered a model park. It is located on the west side of the lake, south of Lynn Creek Park. The terrain is mildly undulating. Approximately 60 percent of the park is densely tree covered with the remaining acreage in undisturbed pasture. Access to Loyd Park will be provided by County Road 2017. Interstate 20 is approximately 6 miles to the north of the park, and U.S. 287 approximately 7 miles to the south. Proposed Highway 360 will be within 2 miles west of the park. Management and operation of Loyd Park will be by the Trinity River Authority.

g. Lynn Creek Park (Plates VIII-10 and VIII-11) - 784 acres.- Lynn Creek Park will have a high initial development along the shoreline with excavated marina, picnic facilities, beach and boat ramps. This park should be a high revenue producing facility for TRA. Development should be first class to assure this. Lynn Creek Park is located adjacent to the embankment on the northwest side of the lake. The terrain is flat. Tree cover comprises approximately 10 percent of the area, with the remaining 90 percent in croplands. Tree cover is primarily mesquite with scattered hardwoods. Undeveloped lands will be prepared for wildlife enhancement and managed by the Corps of Engineers. TRA will manage and operate all developed lands. Access will be good from the embankment road and proposed relocated Road 2148.

8-15. Historical features.- There are numerous historic houses and other features in the project area that are potentially interesting and will be perserved for study and interpretation.



U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY: S. WILD	TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY: S. WILD	GENERAL DEVELOPMENT PLAN		
CHECKED BY: R. GARZA			
TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN.	INV. NO.	DATED: APRIL 1980	SEQUENCE NO.
	DRAWING NUMBER	SHEET NO.	VIII-1
		1 OF 1	

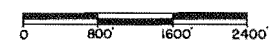


- A. ADMINISTRATIVE AREA**
HEADQUARTERS BUILDING
- B. DAY USE AREA**
100 PICNIC SITES
COMFORT STATION
4 BOAT RAMPS
FISHING JETTY
FISH CLEANING SHELTER
- C. RESIDENCE AREA**
PARK MANAGERS RESIDENCE
- D. MULTI-USE CAMPING AREA**
80 MULTI-USE CAMPSITES
2 RESTROOMS W/ SHOWERS
DUMP STATION
- E. TENT CAMPING AREA**
70 TENT CAMPSITES
2 RESTROOMS W/SHOWERS
- F. GROUP PAVILION AREA**
GROUP PAVILION
COMFORT STATION
- G. DAY USE AREA**
100 PICNIC SITES
COMFORT STATION
FISHING JETTY
PLAYGROUND
- H. INTERPRETIVE AREA**
INTERPRETIVE BUILDING
DISPLAYS
- I. RESIDENCE AREA**
SUPERINTENDENTS RESIDENCE

- J. DAY USE AREA**
200 PICNIC SITES
GROUP PAVILION
3 COMFORT STATIONS
FISHING JETTY
- K. HIGH DENSITY CAMPING AREA**
40 MULTI-USE CAMPSITES
RESTROOM W/SHOWERS
DUMP STATION
- L. SHELTER AREA**
60 SCREENED SHELTERS
2 RESTROOMS W/SHOWERS
FISHING JETTY
- M. MAINTENANCE AREA**
SHOP & PARKING FACILITIES
GASOLINE STORAGE AND PUMP
VOLATILE STORAGE BUILD
- N. RESIDENCE AREA**
SUPERINTENDENT'S RESIDENCE
- O. DAY USE AREA**
50 PICNIC SITES
COMFORT STATION
2 BOAT RAMPS
FISH CLEANING SHELTER
- P. SHELTER AREA**
60 SCREENED SHELTERS
2 RESTROOMS W/SHOWERS
- Q. MULTI-USE CAMPING AREA**
50 MULTI-USE CAMPSITES
RESTROOM W/SHOWERS
DUMP STATION

- R. HIGH DENSITY CAMPING AREA**
36 MULTI-USE CAMPSITES
RESTROOM W/ SHOWERS
FISHING JETTY
- S. DAY USE AREA**
50 PICNIC SITES
COMFORT STATION
FISHING JETTY
PLAYGROUND
- T. TENT CAMPING AREA**
50 TENT CAMPSITES
RESTROOM W/SHOWERS
- U. PRIMITIVE CAMPING AREA**
40 PRIMITIVE CAMPSITES
RESTROOM W/SHOWERS
- V. GROUP CAMPING AREA**
10 PICNIC TABLES
CHEMICAL TOILETS




----- EXISTING ROADS _____ PROPOSED ROADS



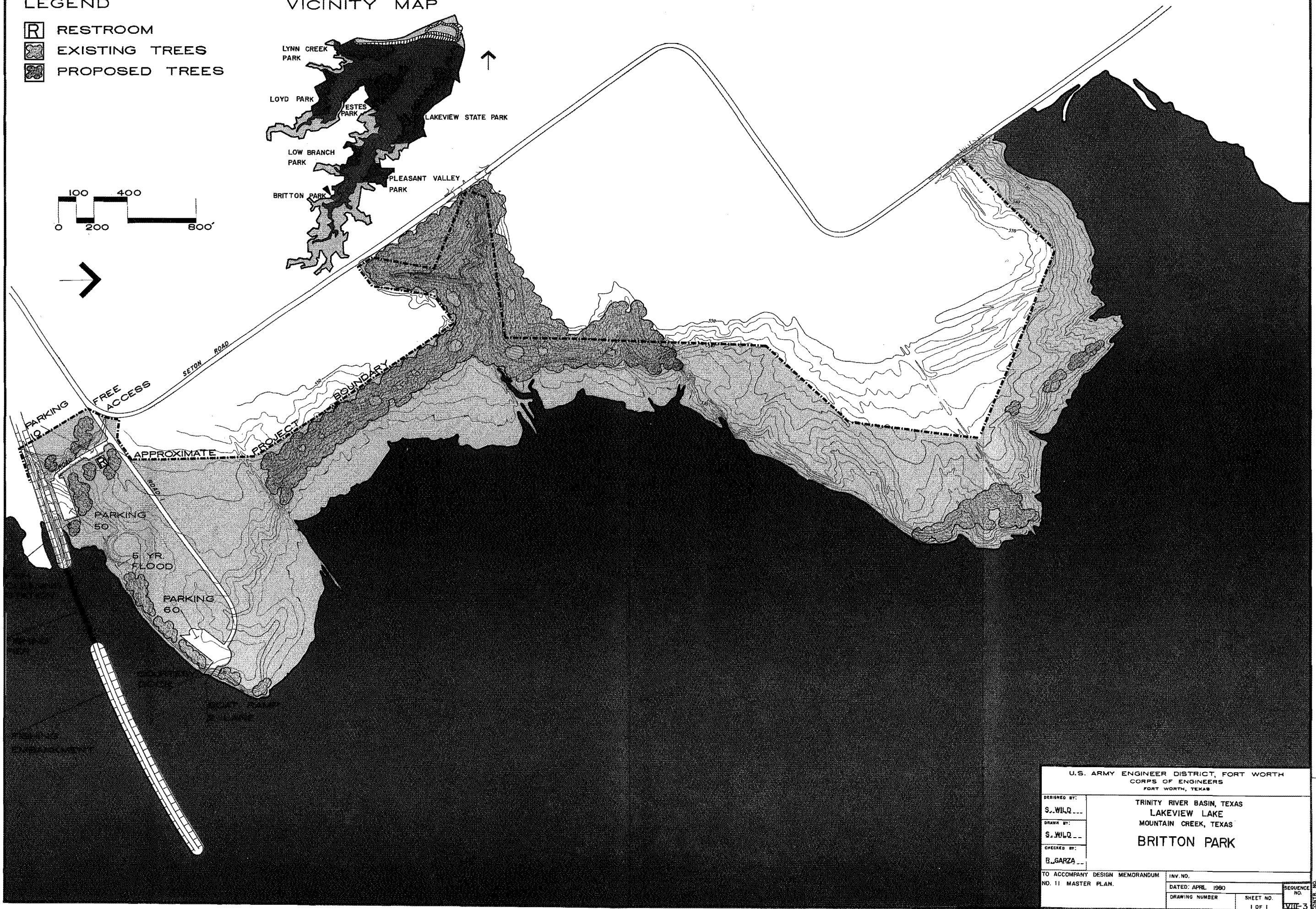
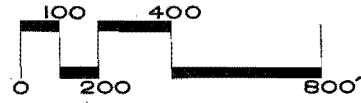
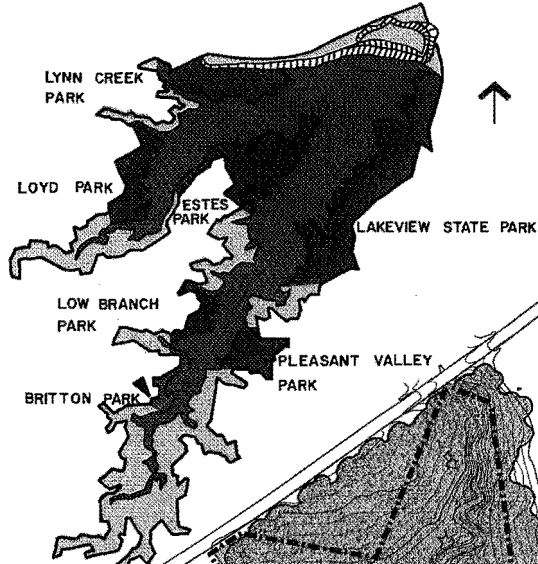
LAKEVIEW PARK SITE

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY:	TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY:	LAKEVIEW STATE PARK PRELIMINARY		
CHECKED BY:			
TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN.	INV. NO.	DATED: APRIL 1980	SEQUENCE NO.
			VIII-2
	DRAWING NUMBER	SHEET NO.	1 OF 1

LEGEND

-  RESTROOM
-  EXISTING TREES
-  PROPOSED TREES

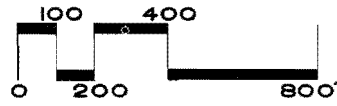
VICINITY MAP



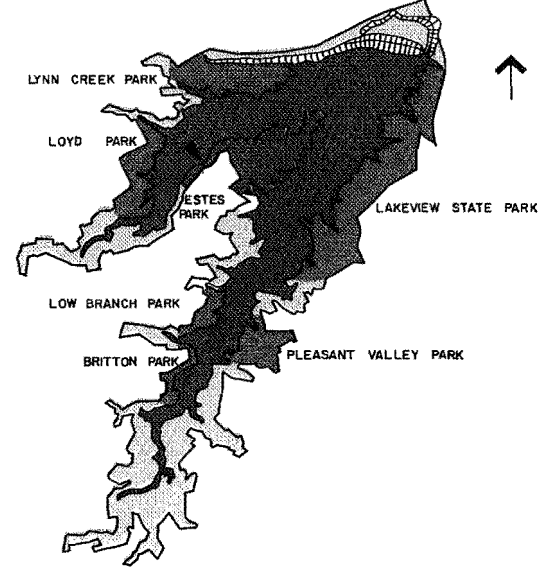
U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY: S. WILD ...	TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS BRITTON PARK		
DRAWN BY: S. WILD ...			
CHECKED BY: B. GARZA ...			
TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN.			
	DRAWING NUMBER	SHEET NO. 1 OF 1	VIII-3

LEGEND

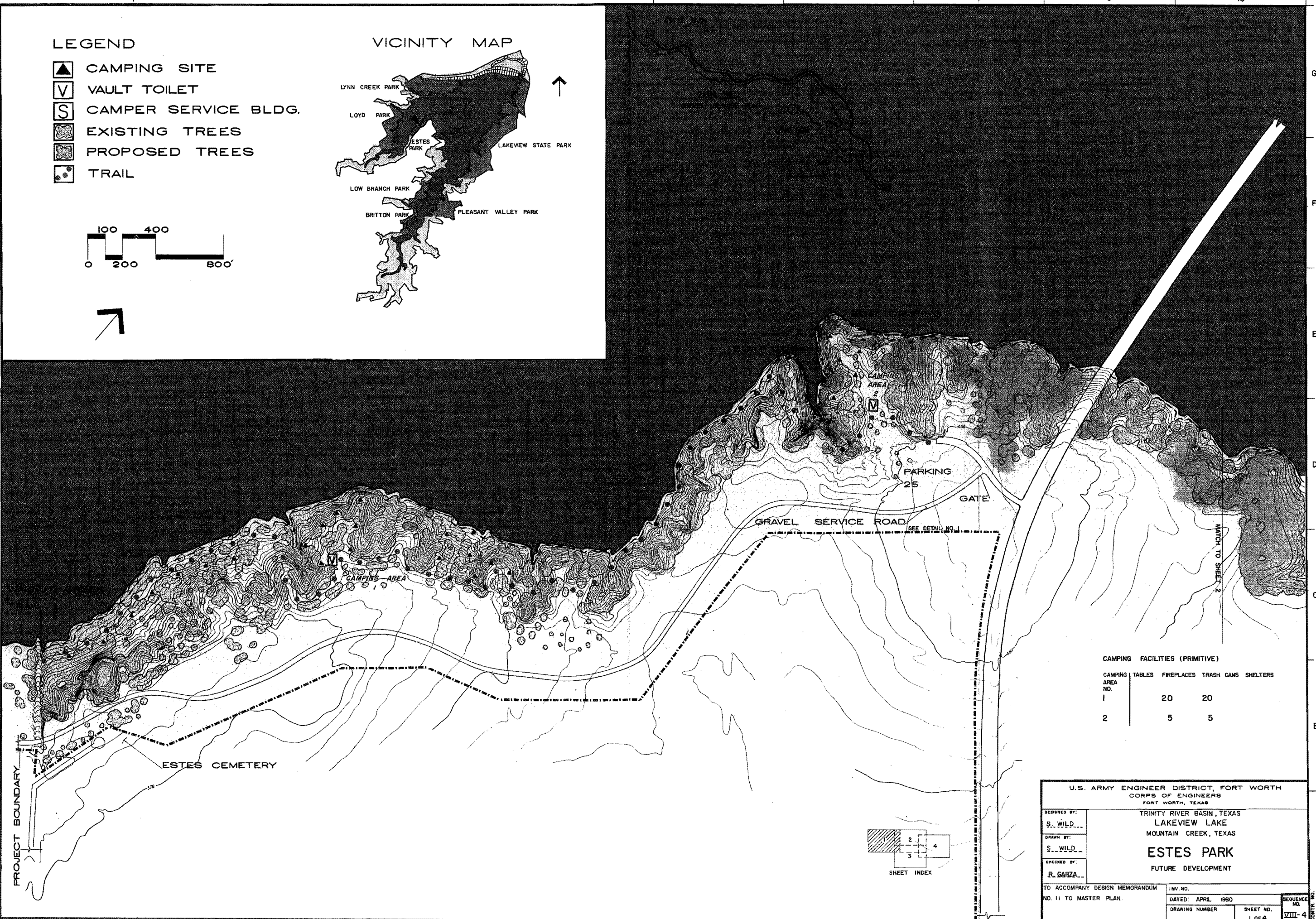
- ▲ CAMPING SITE
- V VAULT TOILET
- S CAMPER SERVICE BLDG.
- ◻ EXISTING TREES
- ◻ PROPOSED TREES
- ◻ TRAIL



VICINITY MAP

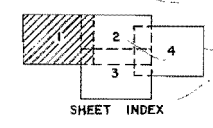


G
F
E
D
C
B
A



CAMPING FACILITIES (PRIMITIVE)

CAMPING AREA NO.	TABLES	FIREPLACES	TRASH CANS	SHELTERS
1		20	20	
2		5	5	



U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: TRINITY RIVER BASIN, TEXAS
S. WILD... LAKEVIEW LAKE
DRAWN BY: MOUNTAIN CREEK, TEXAS
S. WILD...
CHECKED BY: R. GARZA...
ESTES PARK
FUTURE DEVELOPMENT

TO ACCOMPANY DESIGN MEMORANDUM NO. 11 TO MASTER PLAN.

INV. NO. DATED: APRIL 1980
DRAWING NUMBER SHEET NO. 1 OF 4 VIII-4

PROJECT BOUNDARY

ESTES CEMETERY

GRAVEL SERVICE ROAD (SEE DETAIL NO. 1)

PARKING 25 GATE

CAMPING AREA 1

CAMPING AREA 2

NOTION TO SHEET 2

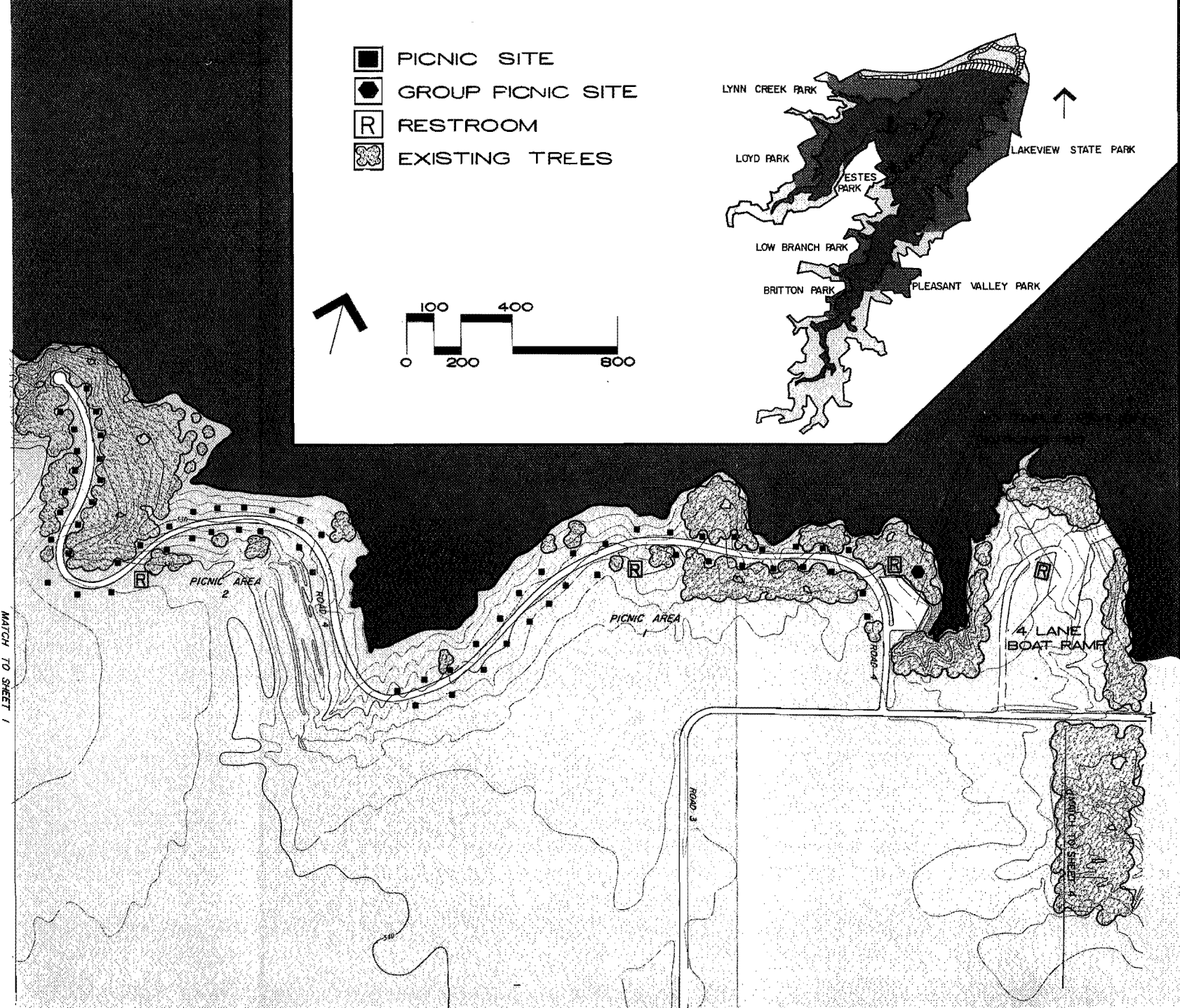
G
F
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1 2 3 4 5 6 7 8

G
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C
B
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1 2 3 4 5 6 7 8 9 10

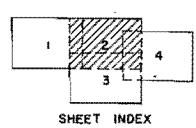
■ PICNIC SITE
 ◼ GROUP PICNIC SITE
 R RESTROOM
 ◉ EXISTING TREES



MATCH TO SHEET 1

MATCH TO SHEET 3

PICNIC AREA NO.	PICNIC FACILITIES (FUTURE DEVELOPMENT)			
	TABLES	FIREPLACES	TRASH CANS	SHELTERS
1	33	33	33	33
2	34	34	34	34



U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: S. WILD
DRAWN BY: S. WILD
CHECKED BY: R. GARZA

TRINITY RIVER BASIN, TEXAS
LAKEVIEW LAKE
MOUNTAIN CREEK, TEXAS

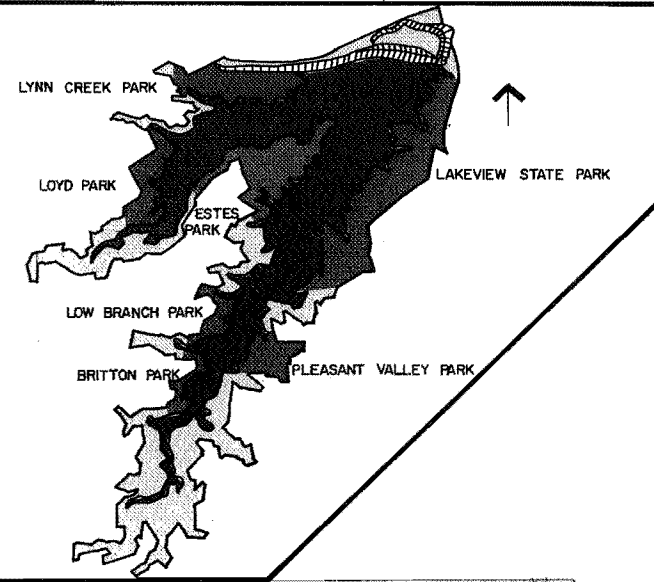
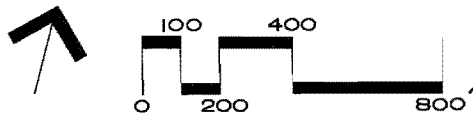
ESTES PARK
FUTURE DEVELOPMENT

TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN

INV. NO.
DATED: APRIL 1980
DRAWING NUMBER

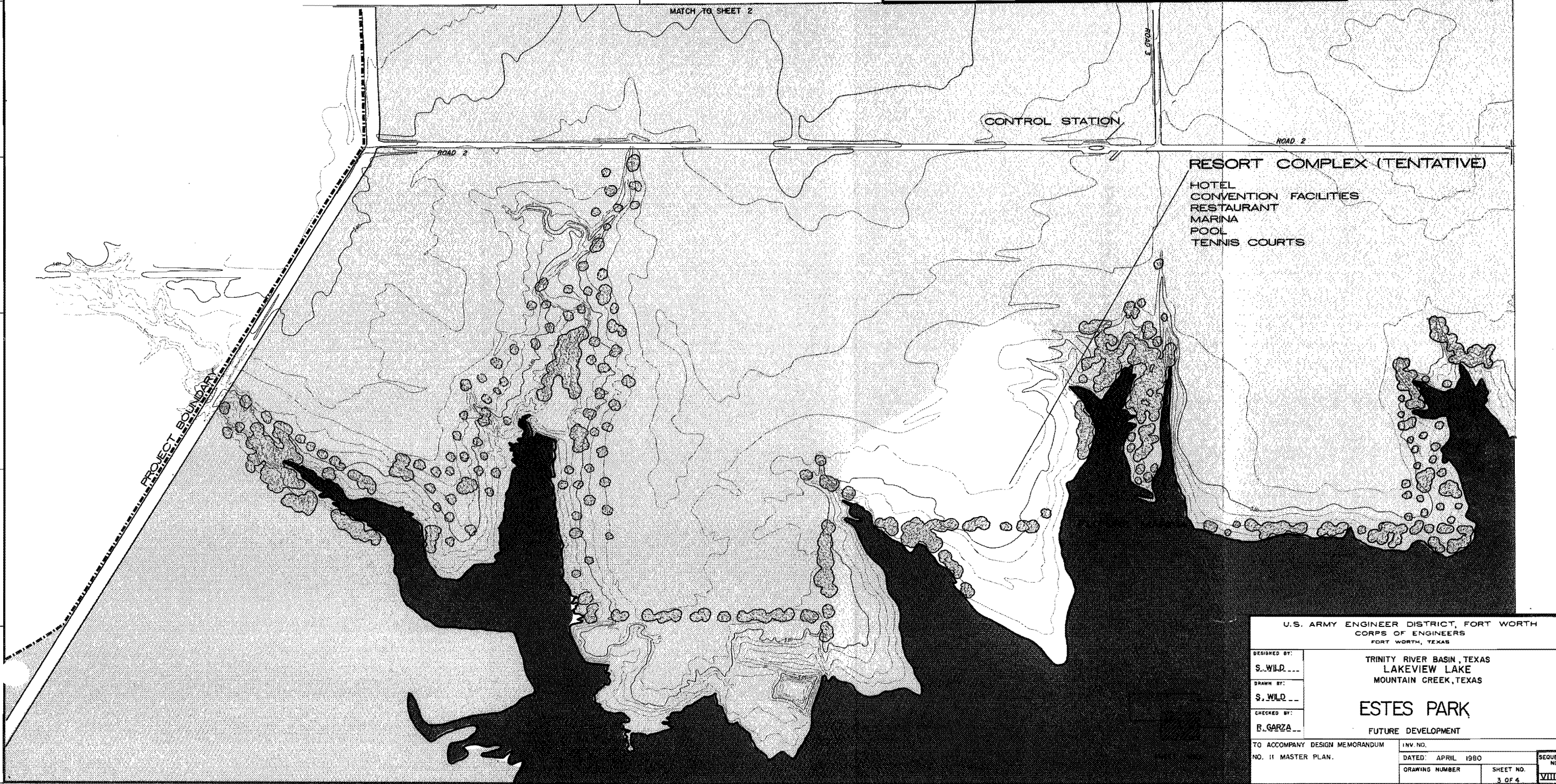
SEQUENCE NO.
SHEET NO. 2 OF 4
VIII-5

- PICNIC SITE
- GROUP PICNIC SITE
- R RESTROOM
- ⊗ EXISTING TREES

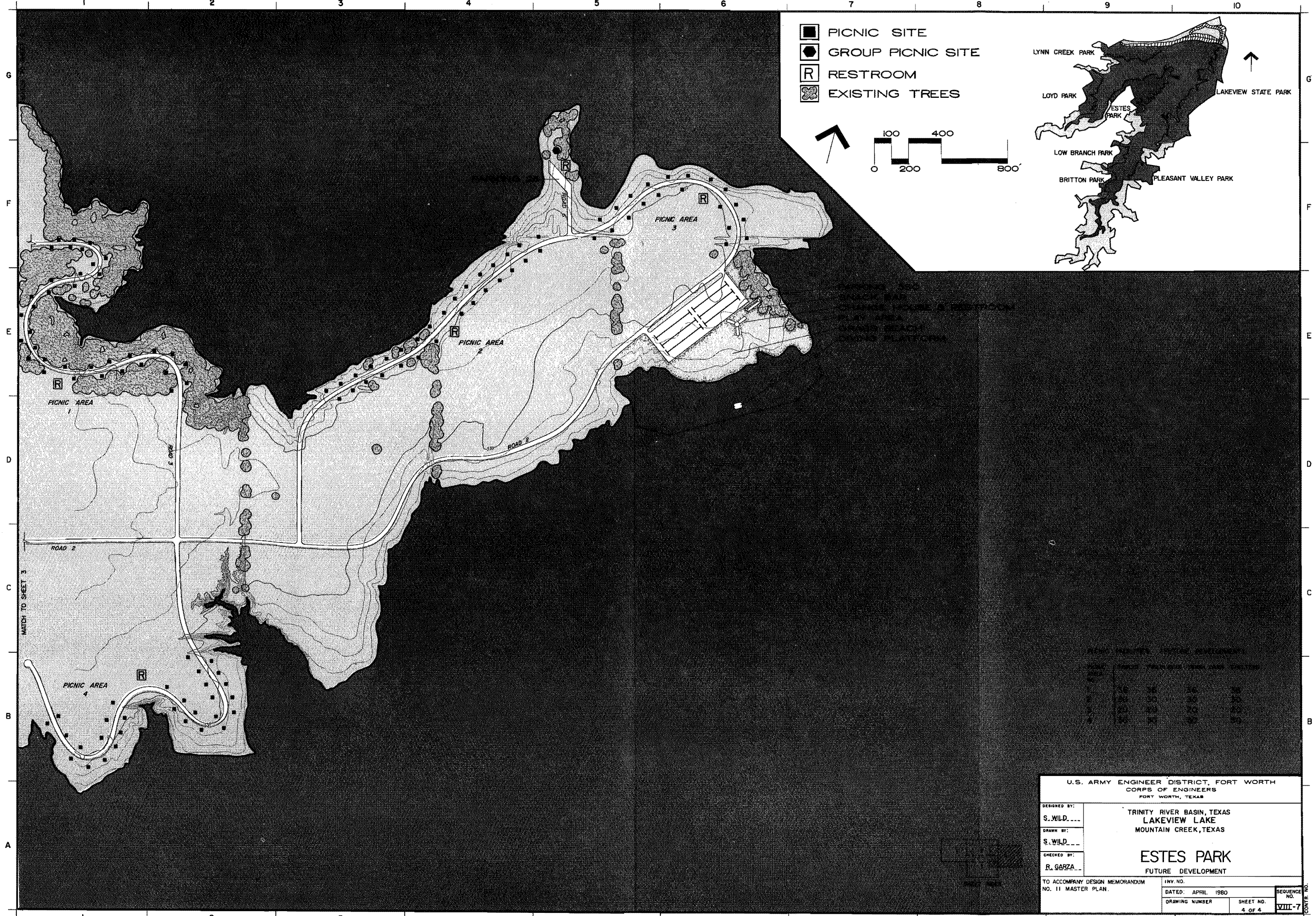


MATCH TO SHEET 1

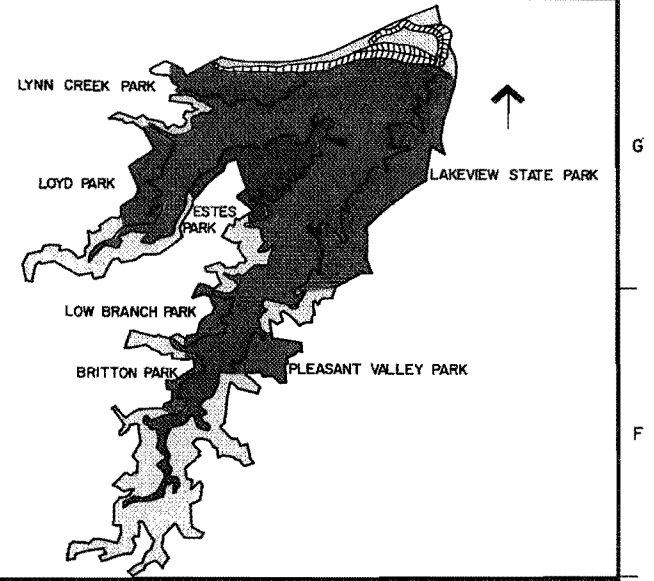
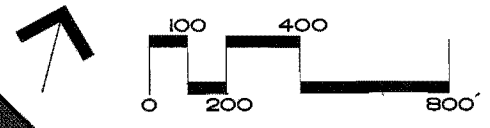
MATCH TO SHEET 2



U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY: S. WILD	TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY: S. WILD	ESTES PARK		
CHECKED BY: R. GARZA	FUTURE DEVELOPMENT		
TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN.		INV. NO. DATED: APRIL 1980	SEQUENCE NO. SHEET NO. 3 OF 4
		VIII-6	



- PICNIC SITE
- GROUP PICNIC SITE
- R RESTROOM
- ◉ EXISTING TREES



MATCH TO SHEET 3

NO.	DATE	BY	REVISION
1	10/78	S.W.	PRELIMINARY
2	11/78	S.W.	REVISED
3	12/78	S.W.	REVISED
4	1/79	S.W.	REVISED
5	2/79	S.W.	REVISED
6	3/79	S.W.	REVISED
7	4/79	S.W.	REVISED

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

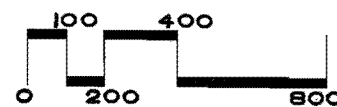
TRINITY RIVER BASIN, TEXAS
LAKEVIEW LAKE
MOUNTAIN CREEK, TEXAS

ESTES PARK
FUTURE DEVELOPMENT

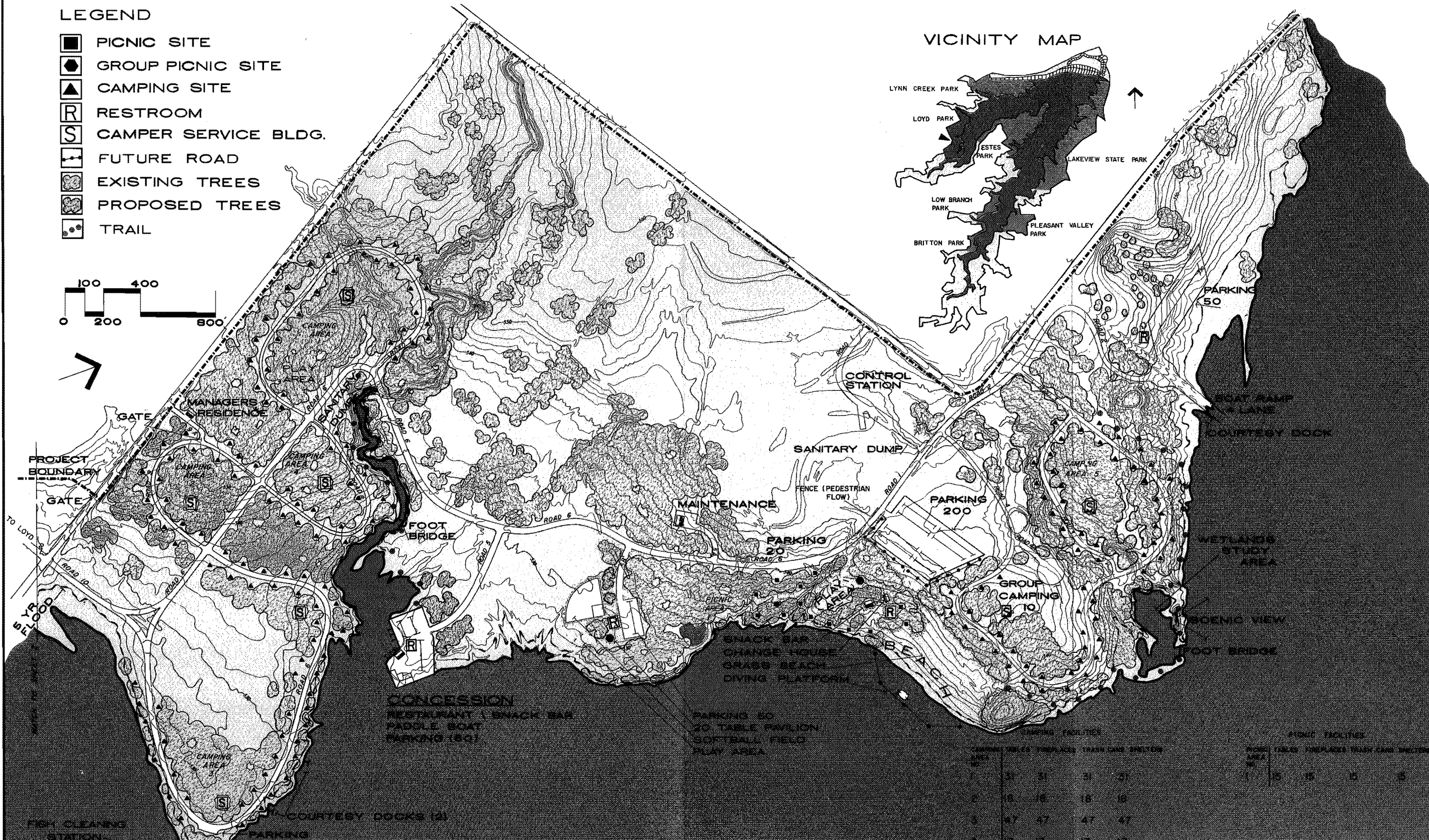
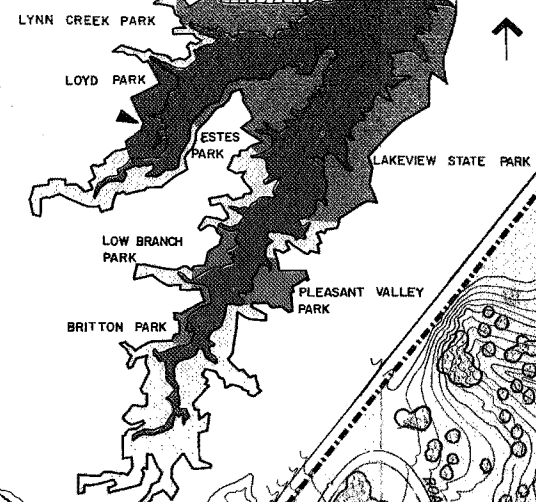
DESIGNED BY: S. WILD	TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN.	INV. NO.	SEQUENCE NO.
DRAWN BY: S. WILD		DATED: APRIL 1980	NO.
CHECKED BY: R. GARZA		DRAWING NUMBER	SHEET NO.
		4 OF 4	VIII-7

LEGEND

- PICNIC SITE
- GROUP PICNIC SITE
- ▲ CAMPING SITE
- R RESTROOM
- S CAMPER SERVICE BLDG.
- FUTURE ROAD
- EXISTING TREES
- PROPOSED TREES
- TRAIL



VICINITY MAP



CONCESSION
RESTAURANT / SNACK BAR
PADDLE BOAT
PARKING (50)

PARKING 20
TABLE TENNIS
SOFTBALL FIELD
PLAY AREA

CAMPING AREA NO.	CAMPING FACILITIES			
	TENT PLACES	TRUCK CAMP	SHEDS	TRAILS
1	31	31	31	31
2	16	16	16	16
3	47	47	47	47
4	17	17	17	17
5	50	50	50	50

CAMPING AREA NO.	CAMPING FACILITIES				
	TRUCK CAMP	SHEDS	TRAILS	TRAILS	TRAILS
1	1	5	5	5	5

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

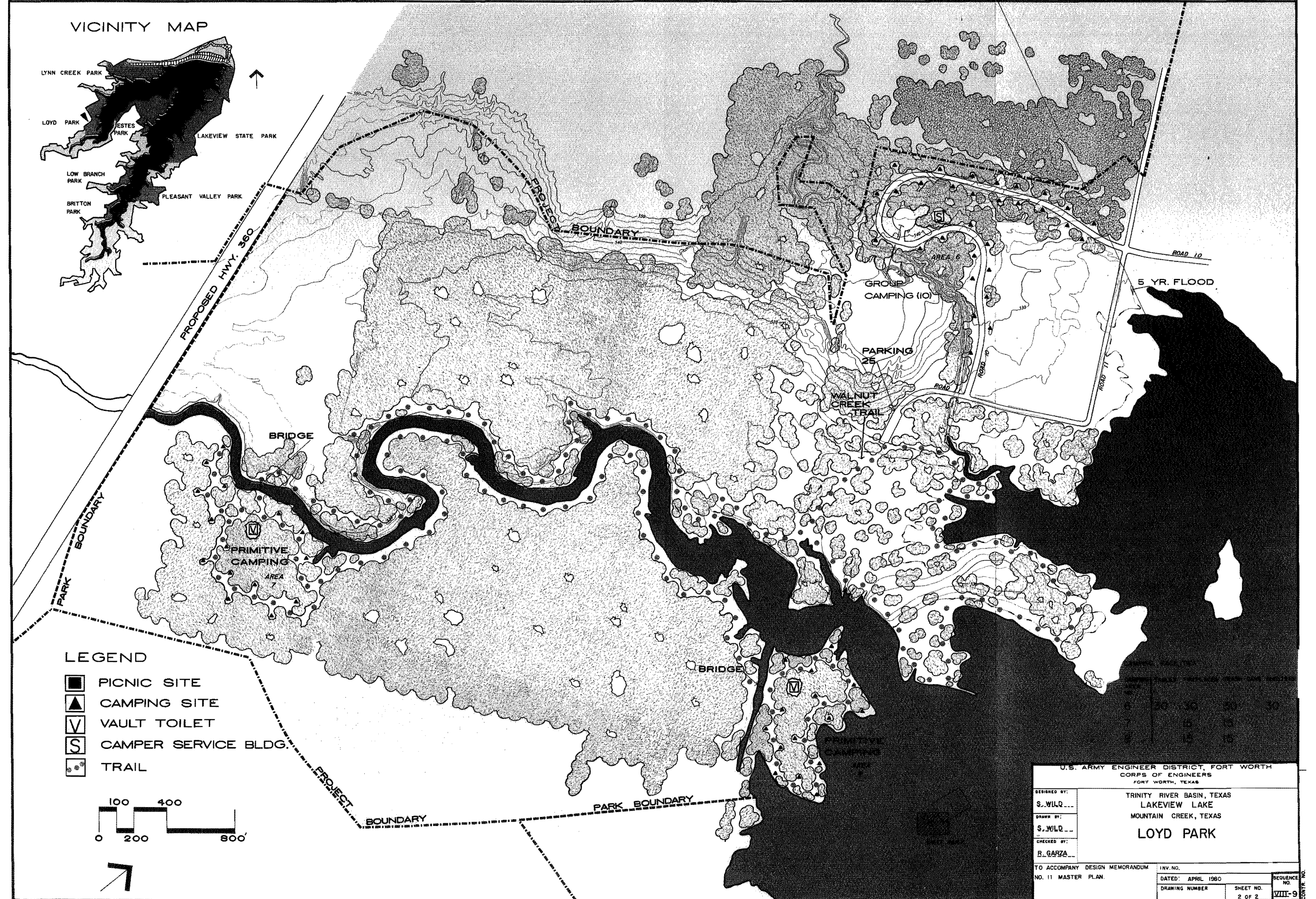
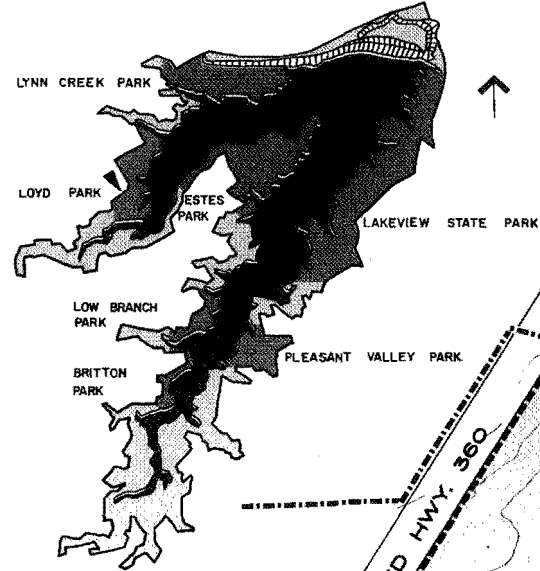
TRINITY RIVER BASIN, TEXAS
LAKEVIEW LAKE
MOUNTAIN CREEK, TEXAS

LOYD PARK

DESIGNED BY: S. WILD...	TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN	INV. NO.
DRAWN BY: S. WILD...		DATED: APRIL 1980
CHECKED BY: R. GARZA...		DRAWING NUMBER
		SHEET NO. 1 OF 2

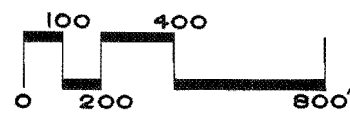
SEQUENCE NO.
VIII-8

VICINITY MAP

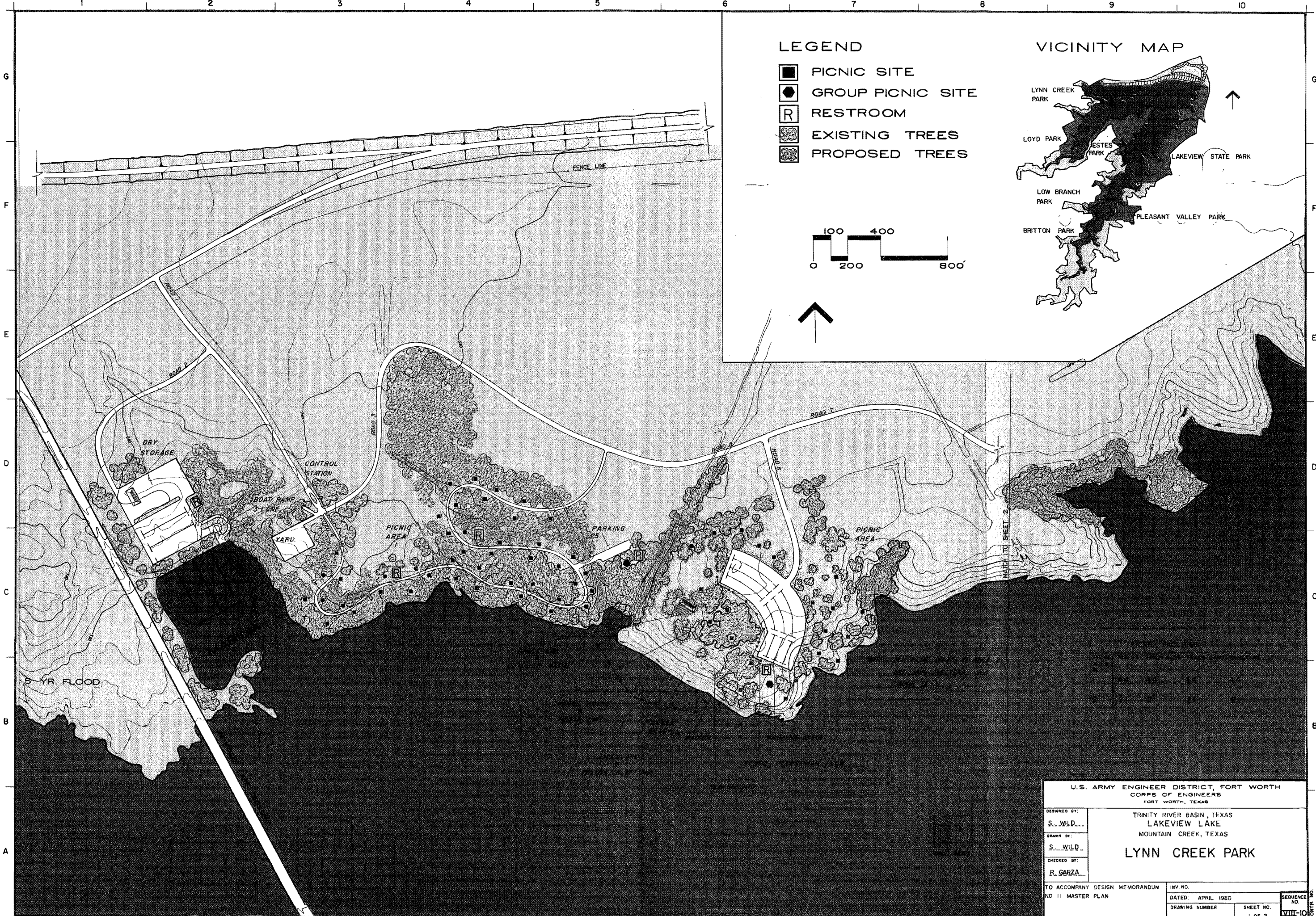


LEGEND

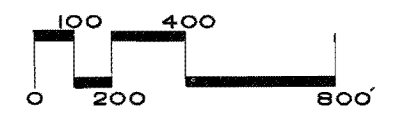
- PICNIC SITE
- ▲ CAMPING SITE
- V VAULT TOILET
- S CAMPER SERVICE BLDG.
- TRAIL



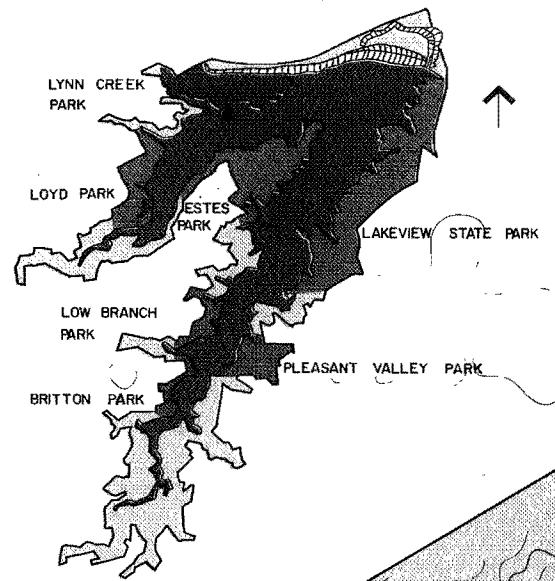
U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY: S. WILCOX	TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY: S. WILCOX	LOYD PARK		
CHECKED BY: R. GARZA	INV. NO.	SEQUENCE NO.	
TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN.		DATED: APRIL 1980	SHEET NO. 2 OF 2
		VIII-9	CONT'D



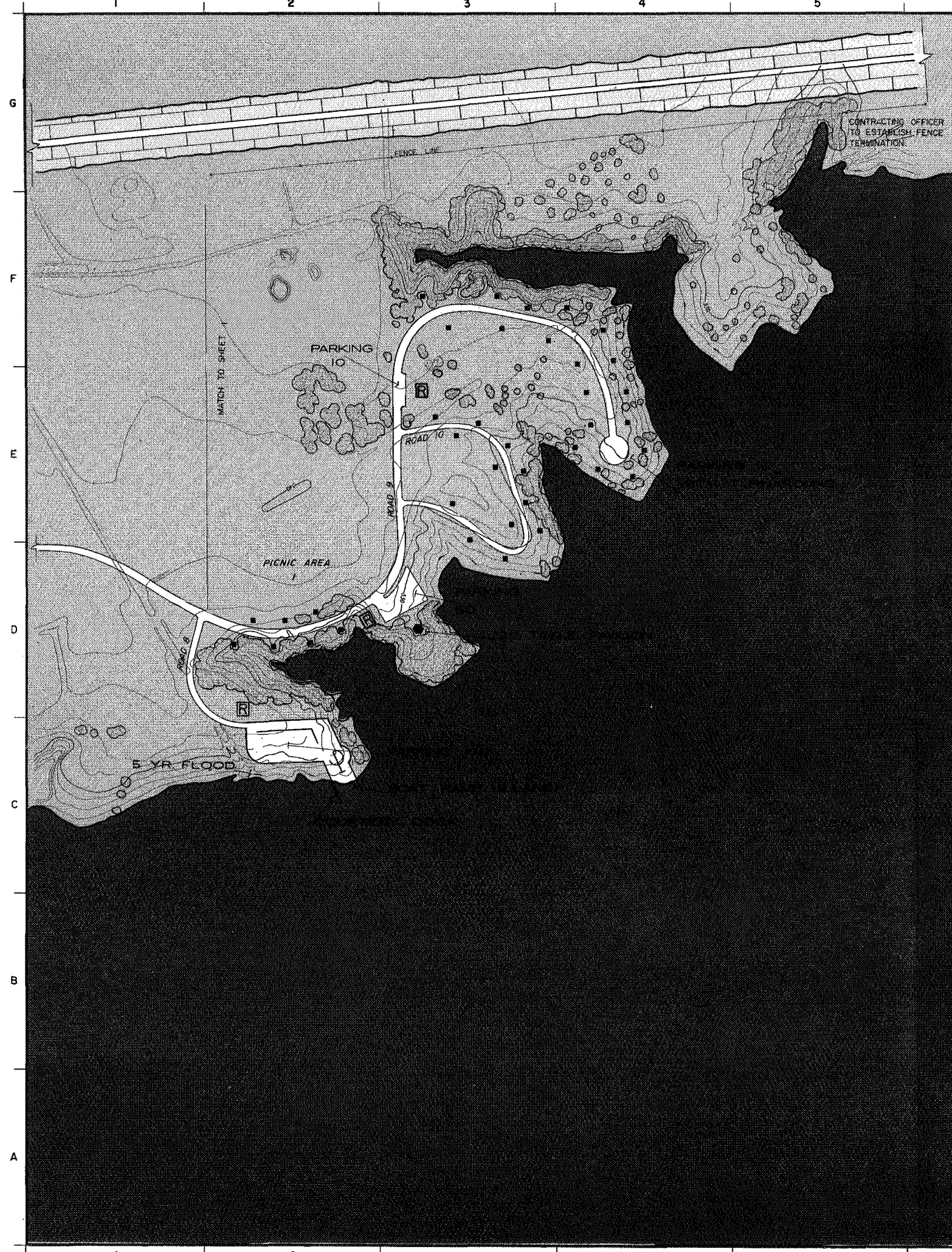
- LEGEND**
- PICNIC SITE
 - GROUP PICNIC SITE
 - R RESTROOM
 - ☼ EXISTING TREES
 - ☼ PROPOSED TREES



VICINITY MAP

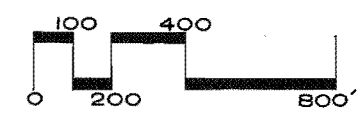


U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: S. WILD...	TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS
DRAWN BY: S. WILD...	LYNN CREEK PARK
CHECKED BY: R. GARZA...	
TO ACCOMPANY DESIGN MEMORANDUM NO 11 MASTER PLAN	INV. NO. DATED: APRIL 1980
	DRAWING NUMBER
	SHEET NO. 1 OF 2
	SEQUENCE NO. VIII-10

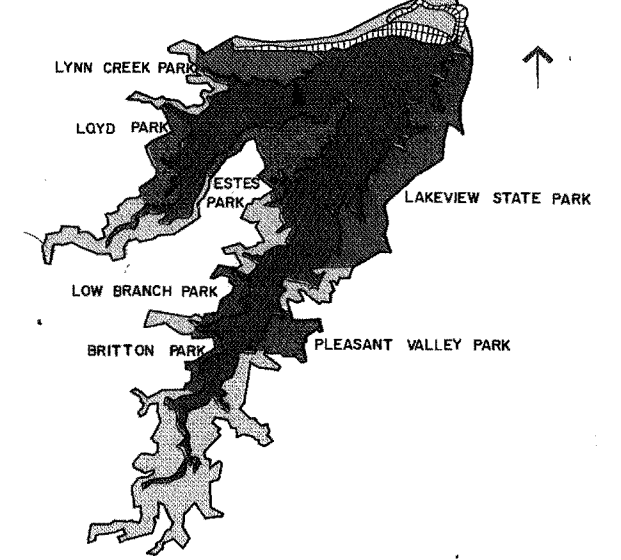


LEGEND

- PICNIC SITE
- GROUP PICNIC SITE
- RESTROOM
- EXISTING TREES
- PROPOSED TREES



VICINITY MAP



U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY: S. WILD	TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS LYNN CREEK PARK		
DRAWN BY: S. WILD			
CHECKED BY: B. GARZA			
TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN.			
INV. NO.	DATED: APRIL 1980	SEQUENCE NO. VIII-11	
	DRAWING NUMBER	SHEET NO. 2 OF 2	



IX FACILITY LOAD AND OTHER DESIGN CRITERIA

IX - FACILITY LOAD AND OTHER DESIGN CRITERIA

9-01. General. The purpose of establishing design criteria is to provide guidelines for insuring that the public is provided with a safe, high quality recreation development that will enhance their outdoor experience and minimize the damage to the environment. Because each project has different site characteristics, design criteria that are appropriate in one situation may not apply to another. Therefore, determination of design criteria and facility load has been based on analysis of each situation in regards to its particular requirements and characteristics. The design criteria and guidelines presented in Engineer Regulations 1110-2-400, 1120-2-400, 1130-2-400, 1165-2-400; Engineer Manual 1110-2-400, and Technical Manual 5-822-2, as well as the following comments, will be used as guidelines in planning new facilities. Every effort will be made to meet program requirements and to preserve and enhance the natural features of the area. The Texas Parks and Wildlife Department has chosen to do their own design and construction, and the Corps has reserved the right to review and approve all plans and specifications prior to construction. The Corps will do the design and construction for Trinity River Authority's recreation development.

9-02. Architectural theme. All facilities for public use, including those constructed by concessionaires, will follow a common design theme for continuity and unity. The theme for Lakeview Lake will be one of functional utility and esthetic harmony with the area. The architecture which has been introduced into this natural environment is a simplistic statement of function, structure, and geometry to compliment rather than compete with the site. The architectural elements comprise a minute portion of the bigger picture of this very large natural setting. For that reason, it was felt that the natural setting would provide the excitement of and introduction to the site and the architectural elements would function in a supportive capacity. Architectural theme is covered in DM No. 7 (Revised).

9-03. Siting. All major permanent structures will be placed above the 5-year flood pool, although some facilities capable of withstanding inundation have been placed within the limits of this elevation. All facilities have been sited to take advantage of natural vegetation, topography, and other environmental features. All buildings requiring heat or domestic hot water should be sited whenever possible to utilize solar systems. Purely functional structures such as comfort stations have been sited for maximum convenience without being physically and visually obstructive, while other structures such as the administration center, overlook, and pavilions have been designed and sited to take advantage of views and to become visual and physical focals. Siting and general alignment of major structures, roads, and facilities have been developed based upon desirable design criteria and preliminary field siting. More detailed surveys will be required for certain areas prior to preparation of plans and specifications. Minor changes in road alignments and location of minor facilities

will be made to preserve vegetation and take advantage of minor environmental features. Due to the terrain and vegetation in several areas, trails are to be considered schematic and will require further study and evaluation during preparation of plans and specifications. Actual alignment of trails will be sited in the field to insure maximum advantage of views, vegetation, and topographic features, and to provide a varied recreational experience.

9-04. Sewage treatment and disposal. Sewage system will be connected to Trinity River Authority Regional Wastewater System to process the sewage generated by waterborne toilets, service buildings, change shelters, and sanitary dump stations. Other elements included in this treatment system will be lift stations, manholes, collector lines, effluent discharge lines, and electric service lines. At the time of construction, the various systems will be investigated to develop a concept for sewage treatment facilities based upon the best available practicable, and economical treatment and disposal system that meets Federal, State, and local requirements. Specific guidance is presented in applicable portions of TM-5-814-3, in the USPHS manual, "Septic Tank Practices," and in the Texas State Department of Health Manual, "Rules and Regulations for Public Waterworks Projects." Reference should also be made to the Federal Water Pollution Control Act of 1972 (Public Law 92-500).

9-05. Electrical supply. Lighting will be provided for personal safety, security of property, and aesthetic enhancement. A minimal outdoor lighting system will be installed to provide a low level of illumination in keeping with the natural, rural nature of the park and will be used to focus on primary destinations and to reinforce circulation systems. The lake area will be served by the Texas Power and Light, Texas Electric Service, Hill County Electric and Dallas Power and Light. The power lines can be extended as required for project needs. All power lines in all major recreation sites will be placed underground unless special conditions make such an installation impracticable. The design and construction of any electrical facility will conform to the companies' standards and will comply with Government codes.

9-06. Water system. Water service will be connected to existing municipal transmission mains wherever possible. Distribution and service lines will be sized to accommodate the facilities and the anticipated ultimate use. If municipal water is not available potable water in each public area will be provided from water filtration and treatment plants using lake water. All facility design for water supply and public use will be coordinated with the Texas State Department of Health according to their general type and location. These facilities should be designed in accordance with EM 1100-2-4201 and should meet the standards required by Federal, State, and local laws.

9-07 Roads.-- Existing State and county roads which provide access to the various sites will be used wherever practicable. In addition, the State and County will be encouraged to continually improve existing roads that provide access to the project. Primary access roads between parks will be F.M. 1382, embankment road, Camp Wisdom Road, Lynn Road, and Arlington Webb Britton Road. Access to Estes Park will be from Mansfield Road and the proposed adjoining lake crossing from the south. Access from the north will be by the proposed crossing at Lynn Creek Park. S.H. 360 will be the primary access to Britton Park. The park roads will provide 2-way transportation to and from the county roads and will terminate at boat ramps, swimming beaches, marina, and 1-way loops which will provide picnicking or camping. Maximum design speeds on the major access roads will vary from 25 to 30 mph and on circulation roads will vary from 15 to 20 mph; variations are due to road conditions, type of use, and potential hazards. All roads will be aligned to save the greatest amount of existing vegetation and to minimize scarring of the land while providing for the maximum sight distance. Surface runoff will be adequately controlled by grade, ditches, and drainage structures; flume downdrains will be used to guard against the formation of tunnels or channels. Culverts or bridges will control cross drainage. They will be located as required and sized in accordance with current Texas culvert practices. Barriers will be installed to prevent vehicles from going off the travelway and will generally be constructed of natural materials such as large rocks, timber, and logs. Cut and fill slopes will be rounded where this will not destroy existing vegetation or rock formations, or create drainage problems. Additional guidance for the planning and design criteria of access park and service roads is presented in ER 1110-2-400.

9-08. Parking.

a. Parking systems. Two different systems of parking will be used at the project. Parking areas for boat launching ramps, rest-rooms, swimming beaches, and the marina will employ large numbers of concentrated parking spaces due to the anticipated public use. Occasional plantings will interrupt the broad expanse of paving. The second system will use single parking spaces which are skewed parallel or perpendicular to 1-way loop roads.

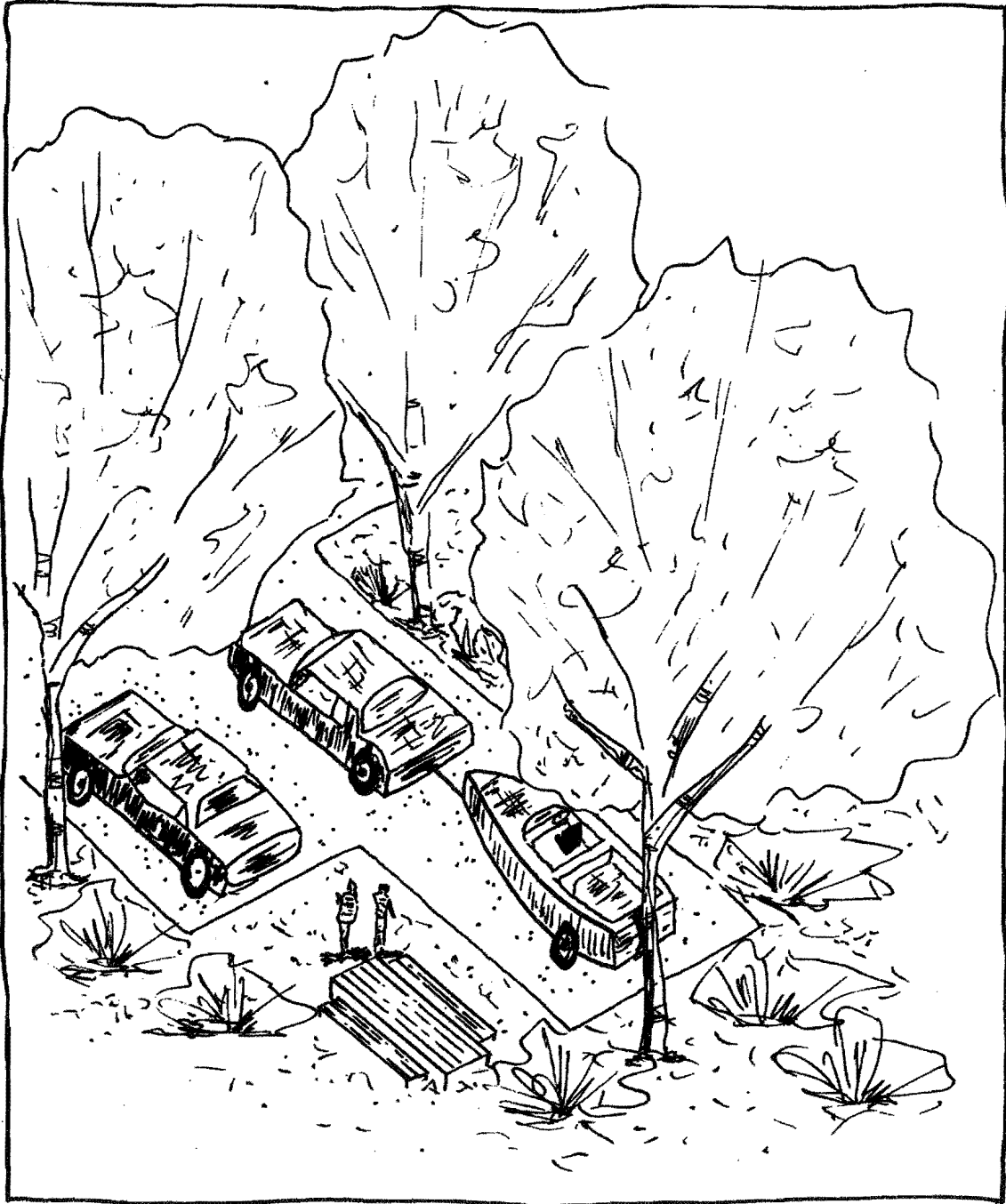
b. Parking spaces. The parking areas will be sited in such a manner as to be in harmony with the environment as much as possible. In addition, parking areas will be designed to avoid vehicular backing onto heavily traveled access roads. The minimum parking space for automobiles will be 10 feet by 20 feet. Car-trailer spaces will be 12 feet by 60 feet for 90-degree head-in parking and 12 feet by 60 feet for 45 degree parking with 25-foot access lanes. A car-trailer parking space of 12 feet by 60 feet will be provided for each "stub-out" type camping and picnic site. In addition to the 12 X 60 parking space, a double "stub-out" will be provided for every fifth camping and picnicking space. See Figure IX-1A and B.

9-09. Boat launching ramps and courtesy docks. Boat launching ramps will be 14 feet wide or multiples thereof, with the length governed by the slope of the land and estimated water level fluctuations. Lanes will be constructed in such a manner as to keep vehicles and trailer confined to a single lane. The upper and lower vertical limits and the slope of the ramps will be in accordance with paragraph 3a of Appendix A of EM 1110-2-400 wherever practicable. Boat ramps will be constructed of concrete and will be located so as to minimize hazards to boating operations. Ramps will be provided with riprap protection as required. Floating courtesy docks will be provided at boat ramps and along the shoreline in camping areas. The minimum requirement for a courtesy dock is an expected 60 boat launchings per normal weekend day. It will be necessary to channelize the boat launching corridor through the Bowman Branch in Loyd Park. This is a small tributary to Walnut Creek located on the north end of Loyd Park. The channel will be cleared and buoyed to a safe distance into the main body of the lake. The Britton Park boat ramp will require an excavated ramp to achieve the proper 12 to 14 percent grade and buoyed to deep water.

9-10. Marina locations.- Marina sites have been located in Estes Park (future), Lynn Creek Park, and south of Lakeview State Park (East Shore Marina). All marinas should accommodate approximately 250 to 300 wet slips. These sites were selected because of accessibility, availability of utilities, natural characteristics of the site, and space available for land and water activities. Siting of the marinas will be in accordance with ER 1110-2-400 and EM 1110-2-400. The initial development at Lynn Creek and East Shore Marina will include access roads, parking, sanitary facilities, and water, sewage and electrical systems. The Lynn Creek Marina will need extensive excavation to meet the needed size of approximately 250 to 300 wet slips. The major part of the excavation for the marina will be accomplished as part of the road relocations contract work, for use as borrow material. In this master plan, data were analyzed as to the locations and feasibility of concession accommodations and services generally needed to meet the public needs. These analyses will be further supported by a market analysis to insure that services and facilities specified in this master plan are of an investment scale to which a capable private operator, under a commercial concession lease can achieve economic success, as well as offer such services and facilities at reasonable prices to the general public.

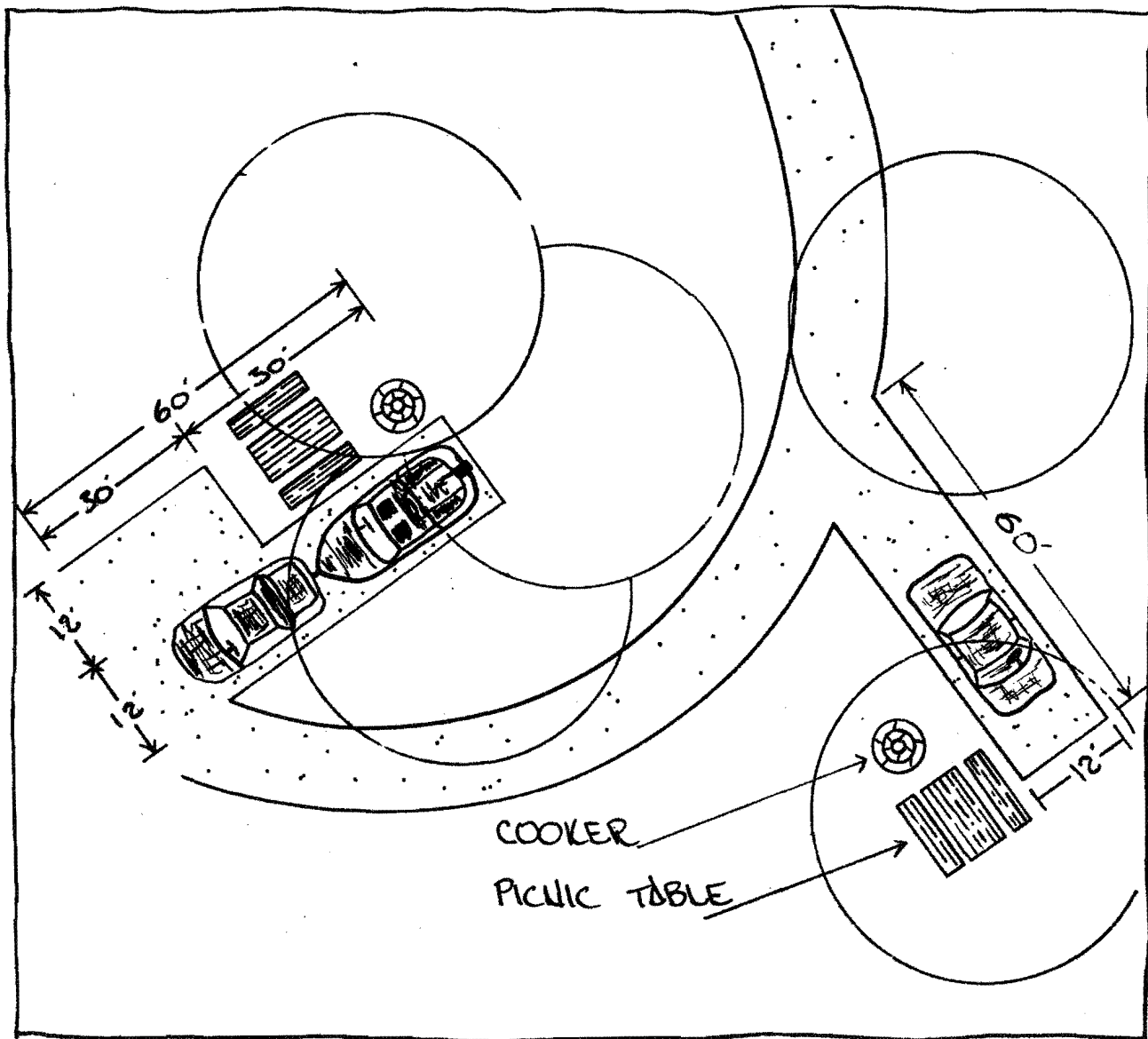
9-11. Camping units.- Camping facilities for an initial design day load of 3,770 will be provided. All of the initial campsites will be in Loyd Park, and Lakeview State Park. Water and sanitary facilities will be provided for within close proximity of each site. In the primitive camping site of Loyd Park, only vault type toilets will be provided. The types of camping facilities to be provided are discussed below.

a. Formal units.- Formal family units will be provided at all large public use areas. They will be graded and usable with either tents or self-contained recreation units. Sites will be spatially



DOUBLE STUB-OUT (TYPICAL)

Figure IX-1A



TYPICAL PICNIC AND CAMP SITE

Figure IX-1B

separated an average of 100 feet on center. Each campsite will have a covered table, charcoal grill, utility table, electrical and water hookups, and trash can. Handicapped sites will be basically the same as other formal sites with some modifications to make them more accessible and convenient for use by the physically disabled. See Chapter XI on Special Problems and Considerations.

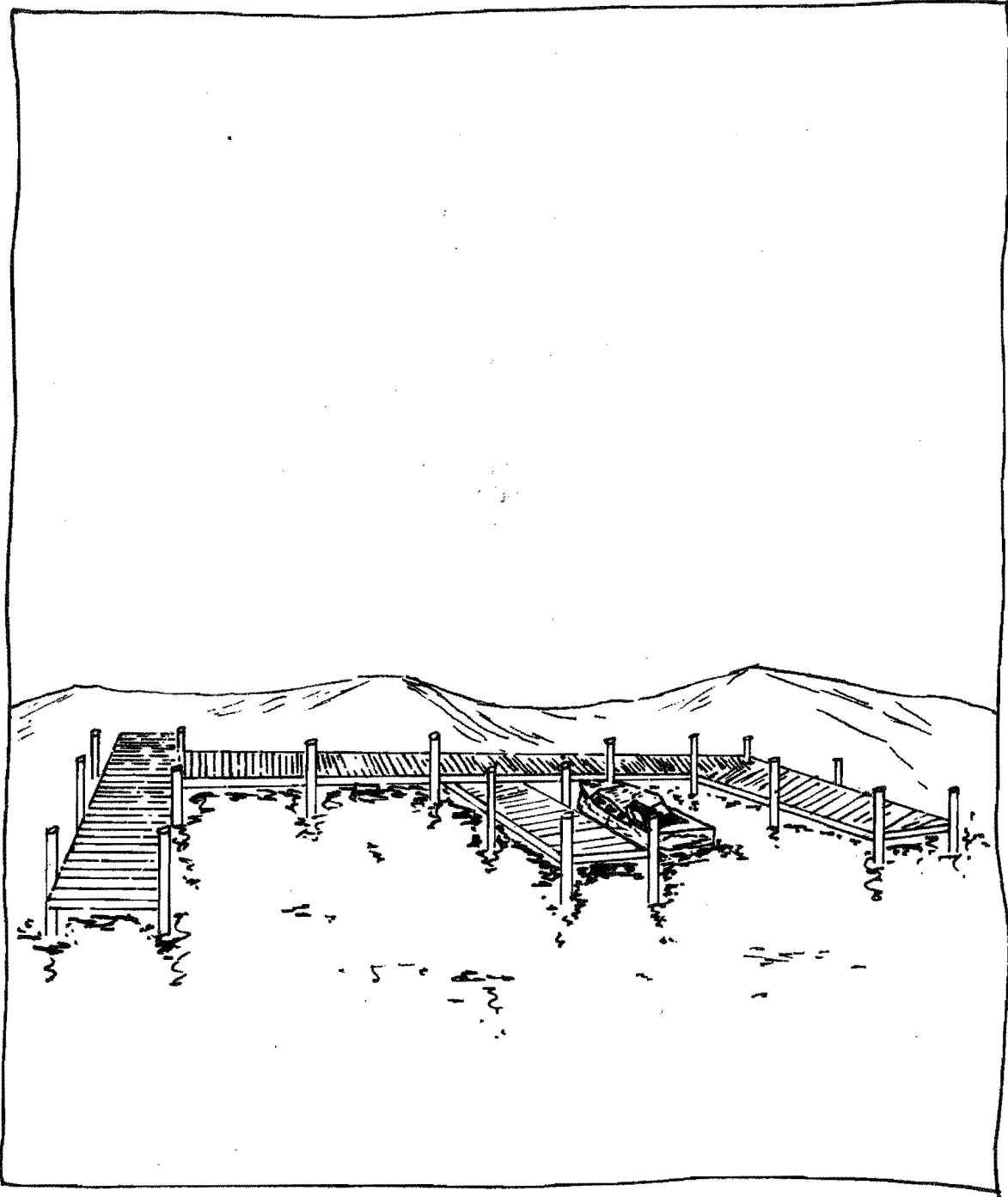
b. Hike-in campsites. Hike-in sites have been located along Walnut Creek in Loyd Park. Each site will consist of a defined camping area, fire-pit type cooking grill, centrally located trash cans, vault toilet, and a centrally located firewood bin. Access to the primitive camping areas will be by Walnut Creek nature trail which is in Loyd Park. Parking will be provided at the trail head. Spacing of sites will be on 150 foot centers. Should demand call for additional sites, they will be located along the western arm of Estes Park.

c. Boat access campsites. On a future demand basis, boat access campsites will be provided for along the western arm of Estes Park. They will be sited and constructed by the same specifications as the hike-in campsites. See Figure IX-2 for mooring facilities.

9-12. Picnic units. Initial facility development was based on a design day load of 9,427 picnickers. Picnic sites will be provided in the areas as designated in this plan. The sites will consist of a picnic table (steel frame with wood tops and seats) on a hard-surfaced area, a canopy, a trash receptacle, and a charcoal cooking grill. These units will be placed individually and in groups of two or more. Group shelters will be provided with eight to twenty wooden tables. Parking spaces will be grouped close to the tables. Each "stub-out" will be constructed to the same specifications and dimensions as the formal camping sites, except for individual water and electric hook-ups. Every fifth "stub-out" will be a double. This will facilitate the easy changeover from camping to picnicking and vice versa should the need arise. Mini-picnic shelters will be used in the walk-in picnic areas at the Loyd and Lynn Creek beaches. See Figure IX-3.

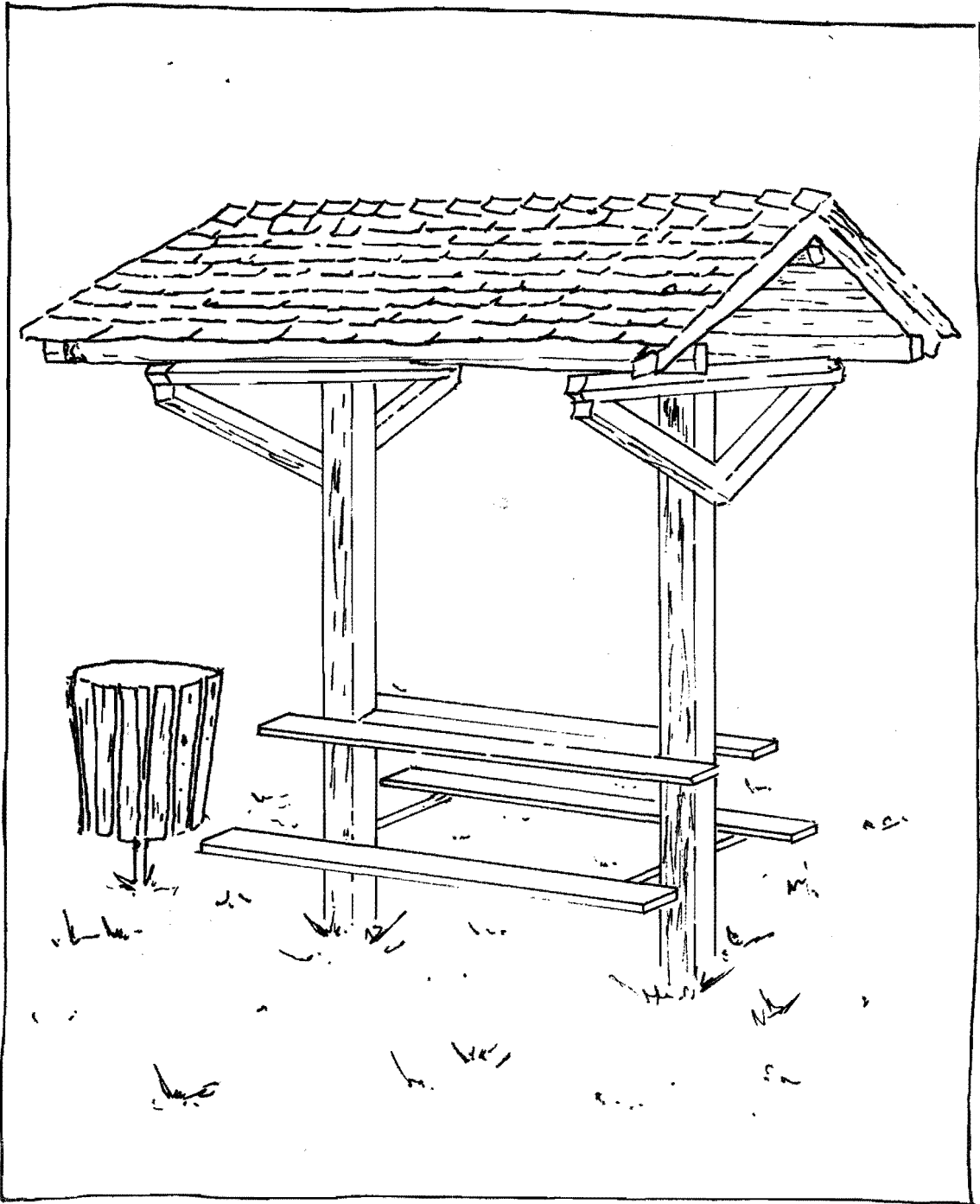
9-13. Swimming areas. Swimming areas for an initial design day load of 3,100 will be provided at public use areas. Permanent restrooms with change shelters will be provided at locations above the 5-year flood pool. Loyd and Lynn Creek Parks will have formal beach areas complete with food concessions, change houses, sheltered picnic sites, grassed beaches and landscaped surroundings, playgrounds, and bouyed swimming with diving/sun-bathing platforms. Bouys will be placed 200 feet from shoreline or to a 12-foot water depth. A wading area will also be bouyed off within the main swimming area. Beaches shall be graded to a maximum of 10% slope, 5 to 8% is ideal. Emphasis should be placed on having a first class development for these swimming areas.

9-14. Playground facilities. Playground lots will be considered at some of the large campgrounds and next to formal beaches. Equipment will be constructed of durable woods and materials which are native to the area or blend with the surrounding landscape. Playground equipment will be designed for durability and safety, and will be vandal-resistant.



MOORING FOR BOAT CAMPING IN ESTES PARK
(FUTURE DEVELOPMENT)

FIGURE IX-2



MINI-SHELTER (TYPICAL)

FIGURE IX-3

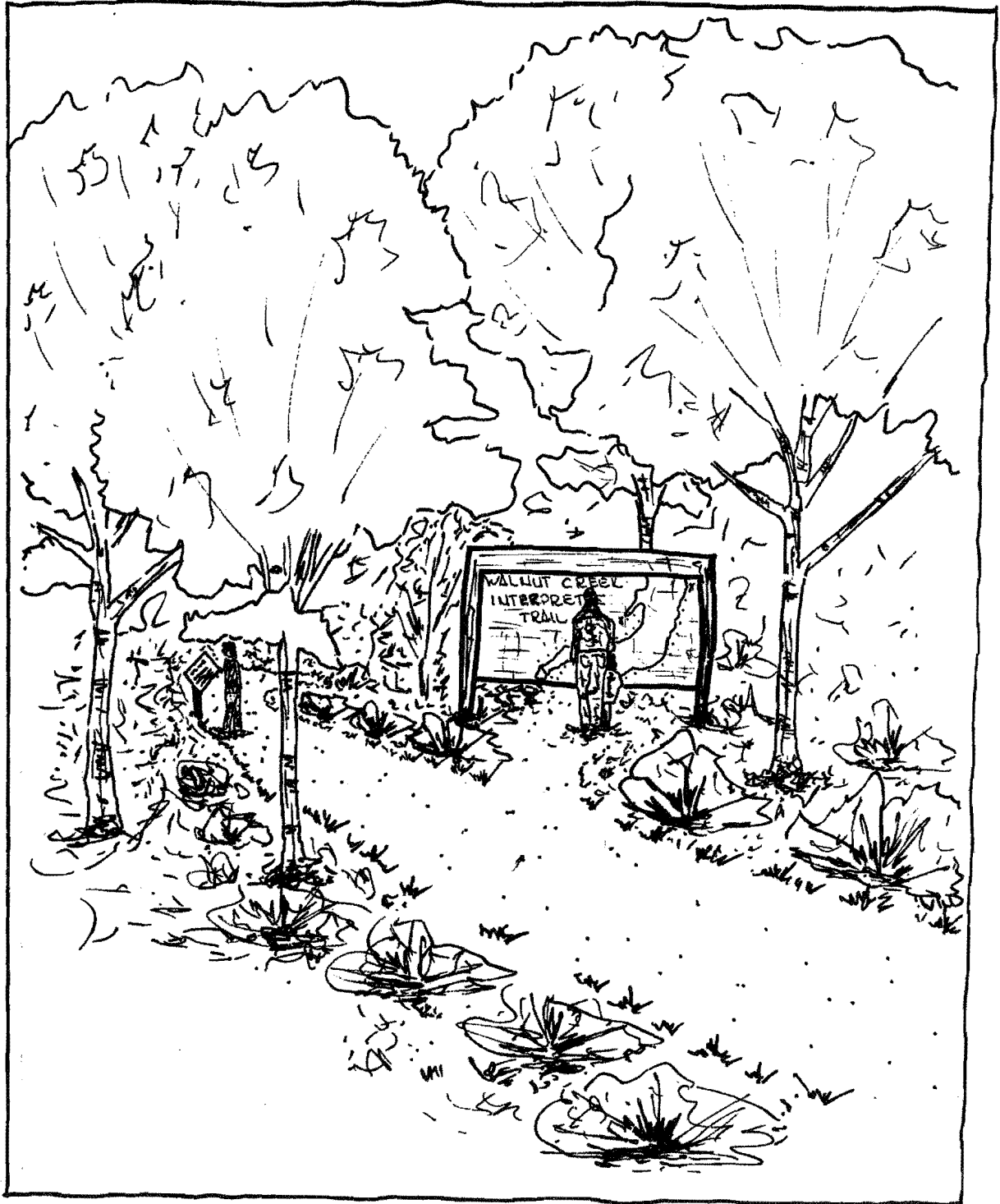
9-15. Trails and pathways. Trails and pathways will be designed to provide maximum circulation efficiency and visitor convenience and to protect the aesthetic and ecological qualities of the area. Switchbacks will be avoided wherever possible. Directional signs will be provided at trail junctions and trail markers will be provided as required on longer trails. Earthwork will be minimized, as will clearing of the natural vegetation except where required for fire reduction. Drainage will be provided. Water bars and ditches will be used where necessary to divert periodic rainflows which would otherwise flow down the trails causing erosion problems. Bollards will be used to control unauthorized access by motor vehicles. Bollards will be removable to permit passage of fire fighting equipment. The basic types of trails and the pathways which will be used are described below:

a. Hiking/fishing access trails. These trails will be constructed to provide a clear thread width of 4 to 6 feet and an 8-foot high clearance. The natural surface will be used. An exception to this will occur with the Walnut Creek hiking and interpretive trail which will be made to accommodate service vehicles. Here a fine aggregate base 8-foot wide and 8-foot of clearance will be used. Sustained grade will generally be under 10 percent and maximum pitch grade under 20 percent.

b. Nature/interpretive trails. Trails will generally follow a short, closed loop design, beginning and ending at approximately the same location. They will be cleared and graded to a width of 6 feet, with an 8-foot high clearance. Sustained grade will be under 10 percent. Intensively used trails, such as those at the Visitor Center, will be paved. On other trails, the natural surface will be used. Interpretive markers will be placed at selected sites along the trail. The interpretive trail at Loyd Park will be approximately 3/4 mile long. The trail layout and interpretation will be done by an interdisciplinary team of Corps personnel. See Figure IX-4.

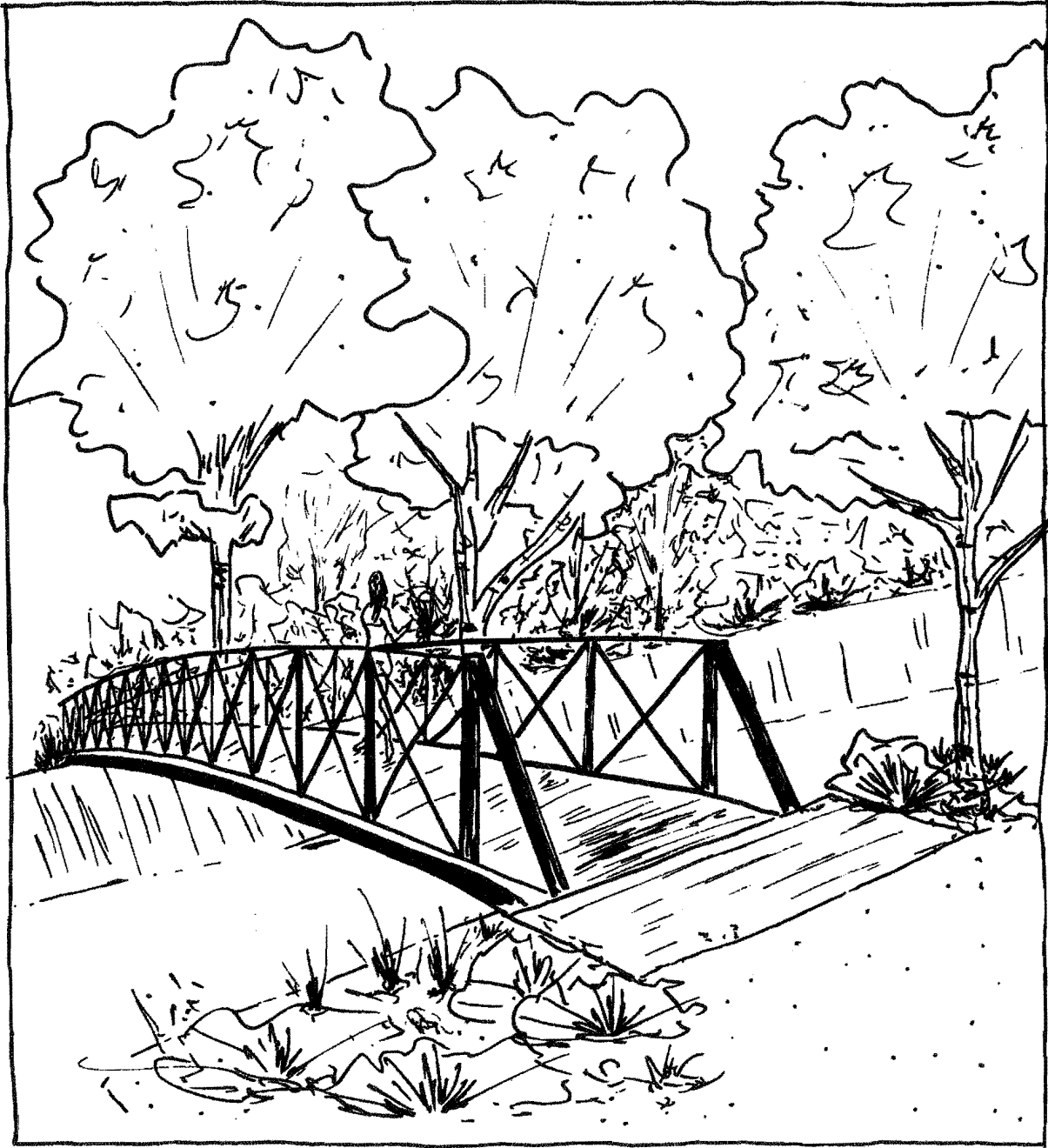
c. Pathways. Within intensively used recreation areas, pathways will be constructed to concentrate foot traffic in specific areas. This will reduce trampling of the natural vegetation and will provide efficient circulation routes. Pathways will lead from the parking lots to picnic areas and beaches. They will also connect campsites with restrooms. Pathways will be 3 feet wide with a stabilized aggregate surface and will generally follow the natural contours of the lands.

9-16. Bridges. Foot bridges will be required in several of the recreation areas. They will be custom built to a 8-foot width and required length. They will be a clear span design with all metal framework to lessen susceptibility to fire, vandalism, and maintenance. The foot bridges along Walnut Creek Trail will be strong enough to support a light maintenance truck. See Figure IX-5.



WALNUT CREEK INTERPRETIVE TRAIL

Figure IX-4



TYPICAL BRIDGE FOR TRAIL CROSSING

Figure IX-5

9-17. Britton Park fishing pier. A fishing pier embankment will be adapted from the abandoned T&NO Railroad trestle in the south end of Britton Park. Railroad ties will be rearranged to form a sure decking and a steel pipe safety railing will be installed. Parking, comfort station, and fish-cleaning station will be provided at the site. This will be the only free access point to Lakeview Lake. See Plate VIII-3.

9-18. Grading and landscaping.

a. Grading criteria. Facilities will be located so as to minimize the grading required. Grading will be undertaken only where necessary to: (1) provide acceptable grades for vehicular and pedestrian circulation, (2) provide reasonably level parking areas, (3) provide boat launches and formal swimming beaches, and (4) to provide level foundation for restrooms, concession buildings, and other permanent structures. Where necessary, alignments and grades will be selected to save the maximum number of existing trees. Grading criteria for each of these uses is described under the individual design criteria sections. Grading will also be used in certain locations to create berms for privacy and to screen out undesirable views and noises.

b. Planting criteria. Planting has been primarily considered on a large scale. Mass tree plantings will be made in several of the camping areas with sparse tree cover. Activity areas such as campgrounds, beaches, and picnic areas will be buffered from parking lots and roads by mass plantings of primarily native trees. Wherever possible, facilities have been sited to take advantage of existing vegetation for screening or aesthetic purposes. Trees will be saved to the maximum extent possible. Trees will be preserved in parking lots by use of tree wells (above grade), meeting the existing grade with the paved surface, or leaving unpaved islands around the trees. Major native tree species used in mass plantings will be live oak, cedar elm, ash, and red oak. The major shrubs which will be used for understory and landscaping of buildings are: ligustrum, eleagnus, yaupon, and shrub type junipers. Turf for parking areas, playgrounds, and landscaping of buildings will consist of species of grass which are drought tolerant, traffic resistant, and blend with the natural surroundings.

9-19. Revegetation of disturbed lands. The Lakeview Lake area is characterized by open cropland, prairie, and sporadic tree cover. Revegetation of former cropland will be done in a manner which will blend into the existing tree stands. Large mass tree plantings should be avoided in non-recreational lands where indigenous grass species can be used.

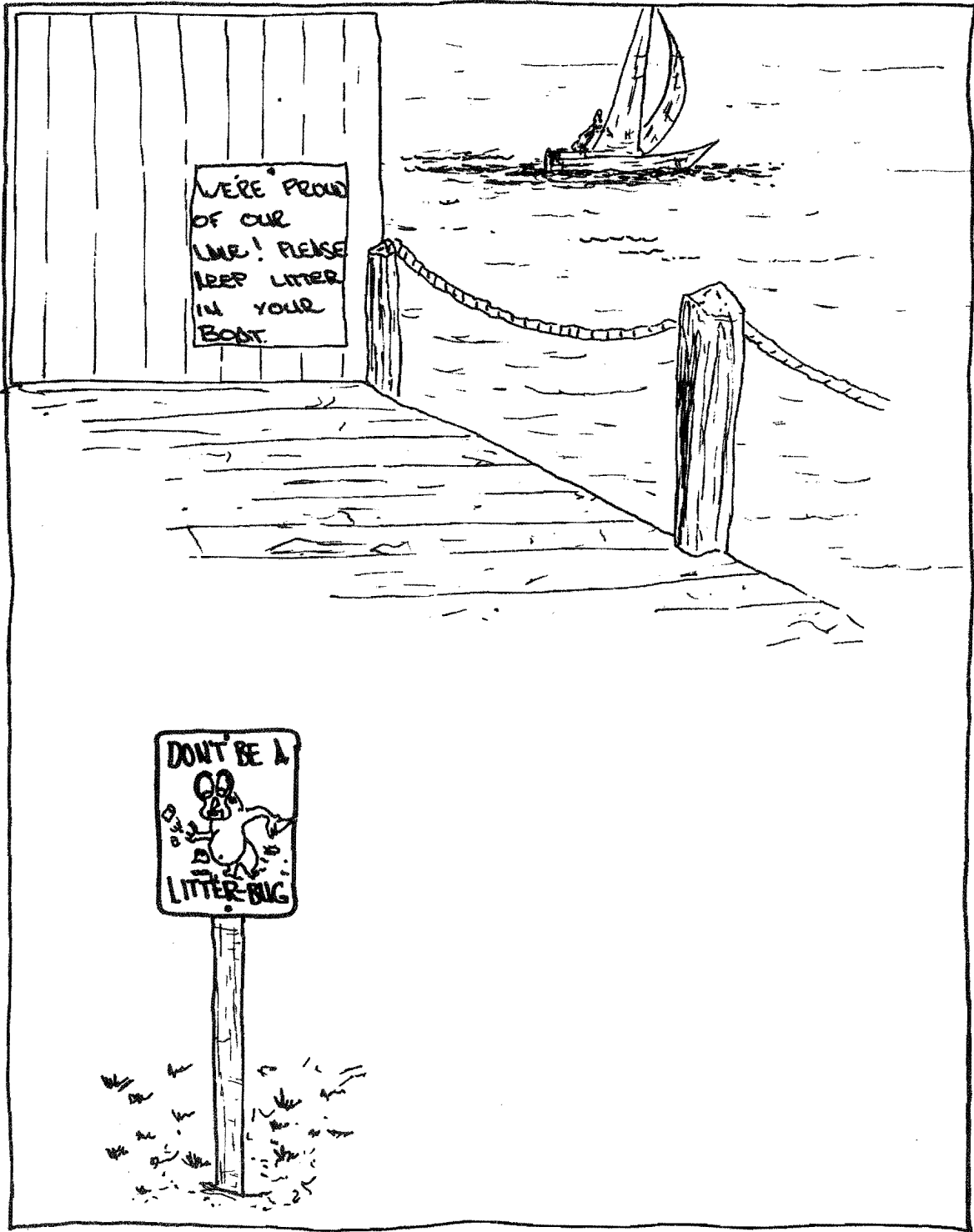
9-20. Signs and interpretive guidance. The objectives of a sign and interpretive guidance program at Lakeview will be to provide appropriate signs, markers, and displays for the proper protection and administration of the project resources and to guide, inform, educate, and protect the visiting public. Signs, markers, and displays needed to accomplish these objectives will be developed and placed in accordance with instructions outlined in EM 1110-2-400, ER 1110-2-400, ER 1130-2-400, and the Handbook on Signs issued by the Southwestern Division, Corps of Engineers. Concepts for signs are displayed in DM No. 7 (Revised).

a. Interpretive signs. Low, unobtrusive, and approximately 2 feet high, interpretive signs will have plaques varying in size with the type and amount of information to be conveyed. The sign plaque will be placed at a 45° angle from vertical. Interpretive signs will be located primarily along hiking trails where the major purpose of the trail is hiking, but an occasional interpretive plaque would be helpful in describing a view, rock outcrop, or other natural features.

b. Anti-littering campaign. A long standing problem with many parks is the careless discarding of litter. A public awareness program through the use of signs will be implemented at Lakeview Lake. See Figure IX-6.

9-21. Project logo. A project logo has been developed to visually "unify" all project areas and facilities in order to help the public perceive the project as an identifiable whole, by creating a sense of place. The logo should be a simple, memorable, graphic representation of the project (and/or its character). The logo will be reflective of some unique project feature or the project's (architectural) character, or both. Since its main function would be to tie together a multitude of recreational activities, geographical areas, and architectural structures in the public's mind, it will be abstracted or general enough to be easily recognizable and form a lasting mental impression.





ANTI-LITTERING CAMPAIGN

Figure IX-6

Lakeview Lake



X COST ESTIMATES

X - COST ESTIMATE

10-01. General.

Cost estimate. The estimated total cost for the construction of the proposed recreational facilities is \$25,935,000 excluding engineering and design and supervision and administration. The recreational facilities will be constructed on a cost sharing basis as prescribed in Public Law 89-72. The cost estimates are based on 1980 price level and from abstract of bids for the construction of similar recreational facilities at other Corps of Engineers' lake projects. The estimated total costs for the proposed facilities are shown on Tables X-1, X-2, X-3, and X-4.

COMPARISON OF PRESENT ESTIMATE OF COST WITH LATEST APPROVED ESTIMATE

A comparison of the present estimate of cost with the latest approved project cost estimate (PB-3) for FY 80 effective 1 Oct 79, is as follows: The increase in cost is due to higher price levels and the fencing of Government fee lands.

Acct Nos.	Item	(in thousands of dollars)		
		Estimated Costs Total Development Current Estimate	Latest Appvd PB-3	Difference
01	Project lands (acquired for rec)	\$ 7,176.1	\$ 3,940.0	\$+ 3,236.1
03	Clearing, Revegetation, fencing, etc.	2,743.9	2,144.0	+ 599.9
30	Engineering & Design	226.3	176.9	+ 49.4
31	Supervision & administration	195.8	164.9	+ 30.9
14	Recreation development (initial)	21,001.8 ^{1/}	14,389.0	+ 6,612.8
30	Engineering & Design	1,731.9	1,187.1	+ 544.8
31	Supervision & adminimstration	1,435.2	996.1	+ 439.1
14	Recreation development (future)	4,933.2 ^{1/}	5,498.0	- 564.8
30	Engineering & design	409.5	479.9	- 70.4
31	Supervision & administration	345.3	384.1	- 38.8

X-2

Note

1/ Includes Contingencies

TABLE X-1

SUMMARY OF COST ESTIMATES BY
COST ACCOUNT NUMBERS

Cost Sharing Facilities and Development
 (Corps, TRA, & Tex. Parks & Wildlife)

<u>Acct No.</u>	<u>Initial Development</u>	<u>(In thousands of dollars)</u>
01	Project lands acquired for recreation (see Tables X-16 & X-17)	\$ 7,176.1 ^{1/}
03	Fencing, revegetation, clearing & erosion control (Table X-15)	2,743.9 ^{2/}
14	Recreation development (see Table X-2)	21,001.8 ^{2/} , ^{3/}
30	Engineering & design	1,958.2
31	Supervision & administration	<u>1,631.0</u>
	Total	\$ 34,511.0
<u>Acct No.</u>	<u>Future Development (Corps & TRA)</u>	<u>(In thousands of dollars)</u>
14	Recreation development (see Table X-3)	\$ 4,933.2 ^{2/}
30	Engineering & design	409.5
31	Supervision & administration	<u>345.3</u>
	Total	\$ 5,688.0
<u>Acct No.</u>	<u>Total Initial & Future Development</u>	<u>(In thousands of dollars)</u>
01	Proj. lands acquired for recreation	\$ 7,176.1 ^{1/}
03	Clearing, fencing, revegetation, etc.	2,743.9 ^{2/}
14	Recreation development	25,935.0 ^{2/}
30	Engineering & design	2,367.7
31	Supervision & administration	<u>1,976.3</u>
	Total Project Cost	\$ 40,199.0 ^{2/} , ^{3/}

HISTORICAL AND ARCHEOLOGICAL PRESERVATION
 FEDERAL COST ONLY

18	Cultural resources preservation	\$ 412.0
30	Engineering & design	202.0
31	Supervision & administration	<u>32.0</u>
	Total (updated 18 June 80)	\$ 646.0

Notes:

^{1/} Includes relocation assistance & administration costs

^{2/} Includes contingencies

^{3/} Includes prelim. estimate of cost from Tex. Parks & Wildlife

TABLE X-2
COST ESTIMATES
RECREATIONAL FACILITIES
(Cost Sharing Facilities)

<u>Initial Dev.</u>	<u>Acct #14</u>	<u>30</u>	<u>31</u>	<u>Total</u>
Rec Fac (Public Use) (see Table X-5)	\$10,371.0 ^{1/}	\$860.0	\$727.0	\$11,958.0
Rec Fac (Comm) 6nc Sites) (see Table X-10)	<u>2,233.8</u>	<u>185.3</u>	<u>156.4</u>	<u>2,575.5</u>
Total Initial Dev (Corps & TRA)	\$12,604.8 ^{1/}	\$1,045.3	\$883.4	\$14,533.5

Initial Dev.

Tex Parks & WL (See Table X-4)	<u>8,397.0^{1/}</u>	<u>686.6</u>	<u>551.8</u>	<u>9,635.4^{2/}</u>
Total Initial Dev	\$21,001.8 ^{1/}	\$1,731.9	\$1,435.2	\$24,168.9

Future Dev (Corps & TRA)

TABLE X-3

Rec Fac (Public Use)	<u>4,933.2^{1/}</u>	<u>409.5</u>	<u>345.3</u>	<u>5,688.0</u>
Total Initial & Future Dev (Total Tables X-2 & X-3)	\$25,935.0 ^{1/}	\$2,141.4	\$1,780.5	\$29,856.9

TABLE X-4

(INFORMATION FROM EXHIBIT NO. 1)

<u>Tex Parks & Wildlife</u>	<u>Fed & Non- Red Cost</u>	<u>Non-Fed Cost</u>	<u>Total Cost</u>
Lakeview State Park	\$7,997.1	\$129.2	\$8,126.3
Supervision & Administration	551.8	8.9	560.7
Professional Fees, etc.	686.6	11.1	697.7
Contingencies	<u>399.9</u>	<u>6.4</u>	<u>406.3</u>
Total	\$9,635.4 ^{2/}	\$155.6 ^{3/}	\$9,791.0 ^{2/}

Notes:

1/ Includes contingencies

2/ Preliminary estimate of cost for Rec Fac to be constructed by Texas Parks and Wildlife Department (see Exhibit No. 1, page X-35) for notes on cost estimate.

3/ The costs for "Job Nos. C, I, & N," on Exhibit No. 1 are considered Non-Fed costs.

TABLE X-5

SUMMARY OF ESTIMATE OF COST
PUBLIC USE AND RESERVOIR DEVELOPMENT

RECREATIONAL FACILITIES

Item	Unit	Planned development (1)		Planned development (2)		Account 14 Total planned development	
		Quan- tity	Cost	Quan- tity	Cost	Quan- tity	Cost
1. Roads:							
a. Paved (new primary)	Mile	7.5	\$1,387,500	5.8	\$1,073,000	13.3	\$2,460,500
b. Paved (new secondary)	Mile	3.1	334,800	0	0	3.1	334,800
c. Gravel	Mile	0.6	24,000	1.3	52,000	1.9	76,000
2. Parking areas:							
Paved (new)	S.Y.	40,428	464,895	21,368	245,760	61,796	710,655
3. Boat launching sites:							
a. Boat ramps (18 lanes)(concrete)	S.Y.	7,466	373,300	0	0	7,466	373,300
b. Turnarounds and trailer parking (paved)	S.Y.	18,252	209,895	4,595	52,840	22,847	262,735
4. Toilets:							
a. Frame (concrete vault type)	Each	4	32,000	4	32,000	8	64,000
b. Masonry double unit (waterborne)	Each	11	866,800	9	709,200	20	1,576,000
5. Water supply system:							
Connect to municipal system	L.S.	Job	345,000	Job	180,000	Job	525,000
6. Picnic and camping units:	Camp						
a. One unit consists of one table, one fireplace, one trashcan, & shelter	Each	203	1,258,600	0	0	203	1,258,600
	Picnic						
	Each	81	486,000	186	1,116,000	267	1,602,000
	*	36	72,000	0	0	36	72,000

*Mini Units (consist of):

Mini-shelter, Wooden table w/benches, metal cooker, trash can

TABLE X-5 (continued)

Item	Unit	Planned development (1)		Planned development (2)		Account 14 Total planned development	
		Quantity	Cost	Quantity	Cost	Quantity	Cost
b. Picnic tables (wood) for group shelters	Each	64	35,200	40	22,000	104	57,200
7. Picnic shelters:							
Group shelters	Each	3(8 tbl)	60,000	0	0	3	60,000
		2(20 tbl)	100,000	2	100,000	4	200,000
8. Site improvement:							
a. Underbrushing and cleanup	L.S.	Job	80,150	Job	60,200	Job	140,350
b. Tree planting and seeding	L.S.	Job	209,500	0	0	Job	209,500
9. Signs	L.S.	Job	49,700	Job	17,800	Job	67,500
10. Elec svc lines	L.S.	Job	280,000	Job	185,000	Job	465,000
11. Buoys	L.S.	Job	15,000	Job	6,000	Job	21,000
12. Beach improvement	L.S.	Job	12,200	Job	5,600	Job	17,800
13. Change shelter	Ea.	2	156,800	1	78,400	3	235,200
14. Sewerage (connect to municipal system)	L.S.	Job	530,000	Job	265,000	Job	795,000
15. Foot bridges	Each	3	45,000	0	0	3	45,000
16. Service building (includes waterborne toilets, showers, and laundry facilities)	Each	8	720,000	0	0	8	720,000
17. Sanitary station	Each	2	20,000	0	0	2	20,000
18. Floating courtesy dock	Each	5	42,500	3	25,500	8	68,000
19. Fishing pier	Each	2	33,000	0	0	2	33,000
20. Fish cleaning sta.	Each	3	48,000	0	0	3	48,000

TABLE X-5 (continued)

Item	Unit	Planned development (1)		Planned development (2)		Account 14 Total planned development	
		Quantity	Cost	Quantity	Cost	Quantity	Cost
21. Foot trail (4' wide)	Mile	1.0	\$ 3,500	3.0	\$10,500	4.0	\$14,000
Foot trail (8' wide) ^{1/}	Mile	4.0	28,000	3.5	24,500	7.5	52,500
22. Control station	Each	2	36,000	1	18,000	3	54,000
23. Control gate	Each	6	5,400	2	1,400	8	6,800
24. Miscellaneous							
a. Fence (rail)	L.F.	800'	11,200	0	0	800'	11,200
(barbed wire)	Mile	2.4	21,600	0	0	2.4	21,600
b. Cookers	Each	30	6,000	25	5,000	55	11,000
c. Trashcans	Each	30	4,800	25	4,000	55	8,800
d. Softball field	L.S.	Job	5,000			Job	5,000
4. Maintenance area dev.	L.S.	Job	<u>605,000</u>	0	<u>0</u>	Job	<u>605,000</u>
Subtotal			\$ 9,018,340		\$4,289,700		\$13,308,040
Contingencies			<u>1,352,660</u>		<u>643,500</u>		<u>1,996,160</u>
Subtotal			\$10,371,000		\$4,933,200		\$15,304,200
Engineering & design			860,000		409,500		1,269,500
Supervision & admin			<u>727,000</u>		<u>345,300</u>		<u>1,072,300</u>
TOTAL			\$11,958,000		\$5,688,000		\$17,646,000

Note:

(1) Planned development proposed for FY 83 thru FY 85

(2) Future planned development proposed when needed.

^{1/} Foot trail & service road

TABLE X-6

ESTIMATE OF COST
PUBLIC USE AND RESERVOIR DEVELOPMENT

RECREATIONAL FACILITIES
LYNN CREEK PARK

Item	Unit	Quantity	Unit Cost	Cost
1. Roads:				
a. Paved (new primary)	Mile	3.1	\$ 185,000	\$ 573,500
b. Paved (new secondary)	Mile	1.2	108,000	129,600
2. Parking areas:				
Paved (new)	S.Y.	16,743	11.50	192,545
3. Boat launching sites:				
a. Boat ramps (concrete)	S.Y.	(8 lanes) 3,733	50.00	186,650
b. Turnarounds and trailer parking (paved)	S.Y.	8,317	11.50	95,645
4. Toilets:				
a. Frame (concrete vault type)	Each	0	-	-
b. Masonry double unit (waterborne)	Each	7	78,800	551,600
5. Water supply system:				
Connect to municipal system	L.S.	L.S.	Job	100,000
6. Picnic and camping units:				
a. One unit consists of one table, one fireplace, one trashcan, and shelter	Each (picnic)	81	6,000	486,000
	*mini-units	21	2,000	42,000
b. Picnic tables (wood) for group shelters	Each	36	550	19,800

*Mini-units (consists of);
Mini-shelter, Wooden table w/benches
metal cookers, trash cans

TABLE X-6 (continued)

Item	Unit	Quantity	Unit Cost	Cost
7. Picnic shelters:	Each	2	20,000	\$ 40,000
	(8 tables)			
Group shelters	Each	1	50,000	50,000
	(20 tables)			
8. Site improvement:				
a. Underbrushing and cleanup	L.S.	L.S.	Job	24,560
b. Tree planting and seeding	L.S.	L.S.	Job	111,000
9. Signs	L.S.	L.S.	Job	14,300
10. Elec svc lines	L.S.	L.S.	Job	70,000
11. Buoys	L.S.	L.S.	Job	6,000
12. Beach improvement	L.S.	L.S.	Job	3,200
13. Change shelter	Each	1	78,400	78,400
14. Sewerage (connect to municipi- pal system)	L.S.	L.S.	Job	200,000
15. Foot bridges	Each	0	0	0
16. Service building (includes waterborne toilets, shower, and laundry facilities)	Each	0	0	0
17. Sanitary station	Each	0	0	0
18. Floating courtesy dock	Each	1	8,500	8,500
19. Fishing pier	Each	0	0	0
20. Fish cleaning Sta.	Each	1	16,000	16,000
21. Foot trail	Mile	0	0	0
22. Control station	Each	1	18,000	18,000

TABLE X-6 (continued)

Item	Unit	Quantity	Unit Cost	Cost
23. Control gate	Each	1	900	900
24. Miscellaneous:				
a. Fence (barbed wire)	Mile	2.0	9,000	<u>18,000</u>
Subtotal				\$ 3,036,200
Contingencies				<u>455,430</u>
Subtotal				\$ 3,491,630
Engineering & design				289,800
Supervision & admin				<u>244,470</u>
Total				\$ 4,025,900

Planned development proposed for FY FY 83 thru FY 85

TABLE X-7
 ESTIMATE OF COST
 PUBLIC USE AND RESERVOIR DEVELOPMENT
 RECREATIONAL FACILITIES
 LOYD PARK

Item	Unit	Quantity	Unit Cost	Cost
1. Roads:				
a. Paved (new primary)	Mile	4.0	\$185,000	\$ 740,000
b. Paved (new secondary)	Mile	1.9	108,000	205,200
c. Gravel	Mile	0.6	40,000	24,000
2. Parking areas:				
Paved (new)	S.Y.	22,074	11.50	253,850
3. Boat launching sites:		(4 lanes)		
a. Boat ramps (concrete)	S.Y.	1,867	50	93,350
b. Turnarounds and trailer parking (paved)	S.Y.	4,595	11.50	52,840
4. Toilets:				
a. Frame (concrete vault type)	Each	4	8,000	32,000
b. Masonry double unit (waterborne)	Each	3	78,800	236,400
5. Water supply system:				
Connect to municipal system	L.S.	L.S.	Job	205,000
6. Picnic and camping units:				
a. One unit consists of one table, one fireplace, one trashcan, and shelter	Each (camp)	203	6,200	1,258,600
	*Mini Units	15	2,000	30,000

*Mini-Units (consists of):

Mini-shelter, wooden table w/benches, metal cooker, trash cans.

TABLE X-7 (continued)

Item	Unit	Quantity	Unit Cost	Cost
b. Picnic tables (wood) for group shelters	Each	28	\$ 550	\$ 15,000
7. Picnic shelters: Group shelters	Each (8 tables)	1	20,000	20,000
	Each (20 tables)	1	50,000	50,000
8. Site improvement:				
a. Underbrushing and cleanup	L.S.	L.S.	Job	51,600
b. Tree planting and seeding	L.S.	L.S.	Job	87,000
9. Signs	L.S.	L.S.	Job	31,000
10. Elec svc lines	L.S.	L.S.	Job	200,000
11. Buoys	L.S.	L.S.	Job	6,000
12. Beach improvement	L.S.	L.S.	Job	9,000
13. Change shelter	Each	1	78,400	78,400
14. Sewerage (connecto municipal system)	L.S.	L.S.	Job	280,000
15. Foot bridges	Each	3	15,000	45,000
16. Service building (includes waterborne toilets, shower, and laundry facilities)	Each	8	90,000	720,000
17. Sanitary station	Each	2	10,000	20,000
18. Floating courtesy dock	Each	3	8,500	25,500
19. Fishing pier	Each	1	20,000	20,000
20. Fish cleaning sta.	Each	1	16,000	16,000
21. Foot trail (4' wide)	Mile	1.0	3,500	3,500
Foot trail (8' wide) <u>1/</u>	Mile	4.0	7,000	28,000

Note:

1/Foot trail & service road

X-12

TABLE X-7 (continued)

Item	Unit	Quantity	Unit Cost	Cost
22. Control station	Each	1	\$ 18,000	\$ 18,000
23. Control gate	Each	4	900	3,600
24. Miscellaneous:				
a. Fence (rail)	L.F.	800	14	11,200
b. Cookers	Each	30	200	6,000
c. Trash cans	Each	30	160	4,800
d. Softball field		L.S.	Job	5,000
* Maintenance area dev.	L.S.	L.S.	Job	<u>605,000</u>
Subtotal				\$5,491,240
Contingencies				<u>823,720</u>
Subtotal				\$6,314,960
Engineering & design				524,160
Supervision & admin				<u>441,880</u>
Total				\$7,281,000

Planned development propofed for FY FY83 thru FY85

*Maintenance facilities:

(includes): Site preparation, project office, vehicle storage, and workshop buildings, parking and exterior utilities. Will be located in Loyd Park to be used by TRA for maintenance and operation of recreation facilities.

TABLE X-8

ESTIMATE OF COST
PUBLIC USE AND RESERVOIR DEVELOPMENT

RECREATIONAL FACILITIES
ESTES PARK

Item	Unit	Planned development (1)		Planned development (2)		Total planned development	
		Quantity	Cost	Quantity	Cost	Quantity	Cost
1. Roads:							
a. Paved (new primary)	Mile	0	0	5.8	\$1,073,000	5.8	\$1,073,000
b. Gravel	Mile	0	0	1.3	52,000	1.3	52,000
2. Parking areas:							
Paved (new)	S.Y.	0	0	21,373	245,790	21,373	245,790
3. Boat launching sites:							
a. Boat ramps (4 lanes) (concrete)	S.Y.	1,244	62,170	0	0	1,244	62,170
b. Turnarounds and trailer parking (paved)	S.Y.	00	0 0	4,595	52,840	4,595	52,840
4. Toilets:							
a. Frame (concrete vault type)	Each	0	0	4	32,000	4	32,000
b. Masonry double unit (waterborne)	Each	0	0	9	709,200	9	709,200
5. Water supply system: Connecto to municipal system	L.S.	0	0	Job	180,000	Job	180,000
6. Picnic and camping units:							
a. One unit consists of one table, one fireplace, one trashcan, and shelter	Each (Picnic)	0	0	186	1,116,000	186	1,116,000
b. Picnic tables (wood) for group shelters	Each	0	0	40	22,000	40	22,000

TABLE X-8 (continued)

Item	Unit	Planned development (1)		Planned development (2)		Total planned development	
		Quantity	Cost	Quantity	Cost	Quantity	Cost
7. Picnic shelters:							
Group shelters	Each	0	0	2	100,000	2	100,000
8. Site improvement:							
a. Underbrushing and cleanup	L.S.	0	0	Job	60,200	Job	60,200
b. Tree planting and seeding	L.S.	0	0	0	0	0	0
9. Signs	L.S.	0	0	Job	17,800	Job	17,800
10. Elec svc lines	L.S.	0	0	Job	185,000	Job	185,000
11. Buoys	L.S.	0	0	Job	6,000	Job	6,000
12. Beach improvement	L.S.	0	0	Job	5,600	Job	5,600
13. Change shelter w/toilet	Each	0	0	1	78,400	1	78,400
14. Sewerage (connect to municipal system)	L.S.	0	0	Job	265,000	Job	265,000
15. Foot bridges	Each	0	0	0	0	0	0
16. Service building (includes waterborne toilets, shower, and laundry facilities)	Each	0	0	0	0	0	0
17. Sanitary station	Each	0	0	0	0	0	0
18. Floating courtesy dock	Each	0	0	3	25,000	3	25,500
19. Fishing pier	Each	0	0	0	0	0	0
20. Fish cleaning sta.	Each	0	0	0	0	0	0
21. Foot trail (4' wide)	Mile	0	0	3.0	10,500	3.0	10,500
* Foot trail (8' wide)	Mile	0	0	3.5	24,500	3.5	24,500
22. Control station	Each	0	0	1	18,000	1	18,000

Note:

* Foot trail & service road between Estes Pk & Loyd Pk.

TABLE X-8 (continued)

Item	Unit	Planned development (1)		Planned Development (2)		Total planned development	
		Quan- tity	Cost	Quan- tity	Cost	Quan- tity	Cost
23. Control gate	Each			2	1,400	2	1,400
24. Miscellaneous.							
a. Fence (rail)	L.F.						
b. Cooker	Each			25	5,000	25	5,000
c. Trashcan	Each			25	4,000	25	4,000
Subtotal			\$ 62,170		\$4,289,730		\$4,351,900
Contingencies			9,200		643,500		652,700
Subtotal			\$ 71,370		\$4,933,230		\$5,004,600
Engineering & design			6,130		409,370		415,500
Supervision & admin			5,100		345,300		350,400
Total			\$ 82,600		\$5,687,900		\$5,770,500

(1) Planned development proposed for FY FY83 thru FY 85

(2) Future planned development proposed when needed.

TABLE X-9

ESTIMATE OF COST
PUBLIC USE AND RESERVOIR DEVELOPMENT

RECREATIONAL FACILITIES
BRITTON PARK

Item	Unit	Quantity	Unit Cost	Cost
1. Roads:				
a. Paved (new (primary))	Mile	0.4	\$ 185,000	\$ 74,000
b. Paved (new (secondary))	Mile	0	0	
2. Parking areas:				
Paved (new)	S.Y.	1,611	11.50	18,520
3. Boat launching sites:				
a. Boat ramps (concrete)	S.Y. (2 lanes)	622 (2 lanes)	50.00	31,100
b. Turnarounds and trailer parking (paved)	S.Y.	5,340	11.50	61,410
4. Toilets:				
a. Frame (concrete vault type)	Each	0	0	0
b. Masonry double unit (waterborne)	Each	1	78,800	78,800
5. Water supply system:				
Connect to municipal system	L.S.	Job	40,000	40,000
6. Picnic and camping units:				
a. One unit consists of one table, one fireplace, one trashcan, and shelter	Each	0	0	0
b. Picnic tables (wood) for group shelters	Each	0	0	0

TABLE X-9 (continued)

Item	Unit	Quantity	Unit Cost	Cost
7. Picnic shelters:				
Group shelters	Each	0	0	0
8. Site improvement:				
a. Underbrushing and cleanup	L.S.	L.S.	Job	4,000
b. Tree planting and seeding	L.S.	L.S.	Job	11,500
9. Signs	L.S.	L.S.	Job	4,400
10. Elec svc lines	L.S.	L.S.	Job	10,000
11. Buoys	L.S.	L.S.	Job	3,000
12. Beach improvement	L.S.	0	0	0
13. Change shelter	Each	0	0	0
14. Sewerage (connect to municipi- pal system)	L.S.	L.S.	Job	50,000
15. Foot bridges	Each	0	0	0
16. Service building (includes waterborne toilets, shower, and laundry facilities)	Each	0	0	0
17. Sanitary station	Each	0	0	0
18. Floating courtesy dock	Each	1	8,500	8,500
19. Fishing pier	Each	1	13,000	13,000
20. Fish cleaning sta.	Each	1	16,000	16,000
21. Foot trail	Mile	0	0	0
22. Control station	Each	0	0	0
23. Control gate	Each	1	900	900

TABLE X-9 (continued)

Item	Unit	Quantity	Unit Cost	Cost
24. Miscellaneous:				
a. Fence (barbed wire)	Mile	0.4	\$ 9,000	<u>\$ 3,600</u>
Subtotal				\$ 428,730
Contingencies				<u>64,310</u>
Subtotal				\$ 493,040
Engineering & design				40,940
Supervision & admin				<u>34,520</u>
Total				\$ 568,500

Planned development proposed for FY FY83 thru FY 85

TABLE X-10

SUMMARY ESTIMATE OF COST

BASIC FACILITIES COMMERCIAL CONCESSION SITES
(COST SHARING FACILITIES)

Item	Unit	Quantity	Total Cost
Foot bridge	L.S.	Job	\$ 15,000
Paved roads (28')	Mile	0.8	148,000
Site preparation*	L.S.	Job	480,000
Paved parking	S.Y.	62,986	724,340
Clearing & brushing	L.S.	Job	7,060
Signs	L.S.	Job	5,950
Buoys	L.S.	Job	9,000
Water supply system	L.S.	Job	60,000
Sewage system	L.S.	Job	90,000
Electric system	L.S.	Job	40,000
Waterborne toilet	Each	3	236,400
Boat ramps (7 lanes)	S.Y.	2,333	116,650
Fuel dock	L.S.	Job	10,000
	Subtotal		\$1,942,400
	Contingencies		291,400
	Subtotal		\$2,233,800
	Engineering & design		185,300
	Supervision & admin		156,400
	Total		\$2,575,500

Notes:

Initial development proposed for construction during FY 83 thru FY 85

*Includes harbor excavation.

TABLE X-11

LYNN CREEK PARK

ESTIMATE OF COST

BASIC FACILITIES COMMERCIAL CONCESSION SITES
(COST SHARING FACILITIES)

Item	Unit	Quantity	Cost
Fuel dock	L.S.	Job	\$ 10,000
Paved roads (28')	Mile	0.3	55,500
Site preparation (excavate harbor)	L.S.	Job	300,000
Paved parking	S.Y.	23,093	265,570
Boat ramps (3-lanes)	S.Y.	1,400	70,000
Waterborne toilet	Each	1	78,800
Clearing & brushing	L.S.	Job	2,000
Signs	L.S.	Job	2,250
Buoys	L.S.	Job	3,000
Water supply system	L.S.	Job	20,000
Sewage system	L.S.	Job	35,000
Electrical system	L.S.	Job	<u>15,000</u>
	Subtotal		\$ 857,120
	Contingencies		<u>128,600</u>
	Subtotal		\$ 985,720
	Engineering & design		81,814
	Supervision & admin		<u>69,066</u>
	Total		\$1,136,600

Note:

Initial development proposed for construction during FY83 thru FY85

TABLE X-12

LOYD PARK MARINA

ESTIMATE OF COST

BASIC FACILITIES COMMERCIAL CONCESSION SITES
(COST SHARING FACILITIES)

Item	Unit	Quantity	Cost
Foot bridge	L.S.	Job	\$ 15,000
Paved roads (28')	Mile	0.2	37,000
Site preparation	L.S.	Job	30,000
Paved parking	S.Y.	1,718	19,770
Waterborne toilet	Each	1	78,800
Clearing & brushing	L.S.	Job	3,000
Signs	L.S.	Job	2,700
Buoys	L.S.	Job	3,000
Water supply system	L.S.	Job	20,000
Sewage system	L.S.	Job	20,000
Electrical system	L.S.	Job	<u>10,000</u>
	Subtotal		\$ 239,270
	Contingencies		<u>35,860</u>
	Subtotal		\$ 275,130
	Engineering & design		22,786
	Supervision & admin		<u>19,284</u>
	Total		\$ 317,200

Note:

Initial development proposed for construction during FY83 thru FY85

TABLE X-13

EAST SHORE MARINA

ESTIMATE OF COST

BASIC FACILITIES COMMERCIAL CONCESSION SITES
(COST SHARING FACILITIES)

Item	Unit	Quantity	Cost
paved roads (28')	Mile	0.3	\$ 55,500
Site preparation (excavate harbor)	L.S.	Job	150,000
Paved parking	S.Y.	38,175	439,000
Boat ramps (4-lanes)	S.Y.	933	46,650
Waterborne toilet	Each	1	78,800
Clearing & brushing	L.S.	Job	2,000
Signs	L.S.	Job	1,000
Buoys	L.S.	Job	3,000
Water supply system	L.S.	Job	20,000
Sewage system	L.S.	Job	35,000
Electrical system	L.S.	Job	<u>15,000</u>
	Subtotal		\$ 845,950
	Contingencies		<u>127,000</u>
	Subtotal		\$ 972,950
	Engineering & design		80,700
	Supervision & admin		<u>68,050</u>
	Total		\$1,121,700

Note:

Initial development proposed for construction during FY83 thru FY85

TABLE X-14

ANNUAL FUNDS REQUIRED
FOR OPERATION AND MAINTENANCE

NON-FEDERAL COST

Recreational Facilities

Operation and maintenance and replacement of facilities (includes contract cleanup, mowing, grading, and maintenance of roads, repair of structures, nature areas, etc.). *Form DTO dated Jan 1980 *\$699,000

TABLE X-15

CLEARING, FENCING, REVEGETATION, EROSION CONTROL

Acct No.	Item	Present cost estimate
03	Clearing	\$ 714,000
03	Fencing, perimeter of Government land (75 miles)	792,000
03	Revegetation, (tree planting and seeding & firebreak	<u>880,000</u>
	Subtotal	\$ 2,386,000
	Contingencies (15% [±])	<u>375,900</u>
	Subtotal	\$ 2,743,900
	Engineering & design	226,300
	Supervision & admin	<u>195,800</u>
	Total	\$ 3,166,000

TABLE X-16

STATE OF TEXAS
01 LANDS AND DAMAGES

<u>Item</u>	<u>Amount</u>
Lands and damages, including contingencies	\$5,069,500.00
Relocation assistance	64,600.00
Administrative costs	<u>19,000.00</u>
Total	\$5,153,100.00

TABLE X-17

TRINITY RIVER AUTHORITY
01 LANDS AND DAMAGES

<u>Item</u>	<u>Amount</u>
Lands and damages, including contingencies	\$1,889,500.00
Relocation assistance	115,500.00
Administrative costs	<u>18,000.00</u>
Total	\$2,023,000.00

Note:

Does not include indirect cost or overhead

TABLE X-18

ESTIMATED SEPARABLE RECREATION COST
 TEXAS PARKS AND WILDLIFE DEPARTMENT
 (Feb 80 prices)

<u>Acct No.</u>	<u>Feature</u>	<u>Initial Development</u>	<u>Future Development</u>	<u>Total</u>
01	Land purchase (public use areas)	\$ 5,153,100 ^{2/}	-	\$ 5,153,100 ^{2/}
14	Recreation facilities	8,397,000 ^{3/}	-	8,397,000 ^{3/}
30	Engineering and design	686,600	-	686,600
31	Supervision and administration	551,800	-	551,800
Total recreation expenditures		\$14,788,500		\$14,788,500

I - PARTICIPATION IN DEVELOPMENT

	<u>Percent</u>	<u>Initial Development</u>	<u>Future Development</u>	<u>Total</u>
The Government	50	\$ 7,394,250	-	\$ 7,394,250
The State of Texas	50	7,394,250	NA	7,394,250
Total	100	\$ 14,788,500		\$14,788,500

1/ To be reimbursed by the State of Texas.

2/ Includes relocation assistance and administrative costs. (see Table X-16).

3/ Includes contingencies (see Table X-4).

NA Not available.

TABLE X-19

ESTIMATED SEPARABLE RECREATION COST
 TRINITY RIVER AUTHORITY OF TEXAS
 (Feb 80 prices)

<u>Acct No.</u>	<u>Feature</u>	<u>Initial Development</u>	<u>Future Development</u>	<u>Total</u>
01	Land purchase (pubic use areas)	\$ 2,023,000 ^{3/}	-	\$ 2,023,000 ^{3/}
14	Recreation facilities	12,604,800 ^{4/}	\$ 4,933,200 ^{4/}	17,538,000 ^{4/}
30	Engineering and design	1,045,300	409,500	1,454,800
31	Supervision and administration	883,400	345,300	1,228,700
	Total recreation expenditures	16,556,500	\$ 5,688,000	\$22,244,500

I - PARTICIPATION IN DEVELOPMENT

	<u>Percent</u>	<u>Initial Development</u>	<u>Future Development</u>	<u>Total</u>
The Government	50	\$ 8,278,250	\$ 2,844,000	\$11,122,250
The Authority	50	8,278,250	2,844,000	11,122,250
	100	\$16,566,500	\$ 5,688,000	\$22,244,500

1/ To be reimbursed by the Authority

2/ Estimated schedule for the Authority's share of future development:

	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2010</u>
	0	\$2,844,000	0	

Based on projection of anticipated visitation which will establish the need for additional recreation development

3/ Includes relocation assistance and administrative costs. (See Table X-17).

4/ Includes contingencies.

B U D G E T

Lakeview

1

Exhibit No. 1

JOB NUMBER	PROPOSED FACILITY	QUAN	UNIT COST	COST	RUNNING TOTAL
A	<u>Administrative Area</u>				
		Site Preparation	10,000SF	.07/SF	700
		Headquarters Building	1,500SF	45/SF	67,500
		Parking	20	120	2,400
		Area Lighting	LS	--	600
		Flag Pole	1	900	900
		Sidewalk - 4'	200 LF	6.75/LF	1,350
		Landscaping	10,000SF	.30/SF	3,000
		Roads (Included in Misc.)	--	--	--
		Water	1,000LF	5/LF	5,000
		Electricity	1,000LF	10/LF	10,000
		Sewage	1,000LF	4/LF	4,000
		Telephone	1,000LF	1/LF	1,000
		Subtotal			96,450
B	<u>Day Use Area</u>				
		Site Preparation	20,000SF	.07/SF	1,400
		Picnic Sites	100	895	89,500
		Comfort Station	625 SF	55/SF	34,375
		Boat Ramps	4	10,000	40,000
		Fish Cleaning Shelter	LS	--	5,000
		Fishing Jetty (3,000 SF)	LS	--	55,000
		Sidewalks - 4'	50 LF	6.75/LF	338
		Area Lighting	LS	--	1,500
		Landscaping	10,000SF	.20/SF	2,000
		Trails	.9 mi.	12,000/mi.	10,800
		Roads - 12'	.16 mi.	54,000/mi.	8,640
		Parking	3,146SY	5/SY	15,730
		Water	500 LF	5/LF	2,500
		Electricity	500 LF	5/LF	2,500
		Sewage	2,800LF	3/LF	8,400
	Subtotal			277,683	374,133
C	<u>Residence Area</u>				
		Renovation of Existing Building	LS	--	7,000
		Fencing	200 LF	8/LF	1,600
		Roads - 12'	.12 mi.	54,000/mi.	6,480
		Parking	2	120	240
		Water	600 LF	5/LF	3,000
		Electricity	600 LF	5/LF	3,000
		Sewage	200 LF	4/LF	800
	Telephone	4,800LF	1/LF	4,800	
	Subtotal			26,920	401,053
D	<u>Multi-Use Camping Area</u>				
		Site Preparation	20,000SF	.07/SF	1,400
		Multi-Use Campsites	80	2,817	225,360
		Restroom with Showers	1,340 SF	55/SF	73,700
		Sidewalk - 4'	100 LF	6.75/LF	675
	Landscaping	20,000SF	.20/SF	4,000	

B U D G E T

JOB NUMBER	PROPOSED FACILITY	QUAN	UNIT COST	COST	RUNNING TOTAL
D	<u>Multi-Use Camping Area(continued)</u>				
	Trails	.5 mi.	12,000/mi.	6,000	
	Roads - 18'	.93 mi.	72,000/mi.	66,960	
	Parking	20	120	2,400	
	Water	4,960 LF	5/LF	24,800	
	Electricity	4,960 LF	5/LF	24,800	
	Sewage	2,000 LF	4/LF	8,000	
	Dump Station	LS	--	4,000	
	Subtotal			442,095	843,148
E	<u>Tent Camping Area</u>				
	Site Preparation	20,000SF	.07/SF	1,400	
	Tent Campsites	70	2,320	162,400	
	Restroom w/Showers	1,340 SF	55/SF	73,700	
	Sidewalks - 4'	100 LF	6.75/LF	675	
	Trails	.37 mi.	12,000/mi.	4,440	
	Landscaping	20,000SF	.20/SF	4,000	
	Roads - 18'	.81 mi.	72,000/mi.	58,320	
	Parking	20	120	2,400	
	Water	4,300 LF	5/LF	21,500	
	Electricity	4,300 LF	5/LF	21,500	
	Sewage	1,300 LF	4/LF	5,200	
	Subtotal			355,535	1,198,683
F	<u>Group Pavilion Area</u>				
	Site Preparation	20,000SF	.07/SF	1,400	
	Pavilion	1,200 SF	20/SF	24,000	
	Comfort Station	625 SF	55/SF	34,375	
	Sidewalk - 4'	100 LF	6.75/LF	675	
	BBQ Pit	LS	--	1,000	
	Area Lighting	LS	--	600	
	Picnic Tables	15	70	1,050	
	Fire Ring	LS	--	200	
	Trails	.22 mi.	12,000/mi.	2,640	
	Landscaping	20,000SF	.20/SF	4,000	
	Roads - 18'	.05 mi.	72,000/mi.	3,600	
	Parking	30	120	3,600	
	Water	500 LF	3/LF	1,500	
	Electricity	500 LF	5/LF	2,500	
Sewage	300 LF	4/LF	1,200		
	Subtotal			82,340	1,281,023
G	<u>Day Use Area</u>				
	Site Preparation	10,000SF	.07/SF	700	
	Picnic Sites	100	895	89,500	
	Comfort Station	625 SF	55/SF	34,375	
	Fishing Jetty (3,000 SF)	LS	--	55,000	
	Playground	LS	--	5,000	
	Area Lighting	LS	--	900	
	Trails	.5 mi.	12,000/mi.	6,000	

B U D G E T

JOB NUMBER	PROPOSED FACILITY	QUAN	UNIT COST	COST	RUNNING TOTAL
G	<u>Day Use Area (continued)</u>				
	Sidewalk - 4'	50 LF	6.75/LF	338	
	Landscaping	10,000SF	.20/SF	2,000	
	Roads	.30 mi.	72,000/mi.	21,600	
	Parking	2,222 SY	5/SY	11,110	
	Water	1,800 LF	3/LF	5,400	
	Electricity	1,800 LF	5/LF	9,000	
	Sewage	1,500 LF	4/LF	6,000	
	Subtotal			246,923	1,527,945
H	<u>Interpretive Area</u>				
	Site Preparation	100,000SF	.07/SF	7,000	
	Interpretive Building	2,500 SF	45/SF	112,500	
	Stabilization of Structures	LS	--	50,000	
	Interpretive Equipment	LS	--	50,000	
	Sidewalks - 4'	1,000LF	6.75/LF	6,750	
	Fire Ring	LS	--	200	
	Area Lighting	LS	--	2,000	
	Landscaping	50,000SF	.20/SF	10,000	
	Roads	.45 mi.	72,000/mi.	32,400	
	Parking	50	180	9,000	
	Water	3,200LF	5/LF	16,000	
	Electricity	3,200LF	5/LF	16,000	
	Sewage	1,200LF	4/LF	4,800	
	Telephone	4,000LF	1/LF	4,000	
	Subtotal			320,650	1,848,595
I	<u>Residence Area</u>				
	Residence Renovation	LS	--	20,000	
	Fencing	200 LF	8/LF	1,600	
	Road - 12'	.04 mi.	54,000/mi.	2,160	
	Parking	2	120	240	
	Water	200 LF	3/LF	600	
	Electricity	200 LF	5/LF	1,000	
	Sewage	200 LF	4/LF	800	
Telephone	200 LF	1/LF	200		
	Subtotal			26,600	1,875,195
J	<u>Day Use Area</u>				
	Site Preparation	20,000SF	.07/SF	1,400	
	Picnic Sites	200	895	179,000	
	Group Pavilion	1,200SF	20/SF	24,000	
	Comfort Station	1,875SF	55/SF	103,125	
	Jetty (3,000 SF)	LS	--	55,000	
	Playground	LS	--	5,000	
	Fire Ring	LS	--	200	
	BBQ Pit	LS	--	1,000	
	Trails	2.3 mi.	12,000/mi.	27,600	
	Area Lighting	LS	--	2,000	
Landscaping	10,000SF	.20/SF	2,000		

B U D G E T

JOB NUMBER	PROPOSED FACILITY	QUAN	UNIT COST	COST	RUNNING TOTAL
J	Day Use Area (continued)				
	Sidewalks - 4'	200 LF	6.75/LF	1,350	
	Roads - 18'	.80 mi.	72,000/mi.	57,600	
	Parking	200	120	24,000	
	Water	4,400 LF	5/LF	22,000	
	Electricity	4,400 LF	5/LF	22,000	
	Sewage	2,500 LF	4/LF	10,000	
	Subtotal			537,275	2,412,470
K	High Density Camping Area				
	Site Preparation	10,000SF	.07/SF	700	
	Multi-Use Campsites	40	2,257	90,280	
	Restroom w/Showers	675 SF	55/SF	37,125	
	Sidewalks - 4'	100 LF	6.75/LF	675	
	Landscaping	10,000SF	.20/SF	2,000	
	Trails	.45 mi.	12,000/mi.	33,840	
	Fire Ring	LS	--	200	
	Dump Station	LS	--	4,000	
	Roads - 18'	.47 mi.	72,000/mi.	5,400	
	Parking	10	120	1,200	
	Water	2,460LF	3/LF	7,380	
	Electricity	2,460LF	5/LF	12,300	
	Sewage	500 LF	4/LF	2,000	
Subtotal			197,100	2,609,570	
L	Shelter Area				
	Site Preparation	20,000SF	.07/SF	1,400	
	Screened Shelters	60	3,500	210,000	
	Restroom w/Showers	1,250SF	55/SF	68,750	
	Jetty	LS	--	55,000	
	Trails	.83 mi.	12,000/mi.	9,960	
	Sidewalks - 4'	100 LF	6.75/LF	675	
	Landscaping	10,000SF	.20/SF	2,000	
	Roads - 18'	.84 mi.	72,000/mi.	60,480	
	Parking	20	120	2,400	
	Water	4,460LF	5/LF	22,300	
	Electricity	4,460LF	5/LF	22,300	
Sewage	2,600 LF	4/LF	10,400		
Subtotal			465,665	3,075,235	
M	Maintenance Area				
	Site Preparation	40,000SF	.07/SF	2,800	
	Shop and Storage Building	1,200SF	25/SF	30,000	
	Covered Parking	1,300SF	15/SF	19,500	
	Wash Ramp	288 SF	10/SF	2,880	
	Gasoline Storage and Pump	LS	--	1,000	
	Volatile Storage Building	LS	--	800	
	Equipment and Furnishings	LS	--	2,000	
	Landscaping	10,000SF	.20/SF	2,000	
	Fencing	1,600LF	6.50/LF	10,400	
Road - 18'	.04 mi.	72,000/mi.	2,880		

B U D G E T

JOB NUMBER	PROPOSED FACILITY	QUAN	UNIT COST	COST	RUNNING TOTAL
M	Maintenance Area (continued)				
	Parking	500 SY	5/SY	2,500	
	Water	1,000LF	5/LF	5,000	
	Electricity	1,000LF	5/LF	5,000	
	Sewage	1,000LF	4/LF	4,000	
	Telephone	1,000LF	1/LF	1,000	
	Subtotal			91,760	3,166,995
N	Residence Area				
	Site Preparation	10,000SF	.07/SF	700	
	Residence - 1,400 SF	LS	--	40,000	
	Landscaping	10,000SF	.20/SF	2,000	
	Fencing	200 LF	8/LF	1,600	
	Road - 12'	.04 mi.	54,000/mi	2,160	
	Parking	2	120	240	
	Water	200 LF	3/LF	600	
	Electricity	200 LF	5/LF	1,000	
	Sewage	200 LF	4/LF	800	
	Telephone	200 LF	1/LF	200	
		Subtotal			49,300
O	Day Use Area *				
	Site Preparation	20,000SF	.07/SF	1,400	
	Picnic Sites	50	895	44,750	
	Comfort Station	625 SF	55/SF	34,375	
	Boat Ramps	2	10,000	20,000	
	Fish Cleaning Shelter	LS	--	5,000	
	Trails	.45 mi.	12,000/mi.	5,400	
	Sidewalks - 4'	50 LF	6.75/LF	338	
	Landscaping	10,000SF	.20/SF	2,000	
	Area Lighting	LS	--	900	
	Roads - 12'	.04 mi.	54,000/mi.	2,160	
	Parking	1,980SY	5/SY	9,900	
	Water	2,400LF	3/LF	7,200	
	Electricity	2,400LF	5/LF	12,000	
	Sewage	2,000LF	4/LF	8,000	
		Subtotal			153,423
P	Shelter Area				
	Site Preparation	20,000SF	.07/SF	1,400	
	Shelters	60	3,500	210,000	
	Restroom w/Showers	1,250SF	55/SF	68,750	
	Trails	1.21 mi	12,000/mi.	14,520	
	Sidewalks - 4'	100 LF	6.75/LF	675	
	Landscaping	10,000SF	.20/SF	2,000	
	Roads - 18'	1.14 mi	72,000/mi.	82,080	
	Parking	20	120	2,400	
	Water	6,040LF	5/LF	30,200	
	Electricity	6,040LF	5/LF	30,200	
Sewage	2,400LF	4/LF	9,600		
	Subtotal			451,825	3,821,543

B U D G E T

JOB NUMBER	PROPOSED FACILITY	QUAN	UNIT COST	COST	RUNNING TOTAL
Q	<u>Multi-Use Camping Area</u>				
	Site Preparation	10,000SF	.07/SF	700	
	Multi-Use Campsites	50	2,817	140,850	
	Restroom w/Showers	675/SF	55/SF	37,125	
	Trails	.28 mi.	12,000/mi.	3,360	
	Sidewalks - 4'	50 LF	6.75/LF	338	
	Landscaping	10,000SF	.20/SF	2,000	
	Roads - 18'	.5 mi.	72,000/mi.	36,000	
	Parking	10	120	1,200	
	Water	2,600LF	5/LF	13,000	
	Electricity	2,600LF	5/LF	13,000	
	Sewage	1,200LF	4/LF	4,800	
	Dump Station	LS	--	4,000	
	Subtotal			256,373	4,077,916
R	<u>High Density Camping Area</u>				
	Site Preparation	10,000SF	.07/SF	700	
	Multi-Use Campsites	36	2,257	81,252	
	Restroom w/Showers	675 SF	55/SF	37,125	
	Jetty (3,000 SF)	LS	--	55,000	
	Trails	.90 mi.	12,000/mi.	10,800	
	Sidewalks - 4'	50 LF	6.75/LF	338	
	Fire Ring	LS	--	200	
	Landscaping	10,000SF	.20/SF	2,000	
	Roads - 18'	.53 mi.	72,000/mi.	38,160	
	Parking	30	120	3,600	
	Water	2,800LF	3/LF	8,400	
	Electricity	2,800LF	5/LF	14,000	
Sewage	600 LF	4/LF	2,400		
	Subtotal			253,975	4,331,891
S	<u>Day Use Area</u>				
	Site Preparation	20,000SF	.07/SF	1,400	
	Picnic Sites	50	895	44,750	
	Comfort Station	625 SF	55/SF	34,375	
	Jetty (3,000 SF)	LS	--	55,000	
	Playground	LS	--	5,000	
	Trails	.76 mi.	12,000/mi.	9,120	
	Sidewalks - 4'	50 LF	6.75/LF	338	
	Landscaping	10,000SF	.20/SF	2,000	
	Area Lighting	LS	--	900	
	Roads - 18'	.60 mi.	72,000/mi.	43,200	
	Parking	50	120	6,000	
	Water	2,000LF	3/LF	6,000	
Electricity	2,000LF	5/LF	10,000		
Sewage	2,000LF	4/LF	8,000		
	Subtotal			226,083	4,557,974
T	<u>Tent Camping Area</u>				
	Site Preparation	10,000SF	.07/SF	700	
	Tent Campsites	50	2,320	116,000	
	Restroom w/Showers	675 SF	55/SF	37,125	

B U D G E T

JOB NUMBER	PROPOSED FACILITY	QUAN	UNIT COST	C O S T	RUNNING TOTAL	
T	<u>Tent Camping Area (continued)</u>					
	Trails	.76 mi.	12,000/mi.	9,120		
	Sidewalk - 4'	50 LF	6.75/LF	338		
	Landscaping	10,000SF	.20/SF	2,000		
	Roads - 18'	.61 mi.	72,000/mi.	43,920		
	Parking	30	120	3,600		
	Water	3,250LF	3/LF	9,750		
	Electricity	3,250LF	5/LF	16,250		
	Sewage	1,100LF	4/LF	4,400		
		Subtotal			243,203	4,801,177
U	<u>Primitive Camping Area</u>					
	Site Preparation	5,000SF	.07/SF	305		
	Campsites	40	210	8,400		
	Restroom w/Showers	675 SF	55/SF	338		
	Trails	2.27 mi	12,000/mi.	27,240		
	Sidewalk - 4'	50 LF	6.75/LF	338		
	Landscaping	5,000SF	.20/SF	1,000		
	Roads - 18'	.56 mi.	72,000/mi.	40,320		
	Parking	30	120	3,600		
	Water	3,000LF	5/LF	15,000		
	Electricity	3,000LF	5/LF	15,000		
	Sewage	3,000LF	3/LF	9,000		
		Subtotal			120,586	4,921,763
V	<u>Group Camping Area</u>					
	Site Preparation	5,000SF	.07/SF	350		
	Roads (Gravel)	.09 mi.	30,000/mi.	2,700		
	Parking (Gravel)	20	120	2,400		
	Fire Ring	LS	--	200		
	Picnic Tables	10	70	700		
	Chemical Toilets	LS	--	3,000		
		Subtotal			9,350	4,931,113
	<u>Miscellaneous</u>					
	Entrance Portal	LS	--	10,000		
	Park Signs	LS	--	12,000		
	Roads - 20'	5.0/mi.	80,000/mi.	400,000		
	Hiking Trails	4.5/mi.	12,000/mi.	54,000		
	Fence Removal	25,000LF	1.75/LF	43,750		
	Fencing	6.8 mi.	7,000/mi.	47,600		
	Building Demolition	LS	--	5,000		
	Water - Supply	LS	--	10,000		
Treatment	LS	--	50,000			
Storage	LS	--	25,000			
Distribution	21,000LF	8/LF	168,000			
Electricity	21,000LF	10/LF	210,000			
Sewage - Collection	21,600LF	8/LF	172,800			

B U D G E T

JOB NUMBER	PROPOSED FACILITY	QUAN	UNIT COST	COST	RUNNING TOTAL
	Miscellaneous (continued)				
	Sewage - Manholes, etc.	LS	--	27,000	
	Grinder Pumps	9	6,000	54,000	
	Treatment Plant	LS	--	150,000	
	Irrigation System	LS	--	40,000	
	Telephone	7,200	1/LF	7,200	
	Reforestation	LS	--	50,000	
	Subtotal			<u>1,536,350</u>	8,126,300 ^{1/}
	TOTAL CONSTRUCTION COST				
	^{2/} Supervision & administration	6.9% ⁺		560,700	
	Professional Fees	6.60%		535,200	
	Surveys and Testing	2.0%		162,500	
	Contingencies	5.0%		406,300	
	Subtotal			<u>1,664,700^{1/}</u>	
	TOTAL PROJECT COST *				9,791,000 ^{1/}
	*Does not include cost escalation to bid date				
	NOTE:				
	^{1/} The cost estimates (subtotals & total project cost) were updated by the Corps to Feb 1980 price level in order to establish the separable costs for recreational development by Tex. Parks & Wildlife and the Corps.				
	^{2/} This item was added by the Corps.				



**XI SPECIAL PROBLEMS AND
CONSIDERATIONS**

XI - SPECIAL PROBLEMS AND CONSIDERATIONS

11-01. General. Anticipated problems and features requiring special consideration because of their direct relationship to successful operation of the recreation and resources management program are discussed below.

11-02. Environmental protection. The consideration and treatment of the environmental resources are becoming increasingly important in planning for the development and management of natural resources. The land resources within the area will be preserved in their present condition or be restored to a condition that will appear to be natural and not detract from the appearance of the project. The following measures will be undertaken in accordance with EM 1110-2-38, Guide Specification CW-01430, and SWD Criteria Letters XV 1-65 dated 17 October 1978 and XV 1-65A dated 16 November 1978.

a. Access roads. To avoid additional landscape scars, the limits of roadway clearing will not exceed 10 feet beyond the toe of fills or the top of cut back slopes. In other than solid rock, the harsh appearance of roadway cuts will be subdued by rounding off the tops of excavated slopes. All downed trees, loose rock, rubble, and other debris created by construction activities will be cleared from the area.

b. Recreation facilities and construction. During construction of the recreational facilities, all construction activity will be kept within the established limits of the construction area. Any area scarred by construction activities will be regraded to approximate natural topography and will be revegetated to blend with the surrounding landscape.

c. Borrow and waste disposal areas. Borrow and waste disposal areas located within the conservation pool will be shaped and graded to be compatible with the adjacent areas.

d. Haul roads. Downstream construction activities will be kept to a minimum. Road alignments will be compatible with the natural terrain and will avoid or minimize scars on the environment. Clearing of vegetation will be selective rather than to rigid limits. Downstream areas scarred by haul roads will be regraded to approximate natural topography and will be revegetated to blend with the surrounding landscape.

11-03. Beautification.- Beautification will be considered in facility design, in relocations, in excavation and spoil areas, and in clearing, landscaping, and planting plans. The criteria covering most of the beautification requirements are found in ER 1110-2-400, ER 1130-2-400, ER 1165-2-2, ER 1165-2-400, and EM 1110-2-400.

11-04. General appearance standards.- Standards of appearance for all Government buildings, project structures, signs and other facilities will be established, with all facilities required to be kept in first class repair. Public appraisal of Corps project areas is often based on the appearance and adequacy of project facilities. Continuing study, appraisal, updating, and maintenance of all project-structures and facilities are critical functions of project administration.

11-05. Boundary surveys and monumentation.- Boundary line markers will be surveyed and monumented as soon as possible in accordance with the provisions of ER 1120-2-400 and ER 405-1-200. Early completion of boundary monumentation is essential to control encroachments of Government property. These boundary lines markers should be checked periodically by field personnel to ascertain if any changes have been made to the location of markers or boundary lines either by accident or impropriety. Boundaries and markers should be readily distinguishable at all times.

11-06. Fencing.- In order to achieve economic management and smooth administration of project lands, the boundary of the project will be fenced. The project boundary will be fenced to prevent encroachments, disputes over boundary lines, and trespassing by free-ranging livestock and related damage or degradation of natural and developed resources. It will also be done to help control access by funneling vehicles to established entries and roadways. This, in turn, should help prevent off-road vehicle traffic. By affecting control of people and livestock, the fence will reduce administration problems and the costs associated with investigating and reporting encroachments.

11-07. Special provisions for the handicapped.- Provisions for physically handicapped persons will be made in accordance with ER 1110-2-102, particularly in regard to site grading, sidewalks, parking areas, ramps, and toilet facilities.

11-08. Civil disturbances. Because of the recent trend towards violent and disruptive demonstrations and other civil disturbances, the reservoir manager and his staff should be constantly aware of any signs of potential disturbance. ER 1130-2-313, SWDR 1130-2-4, and SWDR 1130-2-7 provide guidance on this subject.

11-09. Cultural resources preservation. During any construction and operation related activity, the utmost caution will be used to avoid alteration or destruction of any archeological or historical site, feature, or object. Project personnel will be directed to report any incidents of man-induced or natural adverse effects on cultural resources, such as vandalism ("pot-hunting") or shoreline erosion. Accessibility increases the

opportunities for vandalism and non-professional excavation. Future construction may thus have serious effects on cultural resources. Mitigation of any adverse effects on significant sites (i.e., site eligible for the National Register of Historic Places) will be accomplished by the most appropriate method, either preservation or recovery of the information. When possible, site protection with such methods as turfing, fencing, gunite, riprapping, etc., will be employed to protect sites from "pot hunters" and erosion.

Lakeview Lake



XII ADMINISTRATION AND MANAGEMENT

XII - ADMINISTRATION AND MANAGEMENT

12-01. General. The concept behind the administration and management of both created and natural project resources is to provide continued enjoyment and maximum sustained use by the public of the land, water, and associated recreation resources consistent with their carrying capacity, esthetic, and biological values. In accordance with this concept, the policies regarding the administration and management of the project have been formulated to make the majority of the lake and the Government-owned land available to the visiting public to the fullest extent compatible with an orderly and planned development. These policies control the administration, management, and development of the project area, but will not conflict with the operation of the project for its authorized purposes. They will be based on legislation enacted by Federal, State, and local governmental agencies, and experience gained in the operation and development of similar projects and public parks. The administration and management of the project are accomplished jointly through the district office and field personnel of the Fort Worth District.

a. District office. District office personnel will be concerned principally with coordination of project operations and management with the Trinity River Authority and Texas Parks and Wildlife Department in accordance with purposes for which the project was authorized; the nature, location, construction codes; and requirements for development and improvements; coordination and reconciliation of activities relative to policies and regulations.

b. Field office. Field office personnel assigned to the project, along with personnel from Trinity River Authority and Texas Parks and Wildlife Department will be concerned with direct operation, maintenance, and management of the project; supervision of all activities conducted on the impounded water and land over which the Government acquires fee title or a lesser interest.

12-02. Operation and maintenance. The Trinity River Authority shall be responsible for operation, maintenance, and replacement, without cost to the Government, of all facilities developed to support project recreation opportunities in the areas leased by the Trinity River Authority. The Texas Parks and Wildlife Department is responsible for Lakeview State Park. In areas leased by TRA and TPWD, they shall maintain all project lands, waters, and facilities in a manner satisfactory to the Corps of Engineers and pursuant to the provisions of the forthcoming lease. The lands required for operation of the project structures and the recreation/wildlife management-low use lands will be administered by the Corps. The Corps retains the right to review and approve all operation and management policies.

12-03. Staffing. Sound and efficient management requires that the staffing and organization at each project should provide for expertise in disciplines necessary for light construction, maintenance of facilities, and effective administration and management of the project and its related resources. The Government personnel necessary for this phase of the project will be composed of a supervisory ranger, two reservoir rangers, clerk, wage grade leader, two reservoir maintenance workers, and seasonal laborers. Tables XII-1 and XII-2 gives information regarding the proposed personnel organization and the estimated annual cost of operation and maintenance. Tables XII-3 and XII-4 lists the personnel required to manage the TRA areas and the State Park.

TABLE XII-1

OPERATION AND MAINTENANCE COSTS

Personnel	(\$000)
1 Supervisory Ranger, GS-09	\$ 24.0
2 Reservoir Rangers, GS-07	39.0
1 Clerk, GS-03	13.0
1 Wage Grade Leader, WL-08	21.0
2 Reservoir Maintenance Workers, WG-08	38.0
2 Temporary Reservoir Maintenance Workers, WG-05	16.0
Pro-rata share of Reservoir Manager's costs	10.0
Total personnel	<u>\$161.0</u>
Other Costs	(\$000)
Transportation	\$ 8.0
Utilities	6.0
Supplies and Materials	15.0
Equipment Rental	5.0
Erosion Control	2.0
Herbiciding and Fertilizing	3.0
Equipment Purchases (replacement)	9.0
Hydrological Studies	24.0
Reservoir Control Center SWD	9.0
Continuing Evaluation of Civil Works Structures	8.0
Updating Master Plan	7.0
Embankment Instrumentation	4.0
Participation with Other Government Agencies	12.0
Real Estate Management Costs	25.0
Operations Division	29.0
District Office Overhead	40.0
Total Estimated Other Costs	<u>\$206.0</u>
Total Estimated Annual Costs	367.0

TABLE XII-2

PROPOSED OPERATIONS AND MAINTENANCE EQUIPMENT

<u>Quantity</u>	<u>Item</u>	<u>1st Cost (\$000)</u>
1	VHF Radio Base Station	\$ 10.0
5	VHF Radio Mobile Units	10.0
3	Mobile Unit, Law Enforcement Net	6.0
1	Patrol and Work Boat	17.0
1	Crawler Tractor w/dozer	32.0
1	Equipment Trailer, Tilt-deck	5.0
1	Industrial Tractor w/loader	16.0
1	Portable Welder	5.0
1	Six-inch Pump	5.0
1	Portable Air Compressor	8.0
1	Standby Generator, 16 kw	10.0
1	Misc. small tools and equipment	50.0
		<u>\$154.0</u>
	+ contingencies	50.0
	Total	<u>\$204.0</u>

TABLE XII-3

TRINITY RIVER AUTHORITY
ADMINISTRATIVE PERSONNEL

- 1 Park Supervisor
- 2 Park Attendants
- 1 Clerk
- 1 Maintenance Foreman
- 2 Maintenance Crewmen
- 1 Maintenance Trainee
- 1 Night Watchman

TABLE XII-4

TEXAS PARKS AND WILDLIFE
ADMINISTRATIVE PERSONNEL

- 2 Park Supervisors
- 1 Clerk
- 4 Park Rangers
- 3 Maintenance Crewmen
- 8 to 12 Seasonal Workers

12-04. Park areas. The seven park areas will be administered and managed under a plan agreed to by Trinity River Authority, Texas Parks and Wildlife Department, and the Fort Worth District. Corps' guidance is contained in ER 1130-2-400, ER 405-2-835, ER 405-1-830, ER 405-1-800, EC 405-2-12, SWDR 1130-2-7, and the Operations and Maintenance Manual.

12-05. Nonprofit groups and private clubs. There are no plans for long-term leases or reservations for nonprofit groups and private clubs. This recreational need will be accommodated on a short-term reservation basis within the public use areas.

12-06. Commercial sites and services. Commercial sites have been designated in Lynn Creek, Estes Park, Loyd Park, and in the area adjacent to Lakeview State Park. The services provided by the concessionaires will include, but not be limited to, boat and canoe or paddle boat rentals, bait shop, dry storage, boat gas and oil, launching of boats. These services will be provided by Trinity River Authority, Texas Parks and Wildlife Department, and/or through lease agreements.

12-07. Access by adjacent property owners. Owners of lands adjacent to the project will be allowed reasonable access to the lake in accordance with SWDR 1130-2-7 dated 1 November 1978. This does not mean that the adjacent owners are conveyed any right to Government-owned lands, nor does it mean that these owners have any private rights for lease thereof for access or recreational purposes. The use of Government-owned roads by adjacent property owners shall be in accordance with SWDR 405-2-9 dated 11 December 1970. Adjacent property owners will not be allowed to tie into Government-owned roads. Adjacent land owners have no privilege of access that the general public does not have.

12-08. Land and water zoning. The land and water areas of the project have been zoned to insure safety and protect property and the resources of the project. All zoned areas will be clearly and appropriately designated with approved signs or buoys. Temporary zoning for special events of short duration may be permitted after approval by the reservoir manager. SWDR 1130-2-7 contains detailed instructions regarding zoning of land and water areas.

12-09. Fishing. Fishing will be in accordance with applicable Federal, State, and local laws; enforcement will be the responsibility of Federal and State agencies. In addition, fishing will be in accordance with the water zoning plan. Reservoir managers should be refer to SWDR 1130-2-7 and Title 36 for guidance.

12-10. Interim use. Lands not required for immediate or near-future use for public use, fish and wildlife, and project operations may be leased for grazing purposes, or may be left idle for soil restoration through native plant succession. Grazing will be used only as a management tool.

12-11. Archeological and historical. Any further investigations concerning archeological or historical resources of the project will be administered in accordance with Public Law 93-291 and ER 405-1-875.

12-12. Protection of biological resources of project lands and waters. A biological management program for Lakeview Lake is planned for the purpose of deriving maximum benefits from fish and wildlife resources associated with the project. The Corps of Engineers will coordinate with the U.S. Fish and Wildlife Service, the Environmental Protection Agency, the U.S. Public Health Service, the Trinity River Authority, the Texas Parks and Wildlife Department, and the Texas Department of Health in the implementation of this program.

12-13. Visitor and facility protection.

a. Law enforcement. Enforcement of civil and criminal laws at the reservoir will remain the responsibility of duly constituted officers of Federal, State, and local governmental agencies. The Corps of Engineers, through field personnel, will cooperate fully with all law enforcement officers responsible for the enforcement of laws relative to civil actions, game and fish conservation, public health and sanitation, boating, and prevention of pollution. Citation authority covers refuse dumping and the provisions of Title 36 only. The policy of the Corps of Engineers regarding law enforcement is contained in ER 1130-2-420.

b. Pest control. Insecticides, herbicides, and other chemicals may be used to control insects, weeds, and other pests which may be harmful to the health and safety of the public or detrimental to the natural features of the project when they cannot be controlled by other methods. The use of biological or mechanical control other than chemical pesticides is encouraged where practicable and where such methods will not prove harmful to the ecosystems. All spraying and control activities will be coordinated through the Fort Worth District biologist and local and county health officials. EC 1130-2-140 (Pest Control Program for Civil Works Projects), and instructions on the labels will be followed when using and handling all pesticides, insecticides, and other chemicals.

c. Pollution control. The control of air and water pollution and solid waste disposal shall be in accordance with Executive Order No. 11752 on Prevention, Control and Abatement of Air and Water Pollution at Federal Facilities, and the Federal Water Pollution Control Act Amendment of 1972 (Public Law 92-500), and the Clean Water Act of 1977 (Public Law 95-217). All project personnel will maintain constant vigilance for sources of pollution to the reservoir and its stream tributaries. Guidance for this program is contained in ER 1165-2-116. Additional pollution control will be administered in accordance with ER 1130-2-400, ER 405-1-800, and the Operation and Maintenance Manual.

12-14. Health and safety.

a. Safety. A comprehensive safety program will be developed for all project land and water areas. Chapter XVI presents general guidance for the safety program until such time as a project safety plan can be added to the master plan as an appendix.

b. Health and sanitation. The development and use of the reservoir are planned for the public interest and the utmost consideration has been given to the maintenance of high standards of public health and safety. The State health laws, rules, and regulations are applicable to all facilities constructed and provided at the project. Commercial operators and licensees are also required to abide by the State health laws, rules, and regulations. Disposal of waste, trash, and debris will not be permitted on Government land without authorization, and then only in accordance with State laws and at designated locations.

c. Solid waste disposal. Solid waste will be collected and taken to an existing landfill area off the project. The cities of Dallas, Duncanville, and Grand Prairie operate disposal sites in the area. It will be up to the Trinity River Authority and the Texas Parks and Wildlife Department to work out an agreement with one of the landfill operators.

12-15. Boating.

a. General. All boating activities will be in accordance with applicable State laws or acts covering boats, boating, and water safety, and SWDR 1130-2-7. Boaters will be encouraged to comply with such laws and regulations. These boating laws and regulations will be posted at launching ramps, public use areas, and the project office.

b. Mooring policy. The mooring policy will be in accordance with the instructions presented in ER 1130-2-406 and SWDR 1130-2-7. In accordance with paragraph 17 of ER 1120-2-400, power and sail boats will be accommodated in conjunction with the operation of any marina concession.

c. Unsafe operation. Authorized project personnel will issue citations in accordance with ER 190-2-4. Project personnel will also report any unsafe operation of boats to the local authorities charged with enforcement of the State boating and safety laws. In the period before arrival of law enforcement authorities, the project personnel will take action as deemed appropriate to protect life and property.

12-16. Visitor interpretation and education. A visitor interpretation and education program will be developed to inform and educate the public with regard to the purposes and concept of operation of the project and the historical and natural features of the area. This program will be developed in accordance with ER 1130-2-400 and SWDR 1130-2-7. A project visitor center will be developed at Lakeview in accordance with ER 1130-2-401.



XIII RESOURCE USE OBJECTIVES

XIII - RESOURCE USE OBJECTIVES

13-1. General. Two resources will be created by the construction of the Lakeview Lake, water supply to be shared by the surrounding cities and recreational areas to be used by the citizens of the region. An analysis of the lake site supports the need for careful planning of recreational facilities. Emphasis has been placed on slopes, soils, vegetation, views, etc., with soil fragility being the greatest concern on the White Rock Escarpment on the eastern shore. The western side of the lake is predominately agricultural land and will handle urban-type recreation centers and traditional Corps recreational facilities. These objectives are identified in accordance with ER 1105-2-167.

a. Objective 1. To provide water-based recreation facilities particularly for boating that would satisfy the needs of the densely populated Dallas-Fort Worth metro area. The market for boating is excellent in the Lakeview area with tremendous increase in participation expected in the next 10 to 50 years.

b. Objective 2. To establish and maintain a high quality warm water fishery. There is a great demand for fishing in the Dallas-Fort Worth metro area, and the Lakeview Lake with 7,470 surface acres will provide a habitat for an abundance of various species of warm water fish.

c. Objective 3. To provide overnight use areas to accommodate local and cross country travelers. The lake is served by a good network of Federal and State highways which carry a heavy traffic load. The Texas Parks and Wildlife Department and Trinity River Authority have planned for overnight accommodations.

d. Objective 4. To provide high quality diversified recreational opportunities that would satisfy a need for day use and overnight activities.

e. Objective 5. To provide high quality opportunities for water and land oriented activities, such as swimming, boating, fishing, sightseeing, and hiking.

f. Objectives. To provide a first class recreational facility which will serve the paying customer well and act as a catalyst for high quality development in the surrounding area.

Lakeview Lake



XIV FIRE PROTECTION

XIV - FIRE PROTECTION

14-01. General. The primary responsibility for the preparation, administration, and implementation of the fire protection plan will be that of the reservoir manager and his staff. The protection plan will be prepared according to ER 1130-2-400. It will be finalized and submitted for approval by higher authority as soon as practicable, but no later than 3 years after the project becomes operational. The objectives of the plan are to prevent, detect, and suppress all fires that may occur on the project lands, or on adjacent lands from which they will spread to project lands.

14-02. Cooperative agreements. This plan will include or provide for cooperative agreements with State, county, and local agencies for mutual assistance in fire detection and suppression, training of personnel, procedures in case of fire, and provision for necessary equipment and tools to be readily available for prompt suppression activities.

14-03. Training. A training program for field personnel will be established when the project becomes operational. This training program will cover methods of fire prevention, safety characteristics and behavior, methods of attack, use of hand tools, and use of power equipment.

14-04. Equipment. Each Corps vehicle will carry fire tools at all times, with additional tools available at the project building. Power equipment specifically designed for fire suppression will be stored at the project building. All tools and equipment shall be checked and serviced at regular intervals to ensure serviceability.

14-05. Suppression and prevention. A public information program will be initiated to aid in the detection and reporting of fires. News releases, signs, and other means will gain the support of the general public, and will give information on how and where to report fires. High fire danger periods are broadcast daily by the area radio stations. During these times Corps employees will periodically check high risk areas. The park manager will be responsible for the organization of firefighting crews. This will assure that every employee will have a specific duty during a fire. The place and telephone number for reporting fires during nonduty hours will be posted at the project office. Provisions will be made for fire suppression during nonduty hours. The primary means of communication between park manager and firefighting crews will be by radio. Hand-carried radios will be of assistance on large fires and on those fires not accessible to vehicular mounted radios. Fire prevention signs with information about fire safety and reporting fires will be placed on the entrance to public use areas. Additional signs throughout the areas at places such as picnicking and camping sites,

and stenciled fire prevention slogans on refuse containers will assist in promoting fire prevention. Any leases or contracts for use of project lands will contain fire prevention and suppression clauses.



**XV VEGETATIVE
MANAGEMENT PLAN**

XV - VEGETATIVE MANAGEMENT PLAN

15-01. General. The purpose of this section is to provide a conceptual management plan for development of the vegetative resources. The broad objectives of this proposed plan are to conserve, improve, and manage the vegetative resource for its best use and provide proper stewardship for the benefit of the general public. Specifically, this plan proposes to develop and restore project lands currently under cultivation to appropriate vegetative cover while enhancing and conserving the existing vegetative cover. This plan will consider the physical characteristics, vegetative management areas, and the management measures.

15-02. Administration of the vegetative management plan. The Fort Worth District will be responsible for administering and implementing this plan along with Trinity River Authority and Texas Parks and Wildlife. Coordination will be maintained within the district to insure effectiveness of the plan. When the project becomes operational, the project manager and his staff will assume the primary responsibility for the plan.

15-03. Vegetation management areas.

a. Intensive recreation use parks. Lakeview State, Lynn, and Loyd Parks have been selected for development as intensive use areas. The parks have 2,707 acres available for public use at the top of the conservation pool, elevation 522.0 feet msl. The specific management objectives for these parks are to protect and improve the existing vegetation, to improve the wildlife habitat, and to landscape the parks for the enhancement of the recreational experiences of the visitor.

b. Low-density recreation/wildlife management areas. The primary management objective for these areas is to establish a vegetative cover on all disturbed lands which will aid in soil stabilization and wildlife enhancement. Dove and quail are of particular concern. Native grass species such as Little Bluestem, Indiangrass, Kleingrass, Lovegrass, and assorted perennials and annuals are some species which would enhance wildlife and protect against erosion. Woody plantings should be kept to a minimum and then only planted in low lying areas as they might be found naturally. Areas with good native grass cover and established pasture should need no special treatment. Without fertilization all pasture land should revert to native stands of grassland. Controlled burning and grazing should be considered to control excess litter. Row plantings should be satisfactory in all areas except for Lynn Creek Park where revegetated areas will be viewed from the embankment road. A revegetation plan needs to be implemented as soon as possible since many croplands have been purchased and will soon be vulnerable to erosion.

15-04. Standard management practices. The following management practices will be employed to implement the vegetative management plan.

a. Preservation of existing vegetative cover. The project lands presently contain a diversity of vegetative types which provide an excellent framework for the vegetative enhancement program. The specific objective of this management practice is to protect and maintain this diverse vegetative cover by fencing, placement of fire breaks, and enforcement of Title 36 regulations governing public use of project lands and waters.

b. Landscaping. Landscape planting in the parks will be designed to provide shade and shelter from the sun and wind, seasonal color, some food and cover for wildlife, and transitions at buildings, signs, and along roadways. For shade and shelter, large trees native to the region will be selected, such as those shown in Table XV-1. Selections for seasonal color will include evergreens for their foliage and berries, spring flowering trees like plum and redbud, summer white and yellow flowering vines of honeysuckle and jasmine, the brilliant fall foliage of summac, willow, and ash, and, finally, the bright berries of yaupon. Plantings in the parks that produce berries and fruit or those that grow in thickets like multiflora rose provide additional food and cover for wildlife. Near the project buildings, signs, and road rights-of-way, plant selections will be of the more hardy ornamental varieties combining low maintenance with proper effect such as those shown in Table XV-2. Hard artificial lines will be softened and blended with the surroundings through proper application of sound landscape design principles.

c. Establishment of vegetative cover. The primary emphasis of this management measure will be to establish and maintain appropriate vegetative cover on cultivated lands as soon as possible. Table XV-3 lists recommended species for revegetation of project lands. Bermudagrass use will be limited to these areas receiving intensive use, where severe erosion and gullies exist, and in areas below the 5-year pool where no other grass species will be likely to withstand frequent or prolonged inundation.

d. Grazing/burning/haying. It is anticipated that over a period of time, management measures will be required to reduce litter buildup in areas vegetated with native grasses and to rejuvenate grasses and control invasion of undesirable species. Management plan for project lands will include establishment of fencing and cross-fencing as necessary to form manageable units of land or to allow for controlled grazing by future short-term lease. It is also anticipated that burning or haying of grassed areas may be used as alternative vegetative manipulation measures. Burning will only be used where it can be safely conducted without damage to the resource or to adjacent private lands. These measures will also be used in wildlife habitat management plans.

e. Firebreaks. Firebreaks should be established as necessary to protect vegetative resources, particularly on areas where burning will be used as a wildlife management tool. To be effective, the firebreak must be free of combustible material especially during high fire hazard seasons. The greatest danger of wild fires generally comes during two seasons of the year - winter and summer. Most of the vegetation on the project consists of warm season plants that are dormant or dead through the winter and can create a fire hazard. The same vegetation creates a fire hazard in the summer when it becomes dry during periods of low rainfall and high temperature. The following system provides for the use of vegetation to reduce erosion in addition to providing maximum protection during both high fire hazard seasons. It will also provide winter and spring grazing for deer and other wildlife. Cool season grasses, small grains, and legumes should be planted on firebreaks in all areas where the soil is deep enough to permit tillage operations. Small grains that may be planted alone, in mixtures or with grasses are wheat, winter oats, winter barley, rye, and vetch. No specific firebreaks are recommended at this time, but will be established in future management plans.

f. Borrow areas. Most borrow and waste areas will be located upstream from the embankment and below the conservation pool. It is possible that during construction of the embankment, borrow material will be required in areas above the conservation pool. Any areas damaged during construction located above the conservation pool, or downstream of the embankment will receive vegetative treatment.

TABLE XV-1

NATIVE TREES RECOMMENDED FOR PLANTING

Texas Persimmon	<u>Diospyros texana</u>
Eastern Red Cedar	<u>Juniperous virginiana</u>
Live oak	<u>Quercus virginiana</u>
Texas Red Oak	<u>Quercus shumardii</u>
Cedar Elm	<u>Ulmus crassifolia</u>

TABLE VX-2

TREES, SHRUBS, VINES, & GROUNDCOVERS

TREES

Redbud	<u>Cercis canadensis</u>
Chinese Tallowtree	<u>Sapium sebiferum</u>
Texas oak	<u>Quercus shumardii (var Texani)</u>
Evergreen Pear	<u>Pyrus kawakami</u>
Blireana Plum	<u>Prunus blireana</u>

SHRUBS

Eleagnus	<u>Eleagnus pungen</u>
Yaupon	<u>Ilex vomitoria</u>
Laredo Mahonia	<u>Mahonia trifoliata</u>
Glossy Abelia	<u>Abelia grandiflora</u>
Nandina	<u>Nandina domestica</u>

VINES & GROUNDCOVER

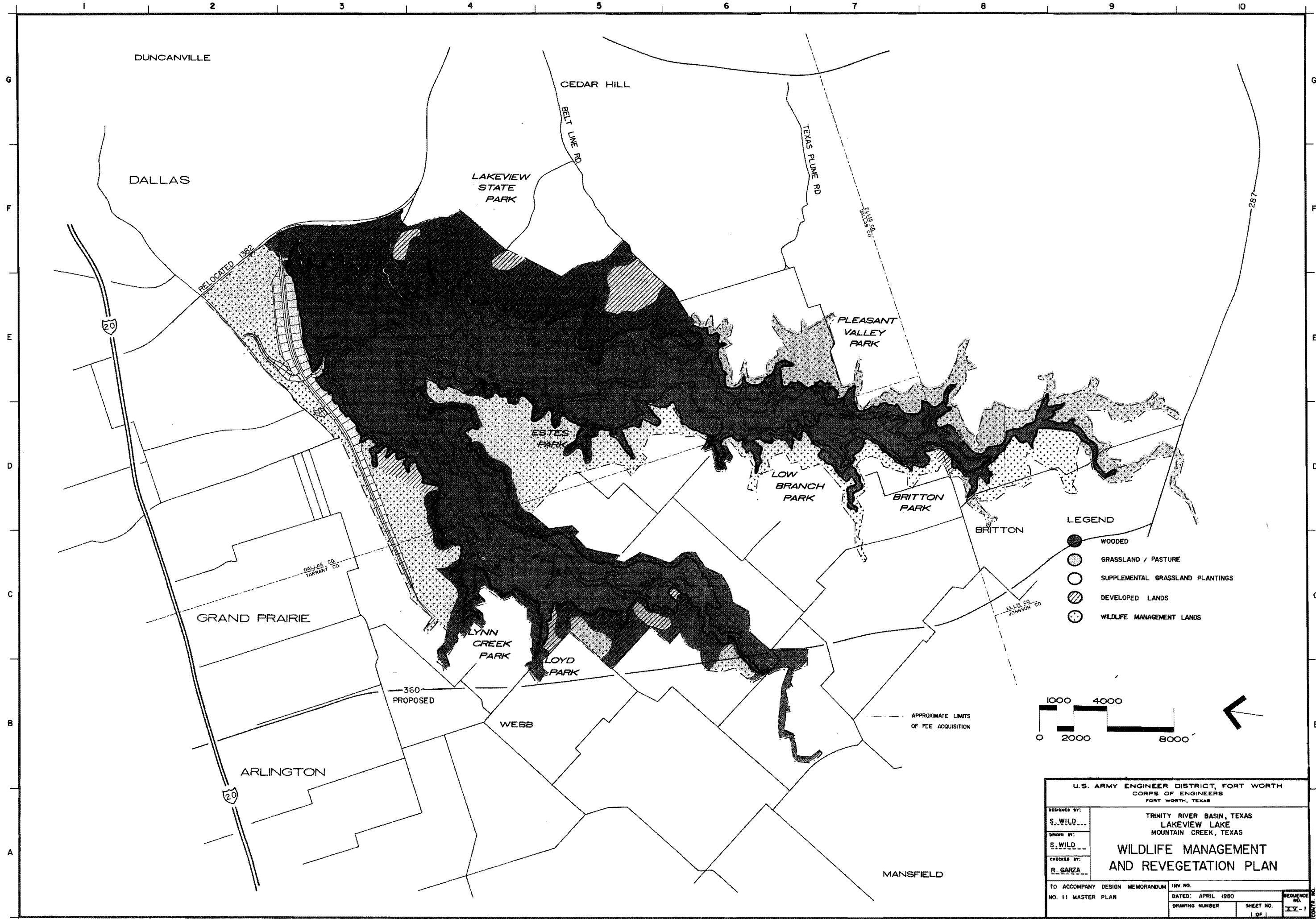
Starjasmine	<u>Trachelospermum jasminoides</u>
Carolina Jessamine	<u>Gelsemium sempervirens</u>
Honeysuckle	<u>Lonicera japonica</u>
Creeping Juniper	<u>Juniperus horizontalis</u>

TABLE XV-3

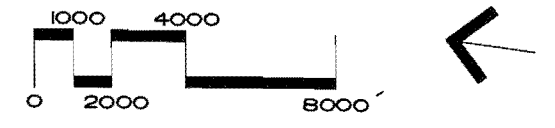
PLANT MATERIAL RECOMMENDATION FOR VEGETATIVE RESTORATION

LAND USAGE	FLORA	
	GRASSES	TREES
Intensive use access areas, and bottomland areas below the 5-year flood pool (water-tolerants), and severely eroded and gullied areas.	Vine-mesquite	Pecan
	Switchgrass	Cypress
	Bermudagrass	Ash
	Buffalograss	
	Kleingrass	
	Bristlegrass	
Areas above the 5-year flood pool.	Bluestems	Cedar elm
	Gramas, sideoats	Pecan
	Switchgrass	Oak, Live, & Texas
	Vine-mesquite	Mexican plum
	Weeping lovegrass	Texas persimmon
	Bristlegrass	Black locust
	Kleingrass	Russian-olive

15-05. Operations Division management plan. Vegetative Management Plan to this master plan will be prepared by Operations Division within the scope of ER 1130-2-400. It will be finalized and submitted for approval by higher authority as soon as practicable, but no later than 3 years after the project becomes operational.



- LEGEND**
- WOODED
 - GRASSLAND / PASTURE
 - SUPPLEMENTAL GRASSLAND PLANTINGS
 - ▨ DEVELOPED LANDS
 - ⊙ WILDLIFE MANAGEMENT LANDS



U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
TRINITY RIVER BASIN, TEXAS LAKEVIEW LAKE MOUNTAIN CREEK, TEXAS		WILDLIFE MANAGEMENT AND REVEGETATION PLAN	
DESIGNED BY: S. WILD	TO ACCOMPANY DESIGN MEMORANDUM NO. 11 MASTER PLAN	INVT. NO.	SEQUENCE NO.
DRAWN BY: S. WILD		DATED: APRIL 1980	1 OF 1
CHECKED BY: R. GARZA		DRAWING NUMBER	SHEET NO.



XVI PROJECT SAFETY PLAN

XVI - PROJECT SAFETY PLAN

16-01. General.- The purpose of this project safety plan is to identify common recurring hazards or unsafe conditions in each major phase or area of operations. This plan will indicate precautionary actions to prevent, reduce, or control hazardous situations and will be prepared in accordance with ER 1130-2-400 dated 28 May 1971.

16-02. Coordination.- A detailed project safety plan will be developed by the resource manager as soon as possible and will be added to the master plan as an appendix. The plan will be developed in adherence to the requirements of the Safety Manual, EM 385-1-1. It should be coordinated with the Texas Parks and Wildlife Department and the Trinity River Authority.

16-03. Implementation.- Project personnel will be instructed on a continuing basis regarding safe practices, safety equipment use, and safety requirements relating to employees and visitors. Specific safety requirements will be emphasized as they relate to office and shop facilities, public use structures, sanitary systems, potable water facilities, insect and poisonous plant control, and roads and trails. Emergency equipment and instructions for its use will be located for convenient and efficient use.

Lakeview Lake



XVII FISH AND WILDLIFE PLAN

XVII - FISH AND WILDLIFE MANAGEMENT PLAN

17-01. General. The intent of this section is to present a conceptual plan for developing and managing project fish and wildlife resources. This plan will serve as a guide until more detailed management plans can be developed. The broad objective of the fish and wildlife management plan is to conserve, maintain, and improve the fish and wildlife habitat in order to produce the greatest dividend of fish and wildlife for the benefit of the general public. The implementation of this plan will aid in achieving the goals of the Fish and Wildlife Coordination Act (Public Law 85-624).

17-02. Administration of the fish and wildlife management plan. The Fort Worth District will assume the basic responsibility for developing and implementing the fish and wildlife habitat management plan. Coordination will be maintained within the district to insure that it is effectively carried out.

17-03. Management responsibilities of the Texas Parks and Wildlife Department and the U.S. Fish and Wildlife Service. The responsibility for managing resident fish and game species is essentially that of the Texas Parks and Wildlife Department. The U.S. Fish and Wildlife Service also assumes a responsibility for the management of these resources with particular emphasis on migratory bird species. In recognition of the above responsibilities, it is the Corps of Engineers policy to encourage these agencies to actively manage or participate in the joint management of the fish and wildlife resources at this project.

17-04. Enforcement of game and fish laws and regulations. Authorization for enforcement of game and fish laws and regulations pertaining to the taking of fish and wildlife lies with the State of Texas. Regulations governing the migratory bird species are administered under the authority of both the State of Texas and the U.S. Fish and Wildlife Service. Under Title 36 rules and regulations, the Corps of Engineers has the authority to close certain areas to hunting and fishing in the interest of safety and to prevent interference with project operations.

17-05. Wildlife management plan. The primary objective of the wildlife management plan is to make desirable species more available for human use for study, esthetics, or photography. This objective will be met by protecting the existing habitat, improving low quality habitat, and developing new habitat. Basically, the wildlife management plan will deal with manipulating the food and cover resource. The first step in implementing this plan is to analyze the wildlife management areas and to indicate the species to be managed.

17-06. Coordination with other agencies. In February 1979 representatives of the Fort Worth District, U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department, and Trinity River Authority conducted on-site investigations of vegetative and fish and wildlife habitat management potentials. Results and recommendations of those investigations are incorporated into this report. Continuous coordination will be maintained with those organizations having collateral interest in the fish and wildlife resource. Periodically, the Fort Worth District will arrange timely conferences with other agencies to discuss the progress of the plan and the short and long term management goals.

17-07. Resource.

a. Lands. Project fee lands above the normal conservation pool will total about 17,417 acres. Of this acreage, 5,195 acres have been designated for wildlife areas. About 580 acres of the land will be designated as project operations lands. Approximately 4,312 acres of wooded habitat interspersed with open areas mostly located in Estes Park, Lynn Creek, Loyd Park, and Lakeview State Park. The trees are mostly oak, cedar elm, or heavily bunched mesquite. Sections of Lynn Creek, Estes, and Britton Parks have been designated as interim wildlife areas. Low Branch and Pleasant Valley Parks will be designated as interim wildlife areas. Most of the land is flat and consists of native grasses with scattered trees or light mesquite. Approximately 12,525 acres are in agricultural use, either as cropland, old fields, or improved pasture. All of this acreage, except for that included in recreation areas and for project operations and maintenance, will be available primarily for wildlife use.

b. Water. Lakeview Lake will be a relatively small impoundment characterized by turbid water and large expanses of littoral habitat. Impoundment to the top of the conservation pool, elevation 522, will create a 7,470 surface-acre lake. The lake will be subject to pool fluctuation with an average variation of about 15 feet in an average 5-year period.

TABLE XVII-1

WILDLIFE MANAGEMENT AREAS

Area	Acres
Lynn Creek	684
Estes Park	930
Britton	119
Low Branch	155
Pleasant Valley	224
Other project lands	3,083
Total	5,195

Plate XV-1 shows the location of the management areas as well as depicting the existing vegetative cover and wildlife habitat. Table XVII-2 provides a detailed breakdown of the existing habitat and vegetative cover for each wildlife area.

TABLE XVII-2

VEGETATIVE COVER AND LAND USE

<u>Wildlife Areas</u>	<u>Agricultural Use Cultivation Acres</u>	<u>Grassland Acres</u>	<u>Wooded Acres</u>
Lynn Creek	400	34	250
Estes Park	650	40	240
Britton	90	19	10
Low Branch	140	15	0
Pleasant Valley	20	200	4

c. Vegetation. The clay soils and rainfall in this physiographic province originally supported a tall-grass prairie, most of which is now committed to agriculture or urbanization. The alluvial areas support such medium to large trees as mesquite, pecan, hackberry, bois d'arc, cedar, elm, and oak. Trees in the valleys grow only along the watercourses. Grasses common to the area include Johnson grass, threeawn, brome grass, common switchgrass, buffalograss, and vine-mesquite. Common shrubs include wild plum and sumac. There are no known rare or endangered plants in the Mountain Creek watershed.

d. Wildlife. Because of the land and the moderately dense human population in the project area, wildlife populations are rather sparse. Hunting pressure is light and is mostly for mourning doves, squirrels, rabbits, and bobwhites. There is some hunting with dogs for raccoons, foxes, and coyotes. Much of the flood plain between the Lakeview damsite and Mountain Creek Lake, owned by Dallas Power and Light Company, is designated as the Dallas County Audubon Wildlife Refuge. There are no known rare or endangered animal species in the Mountain Creek and Walnut Creek watersheds.

e. Fisheries. Mountain and Walnut Creeks meander tortuously across broad alluvial flood plains. Both are intermittent and have insignificant fisheries. However, about 3.2 miles of Mountain Creek channel at the headwaters of Mountain Creek Reservoir are filled by the reservoir and support good fishing for catfishes, bluegills, crappie, and white bass. Most of this stream-like area lies within the Audubon Wildlife Refuge and is open to fishing. However, access is available only at two road crossings. Farm ponds in the area are privately owned and are posted. Fishing in these ponds is light.

f. Endangered and threatened species. Although there are no known endangered or threatened species of mammals, amphibians, or reptiles in the project area, the Southern Bald Eagle, American Peregrine Falcon, and Whooping Crane are possible migrants through the project area. There are no known threatened or endangered species of fish occurring in the watershed.

17-08. Wildlife management practices.

a. General. The primary objective of this plan is to make desirable wildlife species more available for human use whether it is for study, esthetics, or photography. This objective will be met by protecting the existing habitat, improving low quality habitat, and developing new habitat. Basically, the wildlife management plan will deal with manipulating the food and cover resource. The woodland and brushland will be protected and allowed to follow a natural pattern of vegetative succession. The lands below the 5-year flood pool will be vegetated as discussed in the vegetative management plan. The cultivated

acreage will be vegetated and managed for the improvement of habitat for bobwhite quail and mourning dove. The standard management practices discussed in this plan are based upon the premise that quality food and cover habitat must occur in the proper condition and location to support wildlife species on a sustained basis. The primary elements of quality include nutritious foods which should be available during all seasons of the year, suitable cover for the various behavioral and physiological demands of animals, and favorable interspersions of the food and cover components within the range of the animal. Managers should insure that habitat quality is created or maintained for the featured species.

b. Species to be managed. The wildlife plan will utilize the featured species concept. Wildlife species having similar habitat requirements will be selected, and the management efforts will be concentrated toward fulfillment of its needs. The purpose of selecting featured species is to use its habitat requirements to guide wildlife management including coordination, multiple use planning, direct habitat improvements, and cooperative programs. This plan will be oriented primarily toward managing habitat for bobwhite quail and mourning dove above the 5-year flood pool. Plans for managing quail and dove will also greatly benefit cottontails, racoons, opossums, songbirds, and small game animals. As an indirect benefit of this management program, the habitat potential for whitetail deer, migratory water fowl, and numerous non-game animals also will be improved. Preservation of existing timber along side drainage tributaries will benefit fox squirrels.

c. Preservation of existing habitat. The original forest area of the flood plain has been extensively cleared with a resulting patchwork of small pastures and cultivated fields. The preponderance of vegetation now occurs in upland pastures and adjacent to the stream on lands subject to frequent overflow, along tributary streams, fence rows, and in a few woodlots. The primary emphasis of this management practice will be to protect and maintain this habitat. These areas will serve as the framework for the habitat improvement program. Existing woody cover will also be preserved around removed buildings and farm ponds. The vegetative resource will be protected from vehicular traffic and unauthorized grazing by means of perimeter fencing and vehicle control barriers at access points.

d. Revegetation. The primary emphasis of this management practice will be placed upon establishing adapted plant material for the benefit of wildlife, as well as soil improvement and erosion control. Species will be selected from those included in the vegetative management plan for revegetation of eroded and cultivated areas which will also be of benefit to wildlife as food or cover (Table XVII-1 and XVII-2). This management measure will be applied primarily as a vegetative restoration measure to all areas above the 5-year flood pool, but will secondarily benefit wildlife through eventual restoration of a natural ecosystem and

establishment of species of value to wildlife. The planting plan for project areas below the 5-year flood pool is outlined in the vegetative management plan. Plot patterns of woody vegetation will be established in selected areas along with Japanese millet, switchgrass, Buffalograss, kleingrass, or other water tolerant vegetation to reduce potential erosion problem from wind-driven waves. These species will also provide food and cover for wildlife, particularly waterfowl. For the benefit of migratory waterfowl, longleaf pondweed and softstem bulrush should be encouraged in cove areas where the water is less than 5 feet deep. Along the shoreline of these coves, a mixture of Japanese millet and switchgrass should be established after impoundment.

TABLE XVII-3

TREES, SHRUBS, AND VINES RECOMMENDED
FOR WILDLIFE FOOD AND COVER PLANTINGS

Common Name	Scientific Name
Pecan	<u>Garya illinoensis</u>
Osage orange	<u>Maclura pomifera</u>
Black locust	<u>Ribinia pseudoacacia</u>
Sugar hackberry	<u>Celtis laevigata</u>
Western soapberry	<u>Sapindus drummondii</u>
Texas oak	<u>Quercus texana</u>
Russian-olive	<u>Elaeagnus angustifolia</u>
Autumn-olive	<u>Elaeagnus umbellata</u>
Flameleaf sumac	<u>Rhus copallina</u>
Mexican plum	<u>Prunus mexicana</u>
Chickasaw plum	<u>Prunus angustifolia</u>
Texas persimmon	<u>Diospyros texana</u>
Redcedar	<u>Juniperus virginia</u>
Ashe juniper	<u>Juniperus ashei</u>
Red mulberry	<u>Morus rubra</u>
Grape	<u>Vitis spp.</u>
Southern dewberry	<u>Rubus trivialis</u>
Japanese honeysuckle	<u>Lonicera japonica</u>
Multiflora rose	<u>Rosa multiflora</u>
Elaeagnus	<u>Elaeagnus pungens</u>

TABLE XVII-4

PLANT SPECIES SUGGESTED FOR USE
IN SUPPLEMENTAL PLANTING PROGRAM

Common Name	Scientific Name
Corn	<u>Zea mays</u>
Sorghum	<u>Sorghum spp</u>
Lespedeza	<u>Lespedeza spp</u>
Wheat	<u>Triticum spp</u>
Winter rye	<u>Secale spp</u>
Oats	<u>Avena spp</u>
Cowpeas	<u>Vigna spp</u>
Vetch	<u>Visia spp</u>
Brown top millet	<u>Panicum ranosum</u>
Japanese millet	<u>Echirochloa frumentacez</u>
Sweet Clover (yellow)	<u>Melilotus officinalis</u>

e. Habitat manipulation measures. In addition to reestablishment of a multi-purpose vegetative cover on disturbed areas, areas below the 5-year flood pool, and restoration and preservation of existing vegetative resources, the following conceptual wildlife habitat manipulation measures are recommended for project lands. These manipulation measures are designed to increase carrying capacity of project lands primarily for the featured species.

The Corps of Engineers will retain responsibility for implementing wildlife habitat management measures on project lands. These conceptual features will be detailed in the wildlife management plan of this master plan.

(1) Supplemental plantings for food and cover. The best cover pattern includes woodlands interspersed with brush, grass, and cultivated fields. The existing woody cover on project lands does not provide quality habitat in a pattern of thickets interspersed with open space over a large contiguous area. Partitioning the area into smaller tracts with alternate strips of woody cover and grassland would greatly increase the carrying capacity for quail and dove. Plants recommended for wildlife cover are listed in Tables XVII-1, XVII-2, and XVII-3. Utilizing lands retained as cropland, spring and fall plantings of grains concentrated in food strips, primarily for upland game bird use, should be made above the 5-year flood pool. Only lands with slopes of less than 1% should be utilized for food plots. These should be selected from USDA - Soil Conservation Services Soil Survey Data sheets. Spring plantings should contain grain sorghum or forage sorghums. A mixture of

TABLE XVII-5

PLANTS RECOMMENDED FOR UPLAND WILDLIFE FOOD
AND COVER AND THEIR WILDLIFE HABITAT VALUES

Plant Species	Fall Food	Winter Cover	Spring Food	Summer Cover
<u>GRASSES & SEDGES</u>				
Annual bromes	X	X	X	X
Bluestems	-	XX	-	XXX
Bristlegrass	XX	X	XXX	X
Fringeleaf paspalum	X	X	X	X
Gramma, blue, hairy and tall	-	X	-	X
Indian grass	X	XX	-	XX
Sand dropseed	X	X	X	X
Scribner panicum	XX	-	XX	-
Sedges				X
Switchgrass	X	X	-	X
Texas bluegrass	X	X	X	X
Vine-mesquite	X	X	X	X
Weeping lovegrass	X	XX	X	XX
Kleingrass	XXX	XX	XXX	X
<u>LEGUMES</u>				
Alfalfa	X	X	X	X
Deervetch	XX	-	XXX	X
Korean lespedeza	XXX	X	X	-
Madrid sweet clove	-	XX	-	XXX
Sericea lespedeza	X	XX	-	XX
Tickclover	XXX	X	-	X
<u>FORBS</u>				
Annual sunflower	XXX	X	XX	XX
Croton	XX	X	XX	X
Carolina cranesbill	XX	-	XX	-
Maximillian sunflower	XXX	XX	XX	XX

SYMBOLS

- = Little use or not known
X = Some value

XX = Medium value
XXX = High value

rye, wheat, or oats with hairy vetch should be planted for fall and winter green browse. The plantings should be alternated to provide grain and green browse on adjacent plots. The sorghum grains should be broadcast in sufficient density or drill planted in 10 to 12 inch rows to shade out weed competition, minimize erosion, and increase cover value. Table XIII-2 presents a list of suggested plants to be used in the supplemental planting program.

(2) Brush piles. There is a scarcity of woody cover over much of the project area, and any available brush which must be cleared for project structures, access areas, and boat ramps should be utilized as interim woody cover in open areas rather than being burned or removed.

(3) Grazing. It is anticipated that vegetative management measures will be required in the future on areas now in native grasses and in cultivated areas which will be revegetated, to reduce thatch buildup, restore grass vigor, and open area to improve wildlife habitat. Planning for a future grazing program through use of short-term leases should be undertaken through retention of existing cross fences and gradual establishment of new cross fences to set up feasible grazing allotments.

(4) Disking, haying, and burning. In conjunction with, or as an alternative to a grazing program, a rotational plan on selected areas for disking and prescribed burning should be established to provide reestablishment of preclimax grasses and forbs for wildlife use that would otherwise be crowded out under controlled conditions. Only areas with deep soils and less than 1 percent slopes will be disked and only as necessary to provide benefits to wildlife. Strips at least 15 feet wide and following the contours should be disked between 15 February and 20 March. Alternate strips should be disked every other year or in the third year. Strips that are not disked, i.e., those left to undergo plant succession, should be burned off when undesirable weeds accumulate or whenever grass densities and litter pose a fire hazard. All burns should be completed before March to prevent weakening established grasses and destroying new growth. Haying of permanent vegetation, where marketable, and removal of litter will also be used as a management tool.

17-09. Specific management areas. Based on existing vegetative cover, habitat potential, future-use designation, and coordination with other agencies concerned with protection of fish and wildlife values, the following general management strategies are recommended for specific areas.

a. Lynn Creek Park. Because of existing agricultural activities, most of the Lynn Creek Park area which is not designated for

intensive recreation will require revegetation for erosion control with native grasses such as bluestem, switchgrass, and kleingrass. Bare areas below the 5-foot flood pool will be revegetated with more tolerant grasses such as bermudagrass or Japanese millet in the wetter areas. Vegetation along existing fence rows will be retained and supplemented with browse and cover species such as black locust or Russian-olive. Plantings perpendicular to the prevailing southeasterly winds of rows of black locust, Russian-olive, chickasaw plum, and other recommended trees or shrubs will provide erosion control to the re-establishing grassland and secondarily will provide food and cover to wildlife.

b. Estes Park. This area is designated as a wildlife management area, but is subject to utilization as a borrow area during project construction due to excellent compactability qualities of the soil. It is not presently certain how much of the area, if any, will be required for borrow so specific management measures for fish and wildlife conservation cannot be adequately addressed at this time. If soils from the area are used in dam construction, criteria will be established for contouring, fertilization, revegetation, and management to optimize fish and wildlife (including waterfowl) values. The majority of this designated wildlife area is presently in agriculture, and if not used as a borrow area would require initial treatment similar to that described for Lynn Creek Park to re-establish vegetation prior to development as a wildlife management area.

c. Low Branch, Britton, and Pleasant Valley Parks. These park areas are currently designated as low-density recreation areas with minimal development. The local sponsor has expressed an interest in promoting habitat values of these areas by minimizing recreational development until demands dictate the need for increased facilities. Land-use of these areas is a mix of agriculture, pasture, and wooded areas. Past use has created localized erosion problems which, for the most part, can be alleviated through revegetation. Agricultural lands will be planted in bluestems, kleingrass, and switch grass to stabilize the soils. On the steeper eroded slopes of old pastures some earthwork and contouring may be required, but plantings of grasses and shrubs such as black locust will be used in most of the less severe areas. The less mature wooded areas are presently predominated by cedar elm, hackberry, and mesquite. The interspersed opening of small areas in the less mature wooded thickets and creation of brush piles will provide diversity and edge to the thickets as well as cover in other areas.

d. Other project lands. The remainder of the project lands, other than Lakeview Lake State Park, are designated as low density recreation/wildlife areas with no facilities development. These lands are primarily within the flood control pool elevation of 536 feet msl. Revegetation for erosion control with grasses will be accomplished in areas where natural revegetation would not be sufficient. Below the 5-year flood pool, especially in the upper reaches of the reservoir, establishment of

more tolerant species such as Japanese millet and brown top millet will serve to control erosion caused by inundation and wave action, as well as providing habitat, food, and cover for migrating waterfowl, fish, and wildlife. Natural succession will be the primary management strategy for the more upland areas which are not in danger of problems associated with erosion.

17-10. Fisheries management plan.

a. General. The fundamental goal of the fisheries management plan is to develop and administer a fisheries program in such a manner as to preserve and enhance the fisheries resource. Specifically, this plan proposes to conserve, maintain, and enhance the quality and quantity of game fish habitat.

b. Fish species to be managed. Although the responsibility for management of the fisheries resource in Texas is vested in the Texas Parks and Wildlife Department, the Fort Worth District will supply aid and assistance to secure a successful fisheries management program. According to the U.S. Fish and Wildlife Service, white crappie and channel catfish will provide the best fishing in the early years of the reservoir.

c. Protecting existing habitat. The primary emphasis of the fisheries plan will be placed upon protecting the existing habitat. Flooded trees and shrubs, shoreline grasses, and emergent aquatic vegetation will provide the necessary cover habitat for juvenile fish. Existing farm ponds will be retained above the conservation pool level except where they present a special safety hazard or interfere with project operation.

(d) Clearing of existing vegetation. A clearing plan will be presented in a separate design memorandum. The clearing plan will be coordinated with the U.S. Fish and Wildlife Service and the State of Texas, Executive Department, U.S. and State Public Health (State Planning and Development Clearinghouse).

e. Seining areas. No special provisions will be provided for seining areas because existing pasturelands when inundated will be adequate for seining. Plate XV-1 indicates location of grasslands, pasture, and croplands where grasses will be established adjacent to and continuing into the conservation pool which will provide adequate seining areas. Certain of these areas will be marked prior to impoundment so that they can be located after impoundment. The Texas Parks and Wildlife Department may desire to clear seining areas adjacent to Lakeview State Park prior to impoundment.

f. Artificial habitat program. Fish require shelter for escape from their enemies and for resting which is in some ways analogous to the shelter needs of land animals. It should be borne in mind that where adequate natural shelter is available, the policy should be to leave

TABLE XVII-6

SOME OF THE MORE OBJECTIONABLE PLANT SPECIES

Common Name	Scientific Name
Water hyacinth	<u>Eichornia spp.</u>
Cattail	<u>Typha latifolia</u>
Water lily	<u>Nymphaea odorata</u>
Frogbit	<u>Limnobium spongia</u>
Cocklebur	<u>Xanthium pensylvanicum</u>
Reed cane	<u>Arundo donax</u>
Cutgrass	<u>Zazaniopsis milagea</u>
Bladderwort	<u>Utricularia spp.</u>
Maidencane	<u>Panicum humitomon</u>
Bulrushes <u>1/</u>	<u>Scirpus spp.</u>
Duckweed <u>1/</u>	<u>Lemna spp.</u>
Coontail	<u>Ceratophyllum demersum</u>

1/ These plant species are of considerable value to waterfowl under certain conditions; yet when they are over abundant, they may become undesirable.

conditions undisturbed unless improvement measures are reasonably sure of success. Supplementary cover will be required in Lakeview Lake. Brush or other fish shelters and attractors should be considered by the third year of impoundment because of the natural degradation of natural cover. Brush piles are utilized best by fish if in shallow water, although they can be used in deeper water. Because of frequent drawdown possibilities, shelters should be placed in water 8 to 20 feet deep. Attached weights should be utilized to sink the shelters and to prevent floating debris. Marker buoys will be provided.

g. Gathering population data. Regulation of the season, size limits, and maintenance operations depend upon adequate population data. Fishing may be poor because there are too many fish present and therefore too few are able to reach legal size because of the competition for the limited food supply. The effectiveness of any operation or regulation can be tested only by means of carefully collected data. Creel census, population studies, catch studies, and growth studies are four important studies recommended. While such programs are essentially the responsibility of the Texas Parks and Wildlife Department, the considerable burden imposed upon the Department by the increasing number of Corps of Engineers projects requires that the Fort Worth District supply all possible aid and assistance to secure an adequate management program.

h. Control of low value plants. Excessive growth of undesirable plants can affect water quality, interfere with boating and result in an imbalance of the fish population. Many of these plants can be controlled with chemicals, or by grazing, plowing, or burning during periods of drawdown. The most effective means of control is to destroy them before they become a problem. Table XVII-4 presents some of the more objectionable plant species found within the region.

17-11. Appendix D - Fish and Wildlife Management Plan. Appendix D (Fish and Wildlife Management Plan) to this master plan will be prepared within the scope of ER 1130-2-400. It will be finalized and submitted for approval by higher authority no later than 3 years after the project becomes operational. The development of this plan will implement Section 3 of the Fish and Wildlife Coordination Act (Public Law 85-624). Further guidance for the fish and wildlife plan is contained in SWDR 1130-2-7 and ER 1105-2-129.

Lakeview Lake



XVIII CONCLUSIONS AND RECOMMENDATIONS

XVIII - CONCLUSIONS AND RECOMMENDATIONS

18-01. Conclusions.

a. By implementing this master plan, the natural and created resources of the project can be maintained and adequately developed to meet the project's optimum usage within the scope of the authorized purposes.

b. This master plan is in compliance with the Corps resource management objectives of providing a planned development program which will provide continued enjoyment and maximum sustained use by the public of the lands, water, and associated recreational resources consistent with their carrying capacity and their esthetic and biological values. The plan is flexible and will allow adjustments to be made in relation to future public needs.

18-02. Recommendation. It is recommended that the master plan for Lakeview Lake involving development for public use and land management be approved as proposed herein.