

DESIGN MEMORANDUM NUMBER 11C

**REVISED MASTER PLAN
FOR
DEVELOPMENT AND MANAGEMENT
OF
STILLHOUSE HOLLOW DAM**

**BRAZOS RIVER BASIN
LAMPASAS RIVER, TEXAS**

**U. S. ARMY ENGINEER DISTRICT
FEBRUARY 1975**

**FORT WORTH, TEXAS
COPY NUMBER 23**

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STILLHOUSE HOLLOW DAM

LAMPASAS RIVER, TEXAS

REVISIONS AND UPDATES

Date

New Pages or Drawings

Page

COMMENTS ON DESIGN MEMORANDUM
No. 11C, STILLHOUSE HOLLOW DAM,
INCLOSURE 2 TO SWDPL-R 1st IND

1. Pl 1.1. Legend on "proposed" and "existing" lake should be reversed.
2. Charts 1 and 2, p 1-14 and 1-15. Actual pool elevation frequencies and durations over the past 6 years the project has been in operation would be useful additions to these hypothetical curves.
3. Para 1.02 C2d, p 1-24. The last sentence should be revised to reflect that the standard for recreation water quality is "Texas Water Quality Standards" dtd Oct 73. In addition to the parameters listed, p H and fecal coliform should also be analyzed.
4. Para 2.01 B, p 2-01. The last sentence should be revised to reflect that erosion control and revegetative practices will be in accordance with the Vegetative Management Plan, not the Resource Management Plan.
5. Para 2.02 A2e, p 2-04. The Natural Area allocation should be used to preserve unique scientific, ecological, historical, archeological or visual values. Such areas would be excluded from grazing and hunting. If the referenced area qualifies for the allocation, the specific purpose should be further explained and hunting and grazing should be excluded. If the area does not qualify, it should be placed in the appropriate allocation, perhaps low-density recreation.
6. Para 2.02 A4b, p 2-04. The first sentence is misleading in that it implies that Pl 2.1 indicates land allocations for grazing and other outgrants. This should be corrected.
7. Table 6, p 2-12.
 - a. Annual sanitary surveys are performed on public water supply and sewage systems. See ER 1130-2-407, para 5. This should be added to this table.
 - b. Compliance Inspections - The prime responsibility for this function is charged to Real Estate Division. Real Estate furnishes listings of outgrants assigned to the Reservoir Manager for inspection (SWDR 1130-2-7, Chap 24).
 - c. Utilization Inspections - These inspections and reports thereof are a responsibility charged to the Real Estate Division (SWDR 1130-2-7, Chap 24, Para 24-2).

SWDPL-R (SWFOD-M 20 Feb 75) 1st Ind

SUBJECT: Stillhouse Hollow Dam, Lampasas River, Texas, Design Memorandum
No. 11C, Revised Master Plan

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

8 MAY 1975

TO: HQDA (DAEN-CWP-V)
WASH DC 20314

1. Forwarded recommending approval of the land use portion of the subject master plan.
2. Those portions of the plan pertaining to development and management of the project resources are approved subject to the inclosed comments which should be considered and incorporated in the plan, as appropriate, prior to implementing the development or action involved.

FOR THE DIVISION ENGINEER:



BARRY G. ROUGHT
Chief, Planning Division

2 Incl
1. wd 4 cys
Added 1 incl
2. as

CF:
SWFOD-M w/incl 2

DAEN-CWP-V (20 Feb 75) 2nd Ind
SUBJECT: Stillhouse Hollow Dam, Lampasas River, Texas, Design Memorandum
No. 11C, Revised Master Plan

DA, Office of the Chief of Engineers, Washington, DC 20314 1 July 75

TO: Division Engineer, Southwestern
ATTN: SWDPL-R

Subject DM is approved subject to comments of the Division Engineer and the following:

a. Pages 3-02 thru 3-06 - The content of these pages represents a very commendable effort to address the ability and limitations of project resources to fulfill recreation demands. However, the pages contain several inconsistencies, as cited below, which should be resolved.

(1) Paragraphs 3.05 and 3.06 - The two paragraphs are contradictory. Paragraph 3.05 states that a basic concept in the plan of facility development is to limit such development to the desired carrying capacity of the project resources; yet paragraph 3.06 states that the desired carrying capacity is unknown.

(2) Paragraph 3.06 - This paragraph states that the desired carrying capacity will be determined in accordance with paragraph A on page 3-03, yet the data presented on page 3-03 does not address carrying capacity but present estimates of recreational demand.

(3) Page 3-05, paragraph E - Even though previous paragraphs have stated that the desired carrying capacity is unknown, the conclusion reached in this paragraph indicates that it is known, and that a decision has been made to develop only facilities that are within that capacity.

(4) The last entry in the table at top of page 3-04 shows ultimate capacity of 1,500,000. Ultimate capacity stated in paragraph E, page 3-05 is 3,000,000.

b. Page 3-13, paragraph 3 - A sentence should be added to this paragraph to make it clear that development of additional recreation facilities proposed in the plan will be contingent on securing a local cost-sharing partner.

c. Pages 3-19 and 3-20 and Plate 3.3 - Stillhouse Park - SWD comment 14 C that the Stillhouse Park area be developed as a day use area is supported. The intermixing of use areas as depicted on Plate 3.3 will create administrative and control problems. Since almost all existing facilities are for day use, the logical expansion and development would appear to be as a day use area.

DAEN-CWP-V (20 Feb 75) 2nd Ind

SUBJECT: Stillhouse Hollow Dam, Lampasas River, Texas, Design Memorandum
No. 11C, Revised Master Plan

d. Pages 3-24 and 3-25 and Plate 3.4B - Dana Peak Park - Consideration should be given to resiting the Day Use Area No. 5 so that users may have access without passing the pay station for the camping sites. An even better solution would be to provide similar day use facilities at Stillhouse Park in line with comment C above.

e. Page 3-30 and Plate 3.5 - Consideration should be given to eliminating the 37 developed campsites from Cedar Gap Park. This peninsula could easily be developed for day use and primitive camping with Cedar Knob Road separating the two use areas. Sufficient land area is apparently available at Union Grave Park for incorporation of the 37 camping spaces.

f. Paragraph 3.08, Design Memorandum No. 11C. A more complete description of design concepts for proposed facilities is needed. The concepts are presently limited to road design.

FOR THE CHIEF OF ENGINEERS:

- 1 Incl
- 1. wd incl 1
- 2. Comments

for Russell K. Adams
ALEX SHWAIKO
Acting Chief, Planning Division
Directorate of Civil Works

SWDPL-R (SWFOD-M 20 Feb 75) 3rd Ind

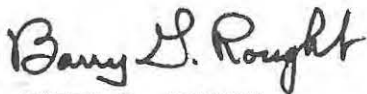
SUBJECT: Stillhouse Hollow Dam, Lampasas River, Texas, Design Memorandum
No. 11C, Revised Master Plan

DA, Southwestern Division, Corps of Engineers, Main Tower Building,
1200 Main Street, Dallas, Texas 75202 11 JUL 1975

TO: District Engineer, Fort Worth

Subject revised master plan is approved subject to comments in the previous
indorsements.

FOR THE DIVISION ENGINEER:



BARRY G. ROUGHT
Chief, Planning Division

1 Incl
nc

COMMENTS ON DESIGN MEMORANDUM - No. 11C, STILLHOUSE HOLLOW DAM

8. Para 2.03 Cla, p 2-13. This paragraph should indicate that fisheries management personnel are available in the District Office.

9. Para 2.03 Clc, p 2-18. The wildlife management concept plan should be prepared based on various habitat types available. In this regard a wildlife habitat- and vegetative-type map should be provided similar to that prepared on soils (Pl 1.2).

10. Para 2.03 C3d, p 2-20. Since this is a concept plan for the development and management of the vegetative resource, it should state generally the treatments planned, rather than make recommendations.

11. Para 2.04 Cl, p 2-25.

a. It is believed that the terms "reviewed by" or "coordinated with" would be more appropriate than "approval is required" as stated in the third line.

b. A new program pertaining to the public's health is the Lake Water Quality Monitoring Program, in accordance with ER 1130-2-334 dated 1 May 1974, subject "Water Quality Management at Corps Civil Works' Facilities." This should be discussed.

12. Para 2.04 C3a(2). A statement should be added that only pesticides registered by EPA will be used and that application will be in accordance with label directions.

13. Table 10, 12, 13, 14, 16, 17, and 18, Item 3. The width for all boat launching ramps are required by para 3a of EM 1110-2-400 to be 12 to 14 feet or multiples thereof. The criteria in this EM will be used unless deviations therefrom are requested and justified in design memoranda. Correction should be made as appropriate.

14. Table 11 and Pl 3.3.

a. The "1 pr" of chemical toilets listed in Table 11 are not shown on Pl 3.3 nor in the list of proposed future development on p 3-19, and 20. This should be clarified.

b. Table 11 - The quantity of future "frame toilets" should be changed to "3 pr" and the cost revised accordingly.

c. Camp Area 3. It is questionable that 20 trailer camp units and 20 tent pads can be provided in this area. This should be restudied. Also, in view of the close proximity to Day-use Area No. 2., consideration should be given to making this area a Day-use Area.

d. It is difficult to tell where the 56 single table w/shelters shown to Table 11 are to be located in this park layout. If 20 of them are to be located in Camp Area 3, this should be clarified on p 3-19. If not, then Table 11 should be revised accordingly.

COMMENTS ON DESIGN MEMORANDUM - No. 11C, STILLHOUSE HOLLOW DAM

15. Table 12 and Pl 3.4.

a. P 3-22. The number of camp units (80) does not agree with that listed on p 3-23, and 24 (75). The difference seems to be in the existing facilities and those proposed for the 5-year development. This should be corrected. The number of table shelters (98) should also be coordinated with the number of picnic and camp units shown on p 3-23, and 24.

b. Pl 3.4 and the proposed future development show three (3) water borne toilets. Table 12 shows only two (2) future W.B. toilets. This figure should be changed to three (3) to agree with what is shown in the other elements.

16. Table 4 and Pl 36. The number of camper service buildings shown in the 5-year development plan should be changed from three (3) to two (2) to agree with what is shown on Pl 36 and the 5-year facility development list on p 3-33, and 34.

17. Table 16. The number of future camp units shown in Table 16 on p 3-40 should be changed to 67 to agree with those listed on p 3-42 under future development.

18. Cedar Gap, Union Grove - East and Bluff Parks, General. An explanation should be given as to what type of waste treatment will be provided for the toilet facilities constructed during the 5-year development plan before the future central waste treatment plants have been constructed. Additional funds should be included in the cost estimates to cover the construction of these treatment facilities during this time period.

19. Table 18. Changes in quantities, etc., to the Master Plan resulting from the above comments should be included in this Cost Estimate Summary.



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

REPLY TO
ATTENTION OF:

SWFOD-M

20 February 1975

SUBJECT: Stillhouse Hollow Dam, Lampasas River, Texas, Design Memorandum
No. 11C, Revised Master Plan

THRU: Division Engineer, Southwestern

TO: HQDA (DAEN-ZA)
WASH DC 20314

1. Design Memorandum No. 11C, Revised Master Plan for the development and management of Stillhouse Hollow Dam, Lampasas River, Texas, is submitted for approval.
2. The Revised Master Plan includes existing and planned development at Stillhouse Hollow Dam and is in compliance with previous Indorsements.
3. Site layout plans reflecting major facility locations and the design to be used in developing each park are presented in this Revised Master Plan. The Revised Master Plan will be utilized as a basis for programming all future 710 funds, determining user fee areas, and future proposals for cost sharing with other agencies.

1 Inclosure
Design Memorandum No. 11C
Stillhouse Hollow Dam (9 copies)


JOE H. SHEARD
Colonel, CE
District Engineer





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

REPLY TO
ATTENTION OF:

SWFOD-M

20 February 1975

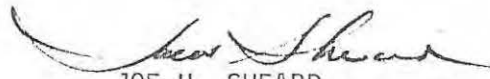
SUBJECT: Stillhouse Hollow Dam, Lampasas River, Texas, Design Memorandum
No. 11C, Revised Master Plan

THRU: Division Engineer, Southwestern

TO: HQDA (DAEN-ZA)
WASH DC 20314

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1 Inclosure
Design Memorandum No. 11C
Stillhouse Hollow Dam (9 copies)


JOE H. SHEARD
Colonel, CE
District Engineer



BRAZOS RIVER BASIN, TEXAS

DESIGN MEMORANDUM NO. 11 (REVISED)

REVISED MASTER PLAN

FOR STILLHOUSE HOLLOW DAM

LAMPASAS RIVER, TEXAS

This report, prepared by the Recreation-Resource Management Branch of Operations Division, Fort Worth District, has been coordinated with Engineering Division and Real Estate Division, and is recommended for approval.

Gordon A. Halstead 7 Feb '75
Chief, Engineering Division Date

Michael B. Cottrill 7 Feb. 1975
Chief, Real Estate Division Date

INTRODUCTION

The objective of resource planning is to obtain proper utilization and adequate stewardship of resources in their operation, maintenance, and management. Accomplishment of this objective, through sound planning principles, coupled with proper resource and operational management plans, will enable public use of the resource while preserving the qualities of the environment.

The Institute for Water Resources has stated four environmental objectives for the Corps of Engineers. These have now been incorporated into Engineer Regulation 1165-2-500. These objectives form a foundation for master planning and resource management philosophy and will be implemented to the fullest extent possible. They are:

- "1. To preserve unique and important ecological, aesthetic, and cultural values of our national heritage.
2. To conserve and use wisely the natural resources of our Nation for the benefit of present and future generations.
3. To enhance, maintain, and restore the natural and man-made environment in terms of productivity, variety, spaciousness, beauty, and other measures of quality.
4. To create new opportunities for the American people to use and enjoy their environment."

All resources will be managed for multiple use in accordance with current policy guidelines and applicable Engineer Regulations. These resources are the property of both present and future generations. Given these valuable resources, it is our duty as stewards to protect and provide proper management while they are in our care. Proper management is defined as planning, organizing, directing, and controlling the use of the project resources. Measures such as limiting or denying the use of all or part of a resource will become part of the management program when such use becomes detrimental or permanently damaging to that resource.

"Ecological" management of both natural and created resources will become the goal of all personnel involved in the management program. In seeking this goal, managers at both the field and district level should recruit professional personnel and provide continued in-service training in resource management principles in order that the objectives outlined above are attained. Management at all levels must be alert to changing technology, new management methods, and changing user preferences as they may affect the development and use of the resource. Through the application of this general philosophy we can insure that short-term uses or gains shall not take the place of long-term goals.

I. BACKGROUND INFORMATION

1.01 Pertinent Data

A. Authority:

| <u>Type</u> | <u>Authority</u> | <u>Date</u> |
|---------------|--|-------------|
| 1. Project | Public Law 780-399 83rd Congress, 2nd Session | 31 Mar 1960 |
| | House Document No 535 81st Congress, 2nd Session | |
| 2. Recreation | Flood Control Act Section 4 (Public Law 534) 78th Congress, 2nd Session | 22 Dec 1944 |
| | Amended by: Flood Control Act Section 4 (Public Law 526) 79th Congress, 2nd Session | 24 Jul 1946 |
| | Amended by: Flood Control Act Section 209 (Public Law 780) 83rd Congress, 1st Session | 3 Sep 1954 |
| | Amended by: Flood Control Act Section 207 (Public Law 874) 87th Congress, 2nd Session | 23 Oct 1962 |
| | Outdoor Recreation Act (Public Law 88-29) | 28 May 1963 |
| | See "Cost-Sharing" on page 1-02 | |

| <u>Type</u> | <u>Authority</u> | <u>Date</u> |
|---------------------|---|------------------------------|
| 3. Fish & Wildlife | Fish & Wildlife Coordination Act | 10 Mar 1934 |
| | Amended by: Public Law 732 79th Congress | 14 Aug 1946 |
| | Amended by: Public Law 85-624 (72 Stat. 563) | 12 Aug 1958 |
| | Public Law 89-669 | 15 Oct 1966 |
| | See "Cost Sharing" on page 1-02 | |
| 4. Land Acquisition | Rivers & Harbor Act (Public Law 14) 79th Congress, 1st Session | 2 Mar 1945 |
| | Engineer Regulation 405-1-1, Planning and Project Authorization | Oct 1952 |
| | Engineer Regulation 405-1-620 Acquisition by Purchase, Donation and Transfer | Feb 1974 |
| 5. Permits | Engineer Regulations 405-1-800 and 403-1-875 | 10 Mar 1972 & 24 Mar 1964 |
| | Southwestern Division Regulation 1130-2-7 | 25 Sep 1968 |
| | Fort Worth District Regulation 1130-2-78 (O&M Manual) | 1969 |
| 6. Leasing | Engineer Regulation 405-2-835 | 24 Mar 1964 |
| | Amended | 9 Nov 1964 |
| | Amended | 30 Aug 1965 |

- | | | |
|------------------|---|-------------|
| 7. Cost-Sharing | Federal Water Project Recreation Act (Public Law 89-72) | 9 Jul 1965 |
| 8. Vegetation | Public Law 86-717 | 6 Sep 1960 |
| | Public Law 89-298 Section 302 | 27 Oct 1965 |
| 9. Water Storage | Public Law 85-230 | 30 Aug 1957 |

B. History

1. Master Plan:

The Master Plan for Stillhouse Hollow Reservoir, Lampasas River, Texas Design Memorandum 11B, was transmitted to the Office, Chief of Engineers, by letter dated 4 October 1963, and was approved by the Chief of Engineers by 2nd Indorsement dated 13 January 1965. This action was followed by Supplement No. 1 which was transmitted to the Division Engineer on 8 February 1966 and was approved by the Chief of Engineers by 2nd Indorsement dated 13 May 1966. The Updated Master Plan Design Memorandum 11C was transmitted to Chief of Engineers by letter dated 11 May 1970 and was approved by Chief of Engineers by 2nd Indorsement dated 15 October 1970.

2. Status of Project:

Construction of the project was initiated in the summer of 1962 with deliberate impoundment of water initiated 19 February 1968. To date, a total of \$862,784* has been spent at Stillhouse Hollow Dam** for providing recreational facilities such as gravel and bituminous roads and parking areas, boat launching ramps, sanitary facilities, potable water

* This figure includes E & D and SA.

** Previously called Stillhouse Hollow Reservoir.

supplies, and picnic and camping facilities. The initial Master Plan, dated September of 1963, estimated annual attendance in the first three years of operation to reach 800,000 visitors. Visitation records show that in Calendar Year 1970, the third year of operation, visitation to Stillhouse Hollow Dam was estimated to be 1,553,000, almost double the original estimate. Since that time visitation has declined to an estimated 1,199,400 in Calendar Year 1974. The decline in public use could possibly be attributed to the lack of sanitary and other facilities development. No major 711 construction has been funded at Stillhouse Hollow Dam since the initial construction of the basic facilities to support public use. Only one water-borne restroom facility, 2 masonry vault type toilets and 22 single frame units have been provided to date. Upgrading and/or replacement of existing sanitary facilities is urgently needed according to guidelines set forth in EM 1110-2-400. Based upon facilities analysis for an annual visitation of 1,199,400 (Calendar Year 1974) Stillhouse Hollow Dam recreation facilities development is deficient by 10 boat launching lanes, 60 day use units (picnic), and 350 camping units.

C. Scope

1. Project Purpose:

Stillhouse Hollow Dam is operated principally for flood control and water conservation. The Brazos River Authority, a state agency, has entered into a contract with the Department of the Army to purchase the conservation storage space in the reservoir. The contract approved by the Secretary of the Army on 13 April 1962, granted the Brazos River Authority the right to utilize the storage space below elevation 572.0 for a present water supply. The storage space between elevations 572.0 and 622.0 (top of the conservation storage) is contracted for future use.

2. Purpose of the Master Plan:

The purpose of the Master Plan is to provide a comprehensive plan which is concerned with effective conservation, protection, development, use, enhancement, and/or management of visitors, water, land, vegetation, and wildlife in the broad public interest. It augments and complements all other existing and contemplated Federal, State, and local public recreational and conservation development within the region.

3. Purpose of This Revised Master Plan:

This design memorandum presents a Revised Master Plan for development and management of the resources at Stillhouse Hollow Dam in accordance with current policy and philosophy. The concept of the plan, including optimizing the overall project management objectives, is to obtain the optimum utilization of the project area for public use and provide proper stewardship of the natural resources.

4. Purpose of the Plan of Development:

The purpose of the plan of development is to:

- a. Indicate and guide the planned development for the life of the project.
- b. Show the accomplished development to date.
- c. Indicate areas in need of upgrading such as vegetation, soil conditions, facilities, etc.
- d. Provide a guide for budgetary submissions for future recreational development.

The Plans, cost estimates, and recreational analyses will be reviewed as necessary. Revised drawings, estimates, and pages of the text will be submitted to Southwestern Division (SWD) and Office, Chief of Engineers, (OCE) for approval and insertion into the basic Revised Master Plan document herein. Field personnel will aid in the development of a detailed site plan of the proposed management areas to establish the location of

roads and facilities at the time construction funds are allocated. A resource management area will not be developed without a detailed site plan approved in advance by SWD and coordinated with field and district office personnel.

D. Region Utilization

1. Region Served:

Central Texas is the major area from which visitors are attracted to Stillhouse Hollow Dam.

2. Transportation:

The primary mode of transportation of visitors to Stillhouse Hollow Dam is vehicular.

3. Population:

See Section III, page 3-04, for projected population data.

4. Economy:

Stillhouse Hollow Dam is located in an area which is predominately agriculture. However, the military payroll generated by Fort Hood, which is located 14 miles to the northwest of the lake, usually dominates the local economy. The population of this region is rural-farm with Temple, Belton and Killeen being the major suburban areas of influence.

5. Related Recreational Areas:

The nearest Corps of Engineers project is Belton Lake, approximately 8 miles north of Stillhouse Hollow Dam. Also, there are at least 13 state, city or privately owned recreation parks within 50 radial miles of the project (See Table 1, Page 1-08). More than 6 years of operation has shown that the recreational development at this project has complemented rather than competed with surrounding recreational areas. It is expected that this same relationship will continue under the development plan included in Section III.

TABLE 1

PARKS, RESERVOIRS, AND LAKES WITHIN 50 MILE RADIUS OF STILLHOUSE HOLLOW DAM

| Index Number | Name | County | Approximate Road Miles From Stillhouse Hollow Dam | Administering Agency | Purpose | Available Recreation Facilities | | | | | |
|-----------------|---------------|-----------------|---|-----------------------------------|--|------------------------------------|----------|---------|------------|---------|--------------------------|
| | | | | | | Fishing | Swimming | Boating | Picnicking | Camping | Historical Structures |
| Water Oriented | | | | | | | | | | | |
| 1 | Belton Lake | Bell & Coryell | 4 N | Corps of Engineers | Flood Control Water Conservation | X | X | X | X | X | |
| 2 | Waco Lake | McClennan | 51 N | Corps of Engineers | Flood Control Water Conservation | X | X | X | X | X | |
| 3 | Lake Austin | Travis | 64 S | Lower Colorado River Authority | Power Generation Municipal-Industrial | X | X | X | X | X | |
| 4 | Lake Travis | Burnet & Travis | 69 SW | Lower Colorado River Authority | Power Generation Municipal-Industrial | X | X | X | X | X | |
| 5 | Lake Buchanan | Burnet & Llano | 75 SW | Lower Colorado River Authority | Power Generation Municipal | X | X | X | X | X | |

TABLE 1

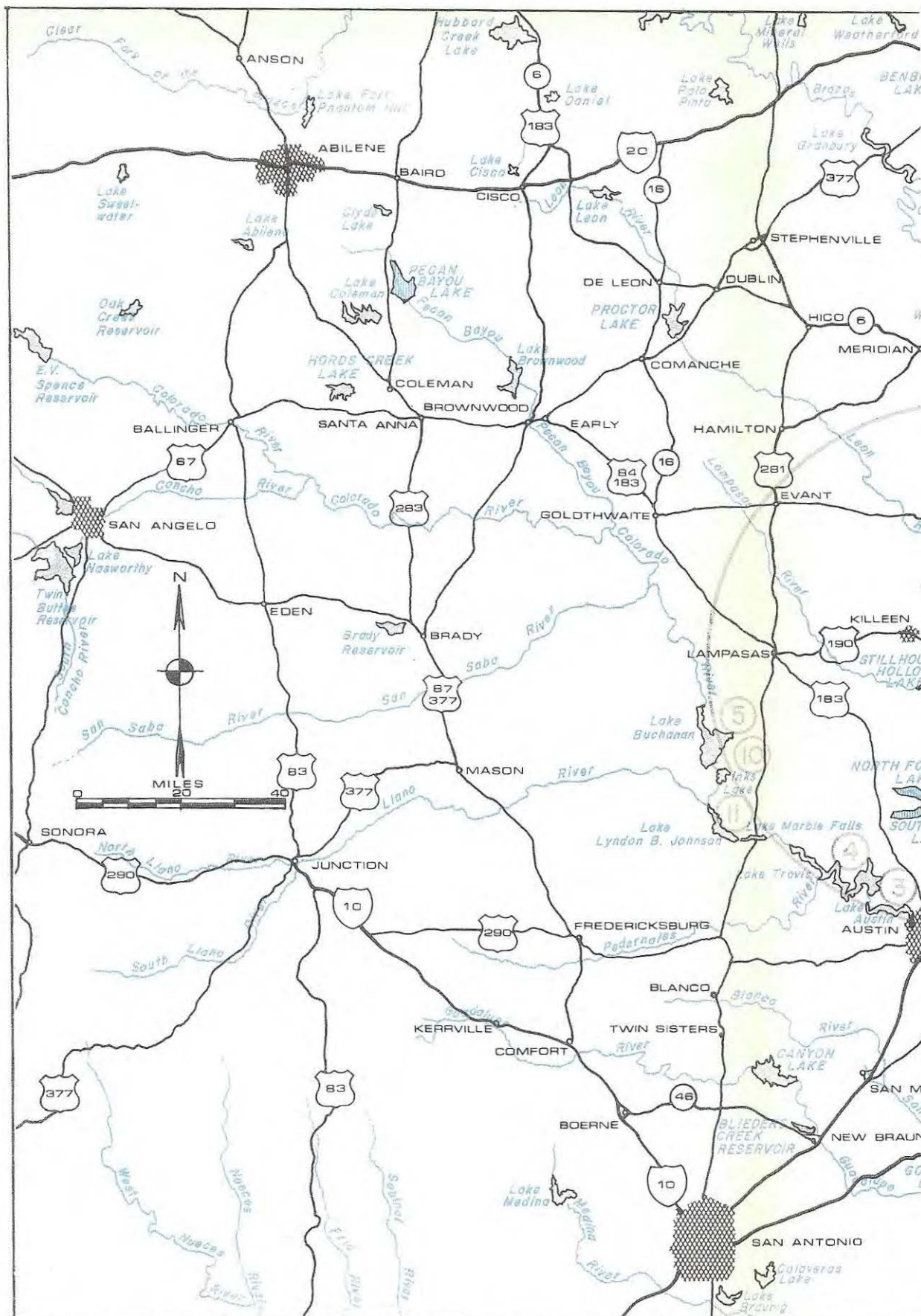
PARKS, RESERVOIRS, AND LAKES WITHIN 50 MILE RADIUS OF STILLHOUSE HOLLOW DAMAvailable
Recreation Facilities

| Index Number | Name | County | Approximate Road Miles From Stillhouse Hollow Dam | Administering Agency | Purpose | Fishing | Swimming | Boating | Picnicking | Camping | Historical Structures |
|----------------------|---|------------|---|---------------------------|--------------------------|---------|----------|---------|------------|---------|--------------------------|
| <u>Land Oriented</u> | | | | | | | | | | | |
| 6 | Mother Neff State Park | Corryell | 23 NE | Texas Parks & Wildlife | Recreation | X | X | X | X | X | |
| 7 | Waco Municipal Park Systems | McLennan | 28 N | City of Waco | Municipal | X | X | | X | | |
| 8 | Inner Space Caverns | Williamson | 32 S | Private | Recreation | | | | X | X | |
| 9 | Homer Garrison Memorial (Texas Ranger Museum) | McClennan | 49 N | City of Waco | Historical Recreation | X | | | X | X | X |
| 10 | Inks Lake State Park | Burnet | 62 SW | Texas Parks & Wildlife | Recreation | X | X | | X | X | |

TABLE 1

PARKS, RESERVOIRS, AND LAKES WITHIN 50 MILE RADIUS OF STILLHOUSE HOLLOW DAMAvailable
Recreation Facilities

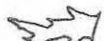
| Index Number | Name | County | Approximate Road Miles From Stillhouse Hollow Dam | Administering Agency | Purpose | Fishing | Swimming | Boating | Picnicking | Camping | Historical Structures |
|-----------------|----------------------------------|--------|---|---------------------------|------------------------|---------|----------|---------|------------|---------|--------------------------|
| Land Oriented | | | | | | | | | | | |
| 11 | Longhorn Cavern State Park | Burnet | 65 SW | Texas Parks & Wildlife | Scenic | | | | X | | |
| 12 | Austin Municipal Park System | Travis | 69 S | City of Austin | Municipal | X | X | | X | | |
| 13 | State Capital & State Museums | Travis | 69 S | State of Texas | Historical Exhibits | | | | X | | X |



U. S. ARMY
ENGINEER DISTRICT
FORT WORTH
FT. WORTH, TEXAS



EXISTING LAKE



PROPOSED LAKE

RIVER



POINTS OF INTEREST
(SEE TABLE FACING PAGE)



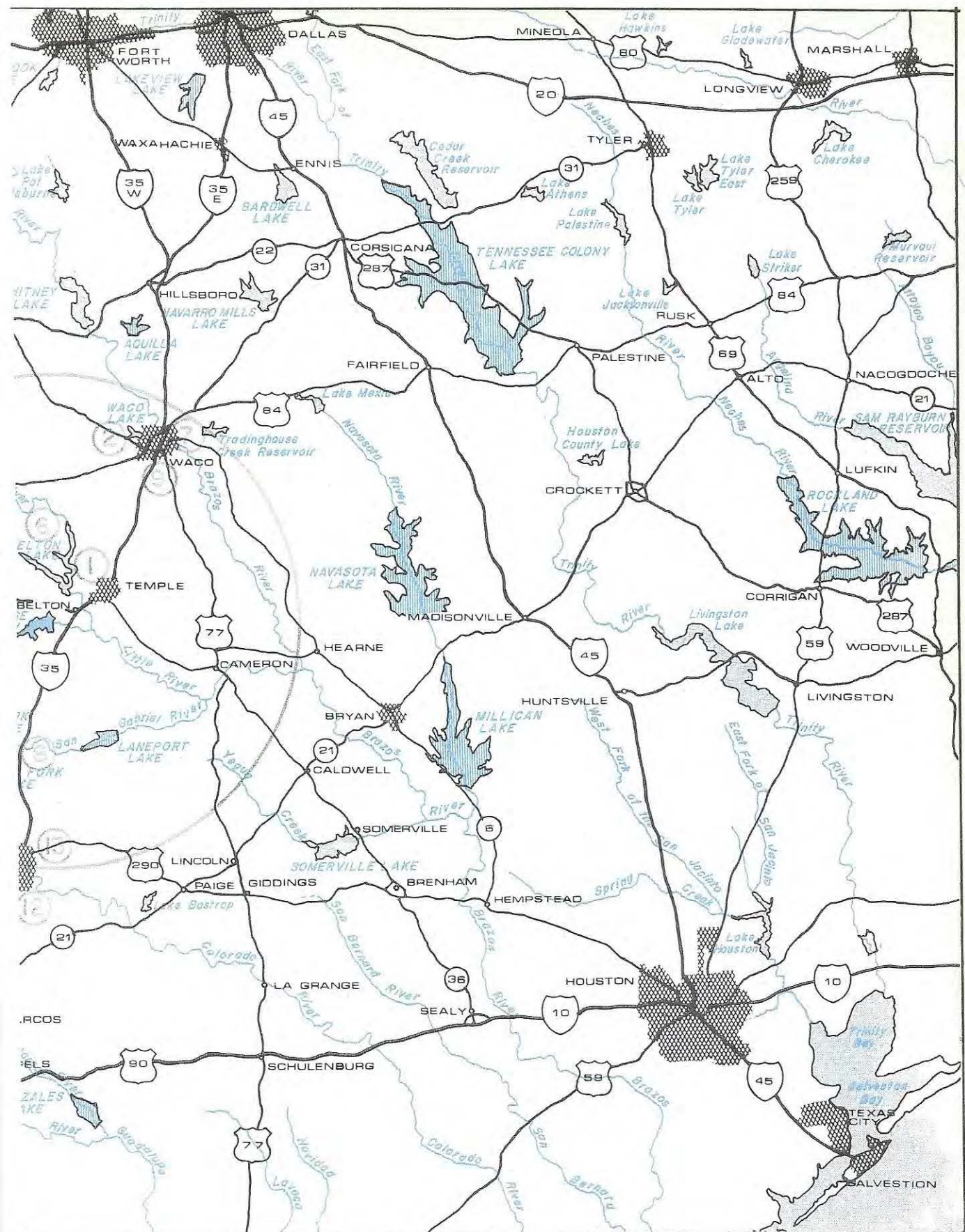
STATE HIGHWAY



10



75



INTERSTATE HIGHWAY

50 MI.
RD.

AREA OF INFLUENCE

STILLHOUSE HOLLOW DAM

PLATE

FEDERAL HIGHWAY



CITIES

REGIONAL
RECREATION MAP

1.1

DATED:

DEC. 1974

NUMBER

1.02 Project Description

A. General

1. Physical Data:

The topography of the area is characterized by buttes, mesas, and divides. The terrain in the area ranges from flat in the narrow valley of the flood plain to steep slopes and near vertical bluffs in the uplands. The thin limestone soils in the hilly portion are timbered with oak, elm, mesquite, juniper and ash. Alluvial soils along the stream support pecan, willow, and hackberry trees. The main body of the impounded water at elevation 622.0 (top of the conservation storage) has a maximum length of about 12.7 miles and a maximum width of about 2.4 miles. The impounded water at elevation 622.0 inundates about 6,430 acres and has a shoreline of about 58 miles.

2. Location:

The Stillhouse Hollow Dam site is located on the Lampasas River 16.0 river miles upstream from the confluence of the Lampasas and Leon Rivers and is in the central part of Bell County about five miles southwest of Belton, Texas. The reservoir area lies entirely within Bell County. (See Plate 1.1).

3. Accessibility

a. Roads:

State Highway No. FM 1670 crosses the main embankment. This highway intersects U.S. Highway 190 approximately three miles southwest of Belton, and Interstate 35 approximately three miles southwest of the project. In addition to this highway, access to the Government property and public use areas is available over existing improved and unimproved county roads.

b. Railroads:

The nearest railhead is at Belton, Texas, and is about five miles from the reservoir headquarters area.

4. Lake Watershed Provisions:

The watershed above Stillhouse Hollow Dam has a length of 80 miles along the axis of the river and a maximum width of 19 miles. The drainage area covers approximately 1,318 square miles. At elevation 622.0 msl, the lake has a maximum width of approximately 2.4 miles, a maximum length of approximately 12.7 miles, and has a shoreline of approximately 58 miles. For additional information, see Table 2 Page 1-13 and the Pool Elevation Probability and Duration Curves, Charts 1 & 2, Pages 1-14 & 15.

TABLE 2

Pool Elevations, Areas, and Storages

| | Elevation Feet msl | Reservoir Area (Acres) | Reservoir Capacity (Acre-Feet) |
|--|--------------------------|------------------------------|--------------------------------------|
| Top of Dam | 698.0 | 17,230 | 1,093,900 |
| Maximum Design Water Surface | 693.2 | 16,370 | 1,013,300 |
| Top of Flood Control Pool and Spillway Crest | 666.0 | 11,830 | 630,400 (1) |
| Top of Conservation Pool | 622.0 | 6,430 | 235,700 (2) |
| Streambed | 498.0 | | |
| Average Pool Elevation During Peak Recreation Seasons * | 622.0 | | |
| Five Year Pool Floodline | 632.0 | 7,570 | 305,800 |
| Ten Year Pool Drawdown | 590.0 | 3,100 | 88,400 |
| Five Year Pool Drawdown | 600.0 | 3,889 | 123,000 |

Note: All elevations in this report refer to mean sea level datum of 1929.

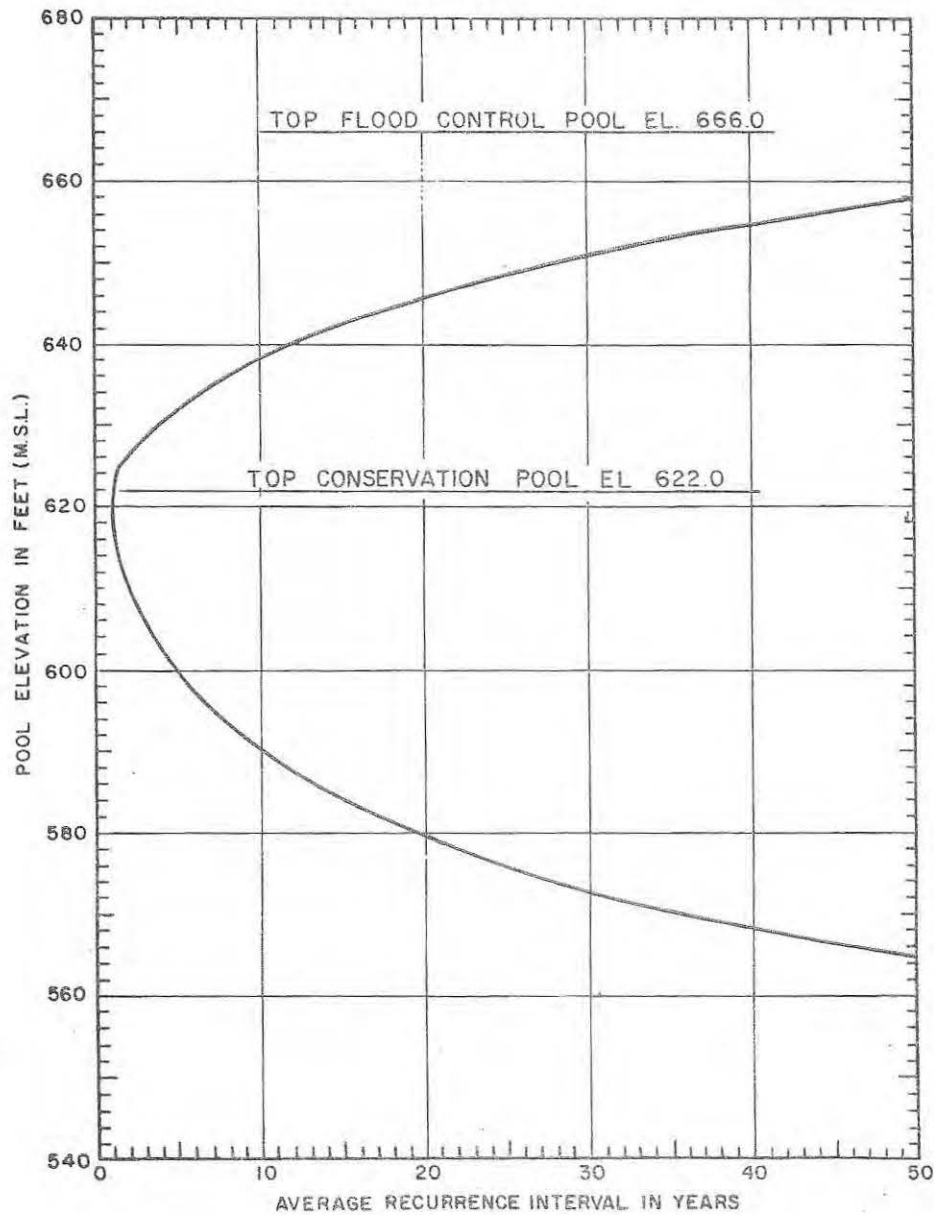
* Average elevation during prime recreation season, June through August.

(1) Includes 34,900 acre-feet of sediment storage.

(2) Includes 30,800 acre-feet of sediment storage.

CHART 1

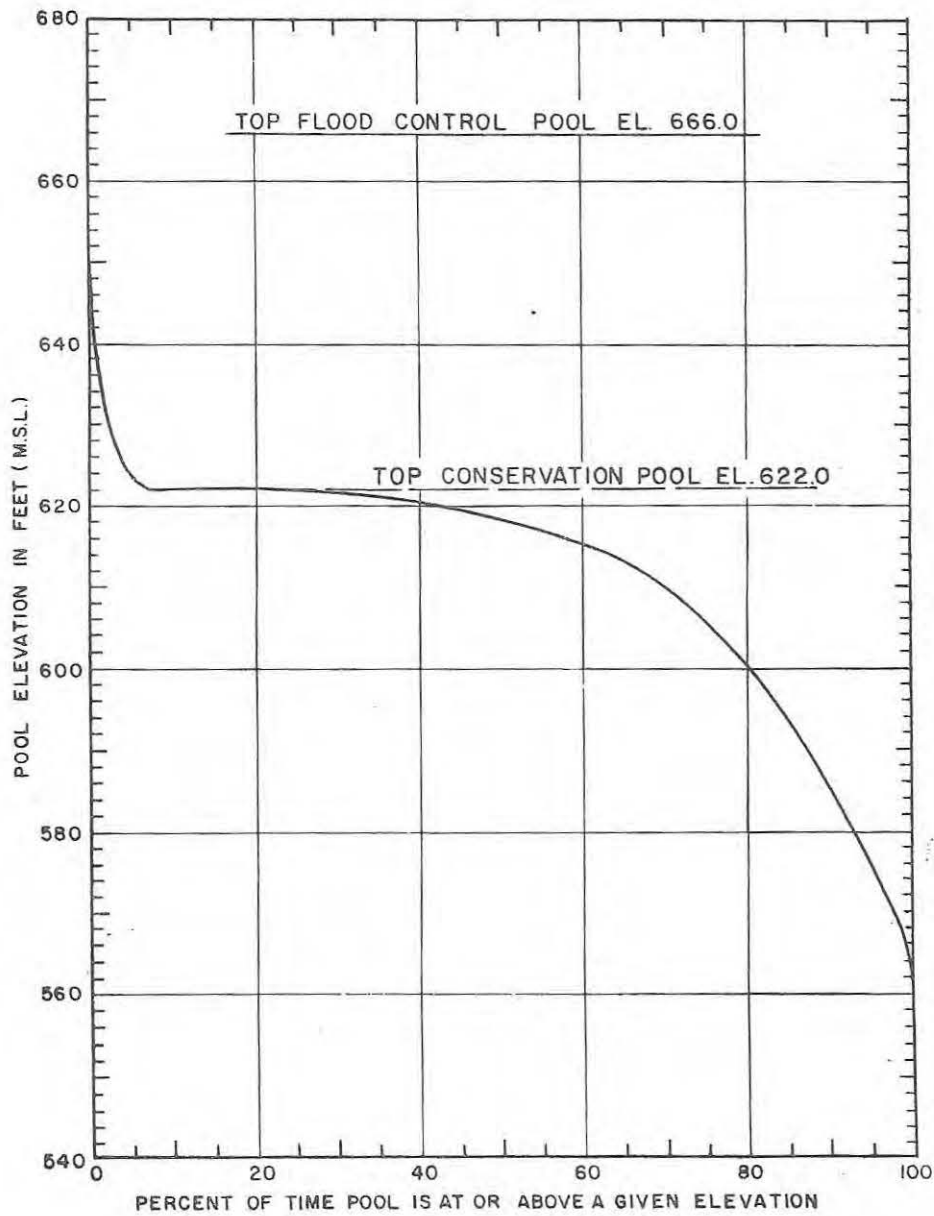
POOL ELEVATION - FREQUENCY CURVES *



* Data based on hypothetical reservoir regulation for period 1924-1957. Elevation - Capacity data after 100-year sediment accumulation.

CHART 2

POOL ELEVATION - DURATION CURVES *



* Data based on hypothetical reservoir regulation for period 1924-1957. Elevation - Capacity data after 100-year sediment accumulation.

5. Climate:

The climate over the Lampasas River watershed is generally mild with hot summers and cool winters. Freezing temperatures and snowfall are experienced occasionally. Temperatures recorded at Lampasas, Texas have ranged from a maximum of 112 degrees Fahrenheit to a minimum of -12 degrees Fahrenheit, with a mean annual temperature of 66 degrees Fahrenheit. The average length of the growing season is 227 days, and the mean annual precipitation is 31.7 inches.

B. Project Features:

1. Park Areas:

There are 6 park areas at Stillhouse Hollow Dam, containing various degrees of physical development. Prior to enactment of the Federal Water Project Recreation Act of 1965 (PL 89-72) recreation facility development at reservoir projects operated and maintained by the Corps of Engineers was 100% federally funded. After 1 July 1973 new recreation development at Corps of Engineers projects will be determined to a great extent by local sponsors. Generally, such areas will not be developed without 50% non-Federal cost sharing. It is proposed that non-Federal agencies will pay 50% of the costs of recreation development and assume all costs for operation and maintenance of the park facilities. Administration policy requires that starting with the Fiscal Year 1975 program, all further recreation development at Corps operating projects will be under one of the three methods of development:

(1) The first method is that prior to construction there will be a written agreement with local interests to pay 50% of the recreation development costs and to assume all costs for operation and maintenance, including replacement of recreation facilities.

(2) Under the second method, the Corps could proceed with recreation projects with 100% federal financing and Corps operation only if a system of user charges is put into effect to recover all operation and maintenance and replacement cost.

(3) Under the third method, the Corps may develop sanitation facilities at 100% federal cost if a non-Federal cost sharing partner cannot be obtained and development is required to meet urgent sanitation needs.

2. Structures:

The following structures exist at Stillhouse Hollow Dam:

- a. Earth filled rolled dam
 - (1) Earthen embankment section (8,080 feet)
 - (2) Dike section (5,894 feet)
- b. Uncontrolled broadcrested spillway (1,650 feet)
crest elevation 666.0
- c. Outlet works:
 - (1) Gate controlled 12 feet diameter conduit
 - (2) 2 (5-8" X 12 feet) hydraulic slide gates
- d. Plant structures
 - (1) Project Office
 - (2) Maintenance Building

3. Archeological and Paleontological Resources:

The National Park Service has the primary responsibility for coordinating the inventory and removal of the archeological and paleontological resources on the project. The Corps of Engineers has the responsibility to participate in salvage activities by furnishing available manpower and equipment for the removal of overburden and artifacts, protection of the sites, restoration of the sites after excavation, and other minor services as required. The Corps of Engineers had the primary responsibility to investigate areas prior to any construction to insure such historical sites will not be damaged or destroyed. A survey of the reservoir area was made in November 1960 and in March 1960 under the direction of the National Park Service, of the archeology and paleontology features of the region that would be adversely affected by the construction of Stillhouse Hollow Dam. The survey located eleven archeological sites, of which three sites were

recommended for extensive testing and six sites for limited testing. Two sites were excavated in 1964 and 1966 by the University of Texas. This report, "Excavations at Stillhouse Hollow Reservoir," by William M. Sorrow, Harry J. Shafer, and Richard E. Ross, Papers of the Texas Archeological Salvage Project No. 11, and published in August 1967 at Austin, Texas, is on file in the district office. The abstract to this report states, "Two stratified terrace sites in the area to be inundated by the Stillhouse Hollow Reservoir in Bell County, Texas, were excavated in 1964 and 1966. The Landslide site yielded a short sequence of early material that fills part of the gap between the Paleo-Indian Stage and what has been called the Early Archaic. The site provided information concerning the placement of the Gower and Martindale dart point types and the provisional type, Bell. The upper part of the sequence overlapped with the lower material from the second site, Evoe Terrace, providing a long sequence of point types for that area. The combined sequence has ten chronological units called local phases and as such, is postulated to be representative for central Texas as a whole." No paleontological prospects were reported in either survey.

4. Other Land Uses:

Government lands are used for recreation intensive use, recreation low density use, wildlife management areas, natural areas and special use areas, as well as for project operation and maintenance for flood control and water supply. See Section II, Land and Water Use Planning and Zoning, for detailed location and description of these areas.

5. Concessionaire

General:

There is one commercial concession located within the land and water areas of Stillhouse Hollow Dam. The concessionaire provides bait, fishing supplies, refreshments, wet boat storage, and gasoline. An additional concession will be required in the future as the development proposed in the 5-year plan is completed. However, a site is not proposed in this Master Plan.

A study will be conducted in conjunction with development of a Lakeshore Management Plan, Appendix F and a location will be proposed accordingly.

C. Resources

1. General:

Natural resources are identified as those assets of nature such as water, soil, vegetation, wildlife, scenic areas, etc. The development of the natural resources is most important toward reaching the carrying capacity of the lake and its surrounding lands for public use. The degree of carrying capacity at a project is classed as either ultimate or desired. The ultimate carrying capacity is defined as the final stage of development of the natural resources at a project which will enable the most people to visit, use, and enjoy the resources at the project but not necessarily protect the natural resources. The desired carrying capacity is the development and management of the natural resources which will enable the most people to visit, use, and enjoy the resources without endangering these same resources. For greater detail, see Section III, Plan of Development, of this Revised Master Plan.

2. Natural

a. Soils

(1) General Conditions:

Soil conditions within this area lend themselves to a variety of uses. However, care should be taken to provide rest periods for vegetative growth when deemed necessary. The desired carrying capacity of this project will be based primarily on the soil series, its ability to endure certain uses as determined from information provided by the Soil Conservation Service, the slope of the land, and a Soil Conservation Service interpretative report relating these aspects in a carrying capacity for each management area.

(2) Specifics:

(a) Soils Table 3, Pages 1-25 through 1-32.

(b) Soils Map, Plate 1.2 following Page 1-32.

b. Vegetation:

Vegetation consists of both land and aquatic plants.

These resources can be better analyzed and managed with respect to the project needs when both types of vegetation are considered.

(1) Land Plants:

The land plants at Stillhouse Hollow Lake are characteristic of those found in the Edwards Plateau and the Cross Timbers and Prairies resource complexes.

(a) Grasses and Forbs:

Native grasses in this region include purple lovegrass, big, little and silver bluestem, oldfield threeawn, sideoats and hairy gramas, buffalograss, tumble windmill grass, curly mesquite, fall witchgrass, muhly grass, vine-mesquite, switchgrass, Texas bluegrass, knot-root bristlegrass, indiagrass, meadow and snad dropseeds and Texas winter-grass. Forbs include ironweed, broomweed, western, giant and common ragweeds, Mexican sage, buffalogourd, yarrow, devilsclaw, Texas paintbrush, commandra, various smartweeds, pigweed, bitterweed, various flowers, Texas bluebonnet, slender, Texas and stueves lespedezas, prairie and rosering gaillardias, antelopehorn, various milkweeds, silver, Lindheimer, threeseed and Texas crotons, and various euphorbias as well as many others. Where desirable vegetation has been overused or abused, less desirable grasses, forbs and woody plants have invaded. These include various prickly pears, yuccas, junipers, baccharis, and mesquite. Introduced grasses in the area are johnsongrass, King Ranch bluestem, and coastal bermudagrass. Bermudagrass or buffalograss is recommended for planting at the lower elevation where periods of inundation may be encountered. A mixture of native grasses and forbs is desired for the higher sites.

(b) Woody Vegetation:

Trees, shrubs and woody vines in the region are varied due to the complexity of soils and site conditions. The area in the upper portion of the lake along the river contains such bottomland species as willow, cottonwood, sycamore, pecan, cedar and American elm, hackberry, live oak and Texas ash with forestiera, green ash, osage-orange, honeylocust and Texas oak as associations. Underbrush include Texas persimmon, chittamwood, Texas redbud, green briars, grapes, hawthorns, gray dogwood, mexicanbuckeye, Texas buckeye, buttonbush and elbowbush. The drier midrange sites contain live, Texas, Bigalow and Mohrs oaks, osage-orange, honey locust, Texas sophora, catclaw acacia, mexicanbuckeye, western soapberry, flameleaf and prairie sumacs, various junipers with yaupon, agarito, pistacia, honey mesquite, and Mexican, sand, and chicksasaw plums. The dry uplands have junipers, mesquite, blackjack, post and Bigalow oaks, honeylocust and yaupon.

(2) Aquatic Plants:

Aquatic weeds have not posed much of a problem since Lake construction with the recent exception of spiny naiad, which has encroached onto prime recreation contact areas (swimming beaches, piers, docking areas). The lake itself is relatively clear. Runoff from agricultural lands adjoining the lake and clarity of lake water may contribute to additional problems with submerged aquatics. Runoff contributes to a fertilizing effect of lake water, through the addition of nutrients utilizable by aquatic plant species. Various species of Pondweeds, bulrushes, cattails, and spikerush are located in patches about the reservoir, however, they are not considered detrimental to recreational users, unless they happen to also encroach into the prime recreation areas. Most obvious plants found in the lake are land oriented forms of black willow and cottonwood trees which become inundated on lake rise along shoreline margins. The spillway channel, in addition to the above vegetation, also supports shrub growths of baccharis. In the future herbicidal treatment may have to be initiated for control of the spiny naiad problem.

(b) Aquatic Plants-Stillhouse Hollow Lake:

| <u>Scientific Name</u> | <u>Common Name</u> | <u>Densities in Lake</u> |
|----------------------------|-----------------------|--------------------------|
| <u>Najas marina</u> | Spiny/or Marine Naiad | Moderate |
| <u>Potamogeton natans</u> | Floating Pondweed | Moderate |
| <u>Potamogeton nodosus</u> | Longleaf Pondweed | Moderate |
| <u>Eleocharis spp.</u> | Spikerushes | Sparse |
| <u>Scripus spp.</u> | Bulrushes | Sparse |
| <u>Typha spp.</u> | Cattails | Sparse |

c. Fish and Wildlife:

(1) Fish:

The following rough, game and forage fishes are known to be present in Stillhouse Hollow Lake.

(a) Rough Fish:

| <u>Scientific Name</u> | <u>Common Name</u> |
|------------------------------|-------------------------|
| <u>Ictalurus melas</u> | Black bullhead catfish |
| <u>Ictalurus natalis</u> | Yellow bullhead catfish |
| <u>Aplodinotus grunniens</u> | Freshwater drum |
| <u>Lepisosteus osseus</u> | Longnose gar |
| <u>Lepisosteus productus</u> | Spotted gar |
| <u>Ictiobus bubalus</u> | Smallmouth buffalo |
| <u>Carpionodes carpio</u> | River carpsucker |
| <u>Moxostoma congestum</u> | Grey redhorse |
| <u>Cyprinus carpio</u> | Common carp |

(b) Game Fish:

| | |
|--------------------------------|-----------------------|
| <u>Micropterus punctulatus</u> | Kentucky spotted bass |
| <u>Micropterus salmoides</u> | Largemouth bass |
| <u>Micropterus dolomieu</u> | Smallmouth bass |
| <u>Stizostedion vitreum</u> | Walleye |

Chaenobryttus gulosus

Lepomis cyaneus

Lepomis microlophus

Lepomis macrochirus

Lepomis humilis

Lepomis megalotis

Pomoxis annularis

Morone chrysops

Ictalurus punctatus

Pylodictus olivaris

Warmouth

Green sunfish

Redear sunfish

Bluegill sunfish

Orangespotted sunfish

Longear sunfish

White crappie

White bass

Channel catfish

Flathead catfish

(c) Forage Fishes:

Dorosoma cepedianum

Notropis venustus

Notropis lutrensis

Notropis volucellus

Notropis buechanani

Pimephales vigilax

Pimephales promelas

Campostoma anomalum

Schilbeodes mollis

Zygionectes notatus

Gambusia affinis

Hadropterus scierus

Percina caprodes

Notemigonus crysoleucas

Notropis atherinoides

Gizzard shad

Blacktail shiner

Red shiner

Mimic Shiner

Ghost shiner

Bullhead minnow

Fathead minnow

Stoneroller

Tadpole madtom

Blackstripe topminnow

Common mosquitofish

Dusky darter

Logperch

Golden shiner

Emerald shiner

(2) Wildlife:

Wildlife at Stillhouse Hollow Dam includes such resident species as white-tailed deer, Rio Grande turkeys, bobwhite quail, fox squirrel, cottontail rabbit, swamp rabbit, jack rabbit, beaver, raccoon, gray fox, skunk, coyote, bobcat, nutria, and armadillo. Non resident waterfowl use the lake for feeding and resting during migration. The predominate migrating species are mallard, pintail, greenwinged teal, and mourning dove.

d. Water:

Surface waters, with specific and limited exceptions, should be suitable for water contact sports and other human uses in recreation activities not involving significant risk of ingestion. Lakes now receive the most concentrated and varied recreational use of any waters and provide enjoyment to a great number of people. Lakes serve as settling basins which intensify the many problems associated with water and water use. They are the center of many divergent and conflicting interests and desires. Competition is increasing for the pursuit of such water sports as fishing, waterfowl hunting, skin diving, skiing, swimming and pleasure boating. The quality of the lake water at Stillhouse Hollow Dam is acceptable for recreational purposes according to the United States Public Health Service standards based on semiannual chemical analyses and monthly profiles of dissolved oxygen and temperature.

TABLE 3

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, STILLHOUSE HOLLOW DAM, TEXAS

| SOIL RATINGS AND ADVERSE FEATURES AFFECTING: | | | | | | | | | | |
|--|-----------------------------|--|--|--|---|---|--|---|--|---|
| Soil Series | <u>Sewage Disposal</u> | | Construction | Traffic Ways | Camp Areas | Picnic Areas | Play-grounds | Paths & Trails | Wildlife Suitability | Range Sites, Production and Plants |
| | Filter Fields | Lagoons | | | | | | | | |
| TARRANT Clayey 14 | Severe: depth to bedrock | Severe: depth to bedrock, stones | Severe: bedrock within 20", stoniness, shrink-swell | Severe: stones, depth to bedrock, slope | Severe: texture, stones, coarse frag-ments on surface | Severe: texture, stones, coarse frag-ments on surface | Severe: texture bedrock stones 6% slopes coarse frag-ments | Severe: texture stones coarse frag-ments on surface | Openland: Poor Woodland: Fair to good Wetland: Very poor | Low Stony Hill: 900# - 1,700# * Excellent Condition: sideoats grama, little bluestem, indian-grass, fall switchgrass, green sprangletop, curly mesquite, bush sunflower, guara, orange zexemia, live oak, and shin oak. Pasture Group: None. |
| VENUS Clay Loam 15 | Slight: | Severe: perme-ability | Moderate: corrosivity | Moder-ate: traffic support-ing capacity | Loam: Slight Clay Loam: Moder-ate texture | Loam: Slight Clay Loam: Moder-ate texture | 0-6% slope: Slight to Moder-ate texture 6%+ slope: Severe-slope | Loam: Slight Clay Loam: Moder-ate texture | Openlands: Good Woodlands: Good Wetlands: Very poor | Deep Upland: 3,500# - 5,500# Excellent Condition: little bluestem, sideoats grama, indiagrass, switch-grass, big bluestem. Pasture Groups: Friable Clayey Upland - Medium to high potential for bermudagrass and kleingrass. Sloping Friable Clayey Upland - Medium potential for bermudagrass and kleingrass. |

TABLE 3

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, STILLHOUSE HOLLOW DAM, 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 | | | | | | | | |
| SAN SABA Clay 12 | Severe: Excessive permeability, bedrock | Severe: Bedrock | Severe: Low strength, high shrink-swell, corrosivity | Severe: Low strength, high shrink-swell, bedrock | Severe: permeability, texture | Severe: texture | Severe: permeability, texture | Severe: texture | Openland: Good Woodland: Very poor Wetland: Very poor | Deep Upland: 3,500# - 6,000# Excellent Condition: Little bluestem, big bluestem, indiagrass, switchgrass, sideoats grama, tall dropseed, Texas wintergrass and Liveoak. Pasture Group: Heavy Clayey Upland-adapted species include improved bermudagrass, kleingrass, King Ranch bluestem, Kleberg bluestem. |
| SPECK Clay 13 | Severe: Bedrock, permeability | Severe: Bedrock | Severe: Bedrock, corrosivity | Severe: Bedrock | Moderate: permeability, texture | Moderate: texture | Severe: Bedrock | Moderate: texture | Openland: Good Woodland: Good Wetland: Poor | Redland: 2,000# - 4,500# Excellent Condition: little bluestem, indiagrass, sideoats grama, Texas wintergrass, buffalograss, Pasture Group: Shallow Clayey - adapted species include improved bermudagrass, King Ranch bluestem, Kleberg bluestem. |

TABLE 3

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, STILLHOUSE HOLLOW DAM, 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 | | | | | | | | |
| PURVES Clay 10 | Severe: depth to bedrock | Severe: depth to bedrock | Severe: depth to bedrock, high shrink-swell potential | Severe: depth to bedrock, high shrink-swell potential | Severe: texture | Severe: texture | Severe: texture, depth to bedrock | Severe: texture | Openland: Poor Woodland: Good Wetland: Poor | Rolling Prairie: 2,500# - 4,000# * Excellent Condition: little bluestem, big bluestem, indiagrass, sideoats grama, tall dropseed, silver bluestem, buffalograss, Texas wintergrass, Engelmann daisy annual forbs, and scattered live oak motts. Pasture Group: Shallow Clays - production potential is low to medium for improved bermudagrass, King Ranch bluestem and kleberg bluestem. |
| REAL Gravelly Clay Loam 11 | Severe: depth to rock | Severe: 0-8%, slope depth to rock 8%+ slope | Moderate: depth to rock, slope | Moderate: depth to rock | 0-8%: Moderate-small stones 8%+ moderate to severe-slope and stones | 0-8%: Moderate-small stones 8%+ moderate to severe-slope and stones | 0-8%: Moderate-small stones 8%+ moderate to severe-slope and stones | 0-8%: Moderate-small stones 8%+ moderate to severe-slope and stones | Openland: Poor to very poor Woodlands: N.A. Wetlands: Very poor | Adobe: 1,500# to 3,500# * Excellent Condition: little bluestem, big bluestem, indiagrass, sideoats grama. Pasture Group: None. |

TABLE 3

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, STILLHOUSE HOLLOW DAM, 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 | | | | | | | | |
| LEWISVILLE Silty Clay 8 | Moderate: permeability | Moderate: 0-7% slopes, permeability Severe: 7-10% slopes | Moderate: corrosivity Severe: 8-10% slopes | Severe: low strength, shrink-swell potential | Severe: soil texture | Severe: soil texture | Severe: soil texture | Severe: soil texture | Openland: Good Woodland: Good Wetlands: Very poor | Rolling Blackland: 3,000# - 5,000# * Excellent Condition: indiangrass, big bluestem, switchgrass, little bluestem, Florida paspalum, and Virginia wildrye. Pasture Group: Friable Clayey Upland-adapted species include improved bermudagrass, johnsongrass, King Ranch bluestem, and lovegrass. |
| PATRICK Clay Loam 9 | Severe: contamination risk | Severe: very high percolation rate below 22" | Moderate: corrosion potential, shrink-swell, bearing strength | Moderate: shrink-swell, traffic supporting capacity | Severe: soil texture | Severe: soil texture | Severe: soil texture slope | Severe: soil texture | Openland: Good Woodland: Poor Wetland: N.A. | Chalky Ridge Site: 3,500# * Excellent Condition: little bluestem, indiangrass, sideoats grama, and Texas wintergrass. Pasture Group: Friable Clayey Uplands - Medium to high potential for improved bermudagrass and kleingrass. |

TABLE 3

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, STILLHOUSE HOLLOW DAM, 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 | | | | | | | | |
| DENTON Clay 5 | 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: Good Woodland: Good Wetland: N.A. | Clay Loam Range: 3,500# - 5,500# * Excellent Condition: little bluestem, sideoats grama, indiangrass, switchgrass, tall dropseed, big bluestem, and Texas wintergrass. Pasture Group: Clayloam Uplands adapted to improved bermudagrass, King Ranch bluestem, and johnsongrass. |
| FRIO Silty Clay 6 | Severe: permeability | Severe: excess humus, frequent flood | Severe: Bracing strength | Severe: flooding, strength | Severe: texture, flooding | Severe: texture, flooding | Severe: texture, flooding | Severe: texture, flooding | Openlands: Very poor Woodlands: Poor Wetlands: Very poor | Loamy Bottomland: 3,000# - 5,500# * Excellent Condition: big bluestem, little bluestem, vine-mesquite, and pecan trees. Pasture Groups: Bottomland Clays - Medium to high potential for improved bermudagrass, indiangrass and kleingrass. |
| KRUM Silty Clay 7 | Severe: permeability | Slight: 0-2% slopes Moderate: 2-7% slopes | Severe: shrink-swell, corrosivity, low strength | Severe: low strength, shrink-swell | Severe: texture | Severe: texture | Severe: texture | Severe: texture | Openland: Excellent Woodland: Good Wetlands: Poor | Rolling Blackland: 4,500# - 8,000# * Excellent Condition: little bluestem, big bluestem, indiangrass, eastern grama, switchgrass, sideoats grama, Virginia wildrye and vine-mesquite. Pasture Group: Friable Clayey Upland-adapted species include improved bermudagrass, johnsongrass, kleingrass indiangrass, switchgrass, weeping lovegrass, King Ranch bluestem, Gordo bluestem, and medio bluestem. |

TABLE 3

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, STILLHOUSE HOLLOW DAM, 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>BRACKETT</u> Loam | Severe: permeability | Moderate: (less than 7% slope) permeable substrata | Severe: (more than 8% slope) Corrosivity, Slope | Moderate: traffic supporting capacity | Slight: permeability | Slight: 0-8% slopes Moderate: 8-15% slope Severe: over 15% slope | Moderate: permeability Severe: over 6% slope | Moderate: texture, slope Severe: over 25% slopes | Openland: Poor Woodland: Good Wetland: Poor | Adobe and Steep Adobe: 1,000# - 3,000# Excellent Condition: little bluestem, tall grama, tall dropseed, silver bluestem, low panicums, and sideoats grama. Pasture Groups: None. |
| 3 | | | | | | | | | | |
| <u>CRAWFORD</u> Clay | Severe: permeability, depth to rock | Severe: Depth to rock | Severe: Very high shrink-swell | Severe: Depth to rock, very high shrink-swell | Severe: texture, very slow permeability | Severe: texture | Severe: texture, very slow permeability | Severe: texture | Openland: Good Woodland: Good Wetland: Very poor | Redland: 3,500# - 5,500# * Excellent Condition: big bluestem, little bluestem, indiagrass, plain lovegrass, canada wildrye, sideoats grama, Texas wintergrass, hairy dropseed, silver and cane bluestem. Pasture Groups: Heavy Upland clay - High potential for improved bermuda-grass or kleingrass. |
| 4 | | | | | | | | | | |

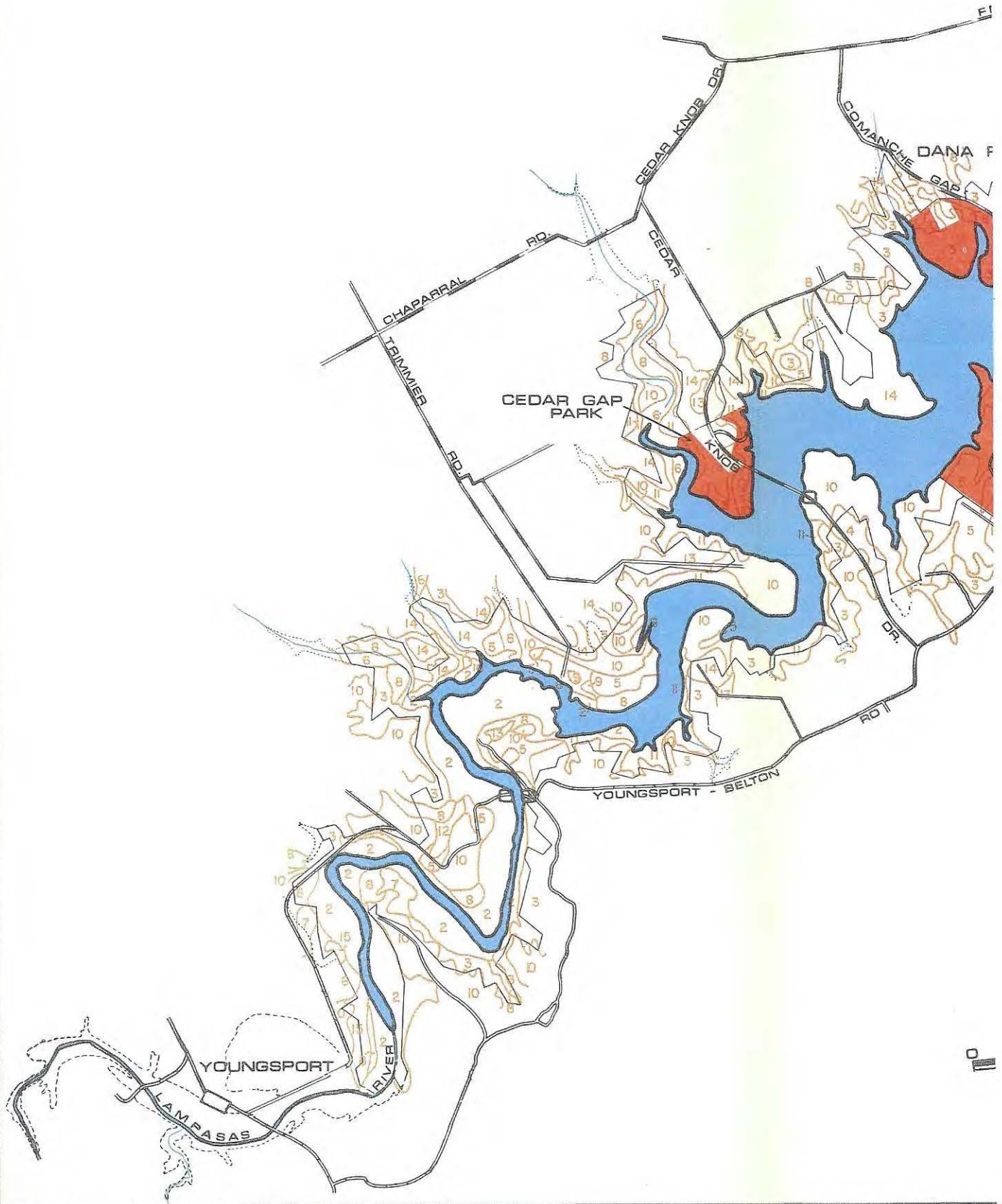
TABLE 3

DEGREE OF LIMITATIONS AND MAJOR SOIL FEATURES AFFECTING SELECTED USE, STILLHOUSE HOLLOW DAM, TEXAS

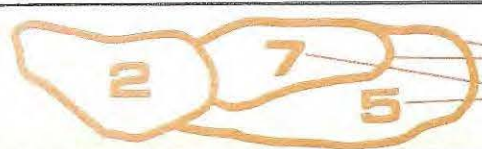
| SOIL RATINGS AND ADVERSE FEATURES AFFECTING: | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|
| Soil Series | Sewage Disposal | | Construction | Traffic Ways | Camp Areas | Picnic Areas | Play-grounds | Paths & Trails | Wildlife Suitability | Range Sites, Production and Plants |
| | Filter Fields | Lagoons | | | | | | | | |
| ALTOSA Silty Clay 1 | Moderate: perme-ability | Moderate: perme-ability | Moderate: Bracing strength, shrink-swell, Corrosivity | Severe: Traffic support- ing capacity | Severe: texture | Severe: texture | Severe: texture | Severe: texture | Openland fair to poor Woodlands: Very poor Wetlands: Very poor | Rolling Blackland: 3,800# - 6,500# * Excellent condition: indiangrass, big bluestem, little bluestem, Florida paspalum, Virginia wildrye. Pasture Groups: Friable Clayey Upland - nearly level to steep- Medium to high production potential for species such as kleingrass, improved bermudagrass, King Ranch bluestem, indiangrass and weeping lovegrass. |
| BOSQUE Fine Clay Loam | Moderate: perme-ability Occasion-ally or frequently flooded: Severe- subject to flooding | Moderate: perme-ability Occasion-ally or frequently flooded: Severe- subject to flooding | Moderate: low-strength | Moderate: traffic support- ing capacity | Loam texture: slight clay loam: Moder-ate texture | Loam texture: slight clay loam: Moder-ate texture | Loam texture: slight clay loam: Moder-ate texture | Loam texture: slight clay loam: Moder-ate texture | Openland: Good to poor (flooded) Woodland: Good to fair (flooded) Wetlands: Very poor | Bottomland: 3,500# - 6,500# * Excellent condition: little bluestem, big bluestem, indiangrass, switch- grass, sideoats grama, Virginia wildrye, pecan and elm trees. Pasture Group: Loamy Bottomland. High potential for improved bermuda- grass, johnsongrass and indiangrass. |

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.



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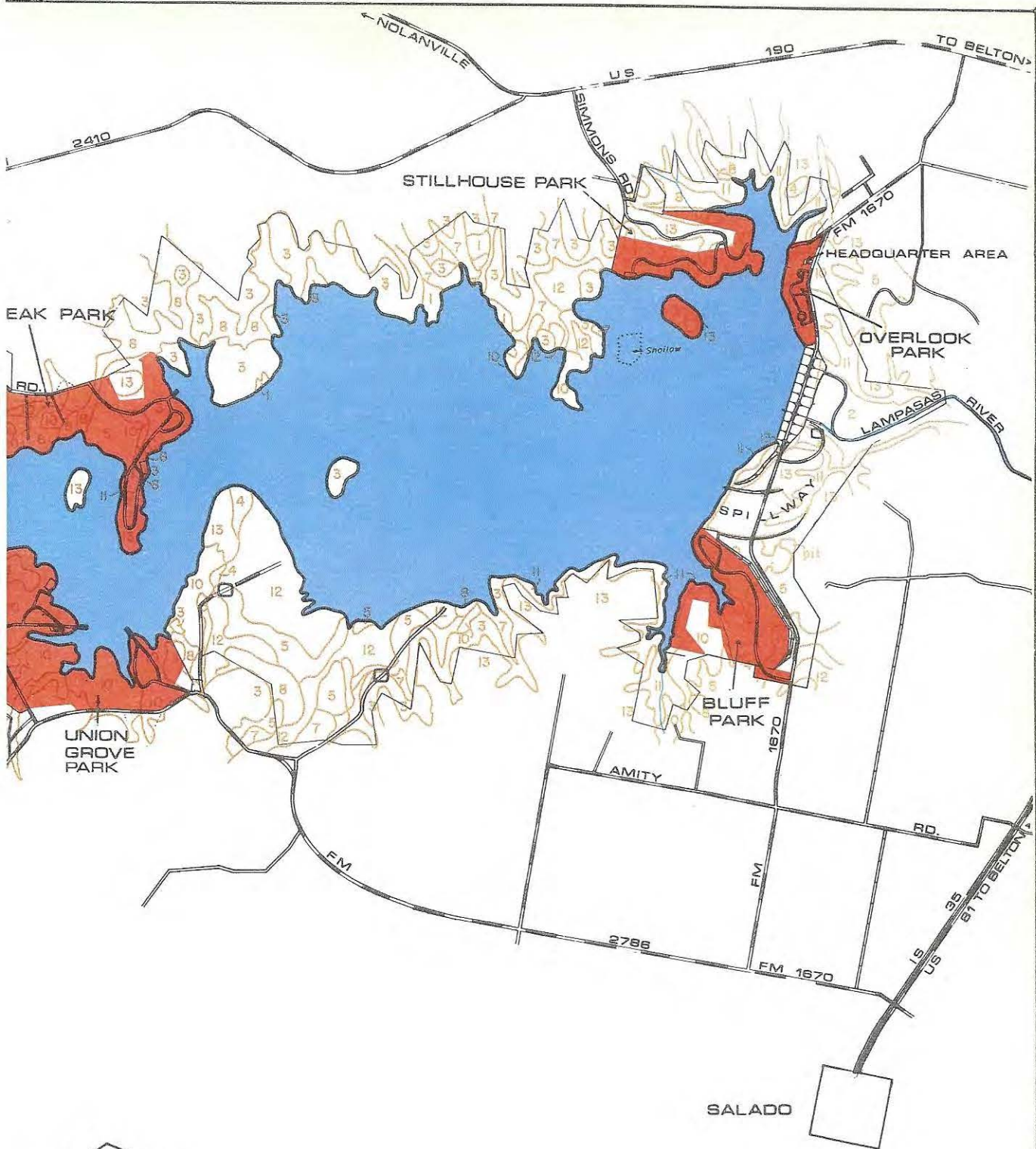


LEGEND

SOIL TYPE BOUNDARY

SOIL TYPE AREA
SEE NARRATIVE
FOR DESCRIPTION

OPEN
LOW
RECI
IN



IATIONS - RECREATION
 ENSIVE USE-----
 N DENSITY USE-----
 REATION LAND
 ENSIVE USE-----

WATER AREA-----
 ROAD (PAVED)-----
 ROAD (GRAVEL)-----
 ROAD (DIRT)-----
 GOV'T. FEE LINE -----

STILLHOUSE HOLLOW DAM
 GENERAL SOILS MAP
 LAMPASAS RIVER, TEXAS
 DATE DEC. 74

PLATE
 1.2
 NUMBER

II. RESOURCE PLANNING AND MANAGEMENT

2.01 General:

A. Environmental Setting:

Stillhouse Hollow Dam is located in an area which is predominantly agricultural. The population of this region is rural-farm. However, use by military personnel, stationed at Fort Hood, located 14 miles to the northeast, dominates all local use of the project. Development of the recreational facilities will create a major recreational resource for the region, and will attract visitors for fishing, boating, swimming, picnicking, and camping. Climate, topography, accessibility, tree cover, fish, wildlife, and the availability of facilities and services are some of the factors which determine public use of recreational facilities for the enjoyment of outdoor recreation. Other factors such as the economic status, the population within the zones of influence; the relative proximity of Interstate Highway 35, a major north-south artery; as well as the availability of other recreational facilities in the vicinity, all have a relative bearing on the number of visitors a project of this type attracts for purposes of recreation.

B. Objectives:

The basic objective of land planning is to provide proper stewardship of the land and its resources through protection, development, and management. To help meet present and future needs in consonance with the land capability and aesthetics of the area, lands will be allocated as changing needs and priorities dictate. All Federally owned project lands are considered necessary to meet the current and future needs of the project. Revegetation will be accomplished primarily through comprehensive vegetative management plans and practices. Erosion control and revegetative practices will be in accordance with the Resource Management Plan required by Engineer Regulation 1130-2-400 and in cooperation with Federal, State, and local governments.

2.02 Land and Water Planning

A. Land Planning

1. General Planning:

A general land use planning map showing the various land allocations is presented as Plate 2.1 following Page 2.06. A key indicating the types of usage and acreage involved is presented as Table 4 on page

2. Types of Usage

a. Recreation - Intensive Use:

High intensity public use areas are Park areas which support a variety of activities and physical developments. Selection of these areas was based upon the following site characteristics: Terrain and vegetative resources and their adaptability to physical development; ease of public access; shoreline and water characteristics; and overall distribution of park areas around the project. Individual descriptions and complete development details for each park area is contained in Section III, Plan of Development.

b. Recreation - Low Density Use:

1. General:

These lands are set aside for the management of resources for multiple recreation uses not requiring support facilities, such as cross country hiking, informal nature study, photography, etc. Resource management plans will restore, enhance and protect the area's resources. These areas provide scenic vistas and buffer zones between Federal and adjacent non-government land. Hunting will be allowed and only foot traffic will be permitted in these areas. No physical development of recreational facilities are planned for these areas since activities which require such facilities are not compatible with the area's designation.

2. Minor Access Points:

These areas are to be used as a management tool to provide central vehicle access and visitor distribution points for low density activities in the adjacent government lands. Perimeter fencing should be utilized, where needed, to restrict vehicles to the access corridors. Development will be limited to gravel parking areas. Frame or portable toilets will be provided when conditions warrant. Six minor access points are shown on the land use plate. The minor access point located at the south bridge abutment of Cecar Knob road is a popular area for boat launching, therefore a plan for a launching complex and a separate cost estimate has been developed for this area and is provided in Section III of this Master Plan. (See Plate 3.8).

c. Wildlife Areas:

Areas set aside for the management of wildlife resources. These lands are intended to provide, through proper management, suitable habitat for propagation and preservation of native wildlife species and to promote a greater variety of species. Resource management plans will be directed toward soil, vegetative, and habitat improvement. Hunting will be permitted in these areas, subject to applicable game laws. Hunting will be controlled when necessary to protect rare or endangered wildlife. These areas will also be available for other low density recreation activities. Management measures for the safekeeping of rare and endangered wildlife may require temporary closure of parts, or all, of the designated hunting areas.

d. Project Operations:

This area is required for normal operating procedures and emergency flood control, such as the dam, pertinent works, administrative office area and compound, and spillway.

e. Natural Area:

This area is for preservation of scientific and ecological values. This area will be managed to perpetuate different species of fauna or flora. Hunting, bird watching, photography, and nature study or enjoyment will be permitted, but grazing will be limited to management intensities in this area.

f. Recreation Lands:

These areas were purchased specifically for recreation purposes and were allocated for any recreation use. These areas, combined with adjacent Operations-Recreation-Intensive Use Areas make up the designated park areas.

3. Zoning and Control:

Lands will be marked according to corresponding allocated land uses on the Land Use Planning Plate with appropriate signs. For example, natural/recreation areas, nature trails, wildlife areas, picnic areas, camping areas, and beaches can be designated by conventional or symbol signs identifying their intended use. Hazardous areas will be marked for safety of the visiting public. Where necessary, land areas will be fenced to control people, vehicles, and livestock.

4. Interim Uses:

a. General:

The resource manager will maintain an up-to-date listing of all outgrants and their locations which will be readily available at the project office.

b. Outgrants:

The Land Use Planning Map, Plate 2.1 indicates the proposed land allocations. Grazing is a secondary management tool which may be used as a vehicle to install measures for soil protection and vegetative restoration, and improvement of wildlife habitat. Lessees will be

encouraged to provide a combination of these measures through selected cultural practices and through rental abatement where warranted. Other interim uses may consist of short-term grants to other public agencies and non-profit organizations. Any interim use that degrades aesthetic or natural values will be cancelled. All outgrants will be closely monitored in order to maintain and perpetuate their long-term use.

(1) Agri-Grazing Leases:

Outgrants for grazing will be made only when needed for selective management of vegetation and will not exceed three years nor six months in any one year. Agricultural or grazing programs will be designed to perform as management tools in the maintenance of vegetative, wildlife, natural, or esthetic areas. Stocking will be established on an animal-unit per month (AUM) basis in accord with the land's carrying capacity and the objectives of habitat management. Hunting will be considered as a priority use with access by water, or on foot, guaranteed. A full discussion of the use of outgrants will be given in the Wildlife Management Plan, Appendix D, of this Revised Master Plan.

(2) Group and Private Club Areas:

Churches, Scouts, and other quasi public organizations with compatible recreation programs will be encouraged to share available sites to insure that the sites will be effectively utilized by the greatest number of people. This will result in greater utilization of project lands and at the same time, reduce the cost of development, maintenance, and operation of the areas for these organizations. There are no plans for long term leases of group or private club areas at Stillhouse Hollow Dam.

c. Easements:

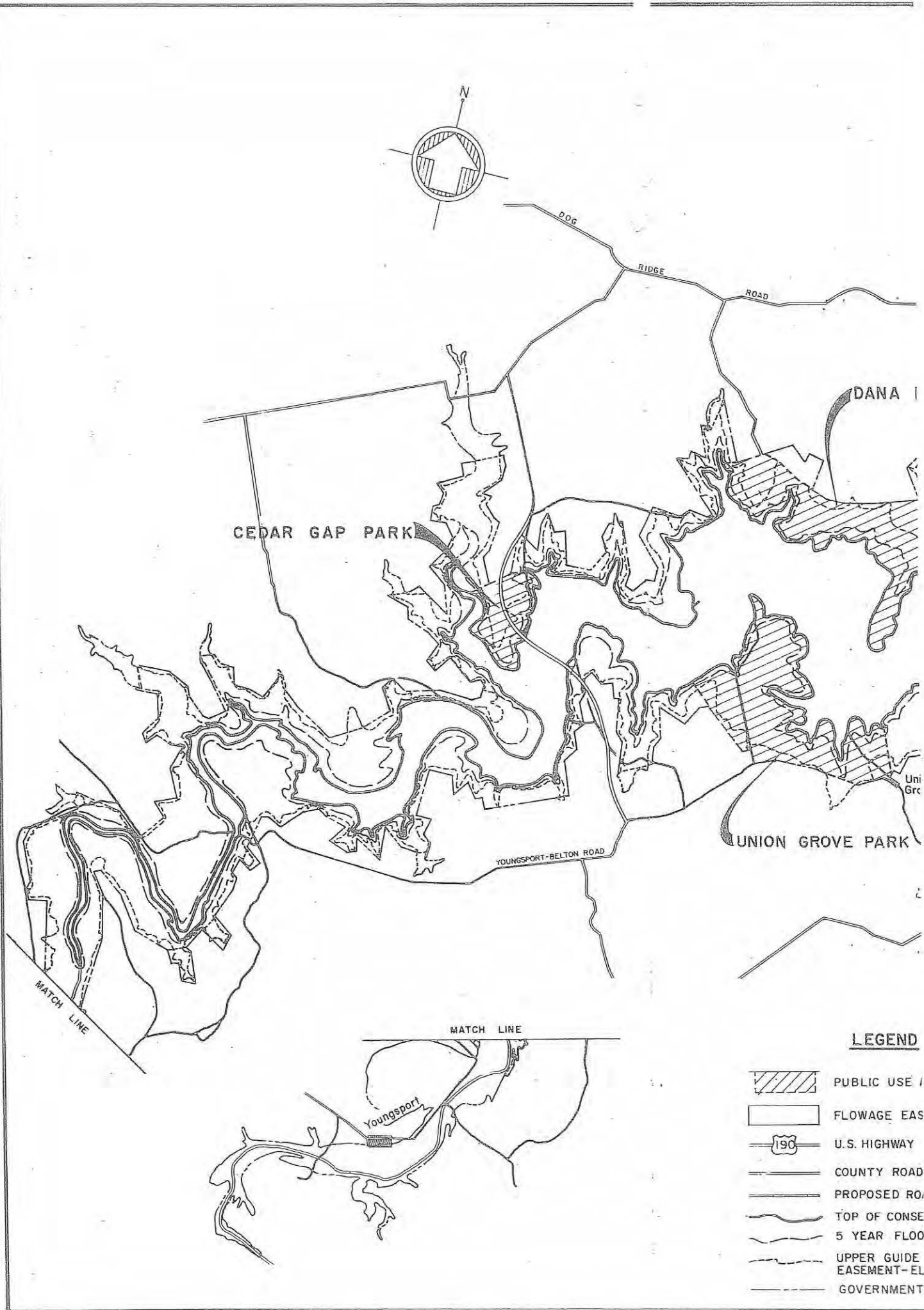
All outgrants, including easements for roads and utility lines, will be processed on an individual case basis through the Project Resource Manager with final approval granted by higher authority. The policy of attempting to have roads and utility lines located on privately owned land will be adhered to, where feasible, in order to minimize any adverse aesthetic effect on Government-owned lands.

TABLE 4


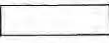
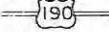







LAND USE PLANNINGLAND RESOURCE ALLOCATION

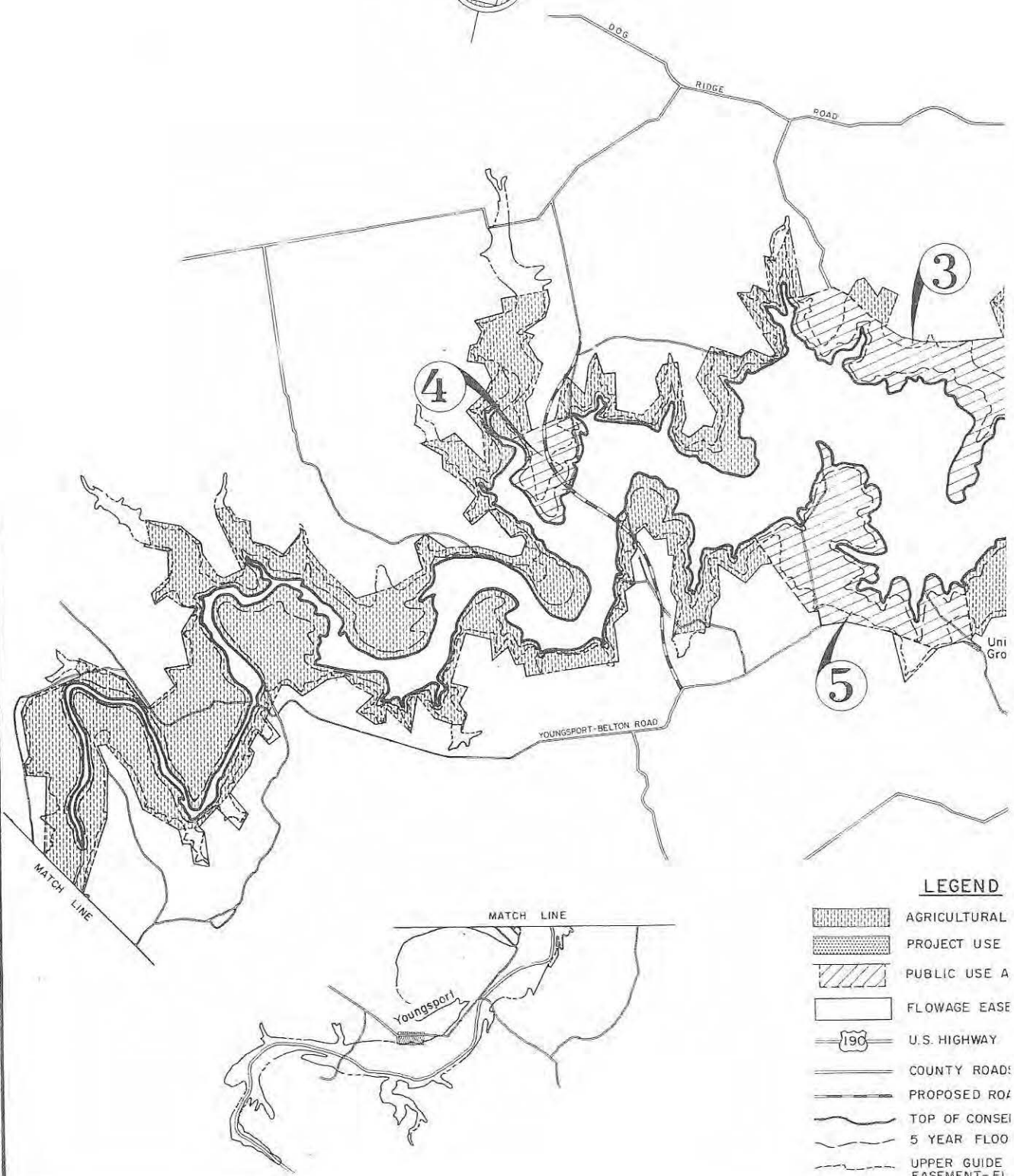
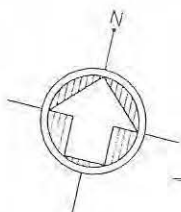
| Recreation - Intensive Use | Acreage | Totals |
|----------------------------|--------------|---------------|
| Overlook Park | 61 | |
| Stillhouse Park | 292 | |
| Dana Peak Park | 613 | |
| Cedar Gap Park | 153 | |
| Union Grove Park | 547 | |
| Bluff Park | 268 | |
| | <u>1,934</u> | <u>*1,934</u> |
| Recreation - Low Density | | |
| Minor Access Points (6) | 12 | |
| All Other Area | 2,404 | |
| | <u>2,416</u> | <u>2,416</u> |
| Natural Area | | 230 |
| Wildlife Management | | |
| Management Area 1 | 534 | |
| Management Area 2 | 391 | |
| Management Area 3 | 486 | |
| Management Area 4 | 392 | |
| Management Area 5 | 555 | |
| Management Area 6 | 312 | |
| Management Area 7 | 1,056 | |
| | <u>3,726</u> | <u>3,726</u> |
| Project Operations | | <u>627</u> |
| TOTAL LAND USE ACREAGE | | 8,933 |
| TOTAL WATER USE ACREAGE | | <u>6,430</u> |
| TOTAL FEE ACREAGE | | 15,363 |
| TOTAL LAND EASEMENT | | <u>882</u> |
| TOTAL ACREAGE | | 16,245 |

* Approximately 236 acres of recreation land (land acquired specifically for recreation use) is included in this total. Locations of Recreation Lands are shown on The Land Use Planning Map.






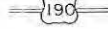




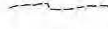


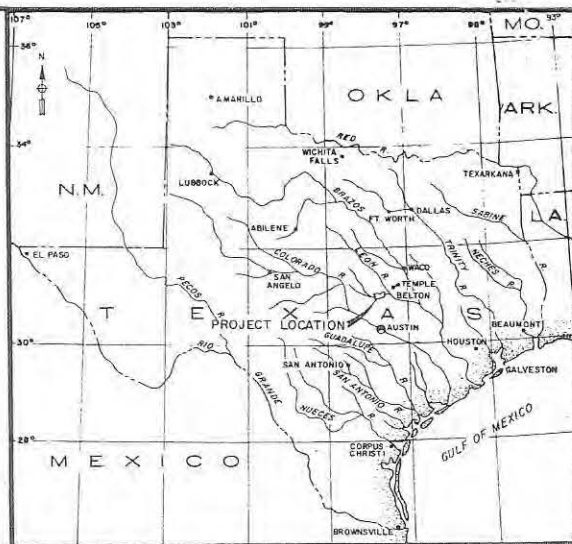
LEGEND

-  PUBLIC USE /
-  FLOWAGE EAS
-  U.S. HIGHWAY
-  COUNTY ROAD
-  PROPOSED RO,
-  TOP OF CONSE
-  5 YEAR FLOO
-  UPPER GUIDE
-  EASEMENT-EL
-  GOVERNMENT



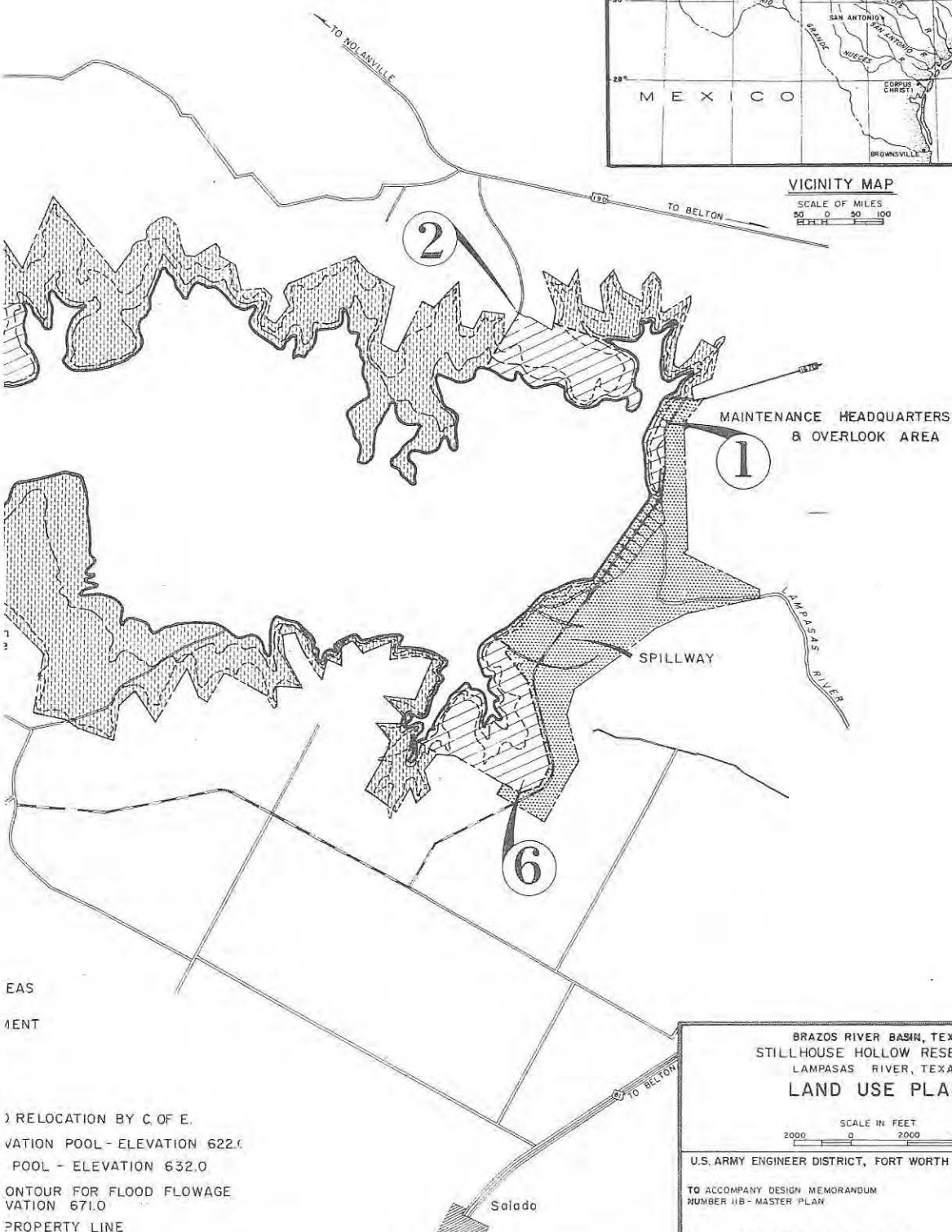
LEGEND

-  AGRICULTURAL
-  PROJECT USE
-  PUBLIC USE A
-  FLOWAGE EASE
-  U.S. HIGHWAY
-  COUNTY ROAD
-  PROPOSED ROAD
-  TOP OF CONSERVATION
-  5 YEAR FLOOD
-  UPPER GUIDE EASEMENT-EL
-  GOVERNMENT



VICINITY MAP

SCALE OF MILES
50 0 50 100
MILES



BRAZOS RIVER BASIN, TEXAS
STILLHOUSE HOLLOW RESERVOIR
LAMPASAS RIVER, TEXAS
LAND USE PLAN

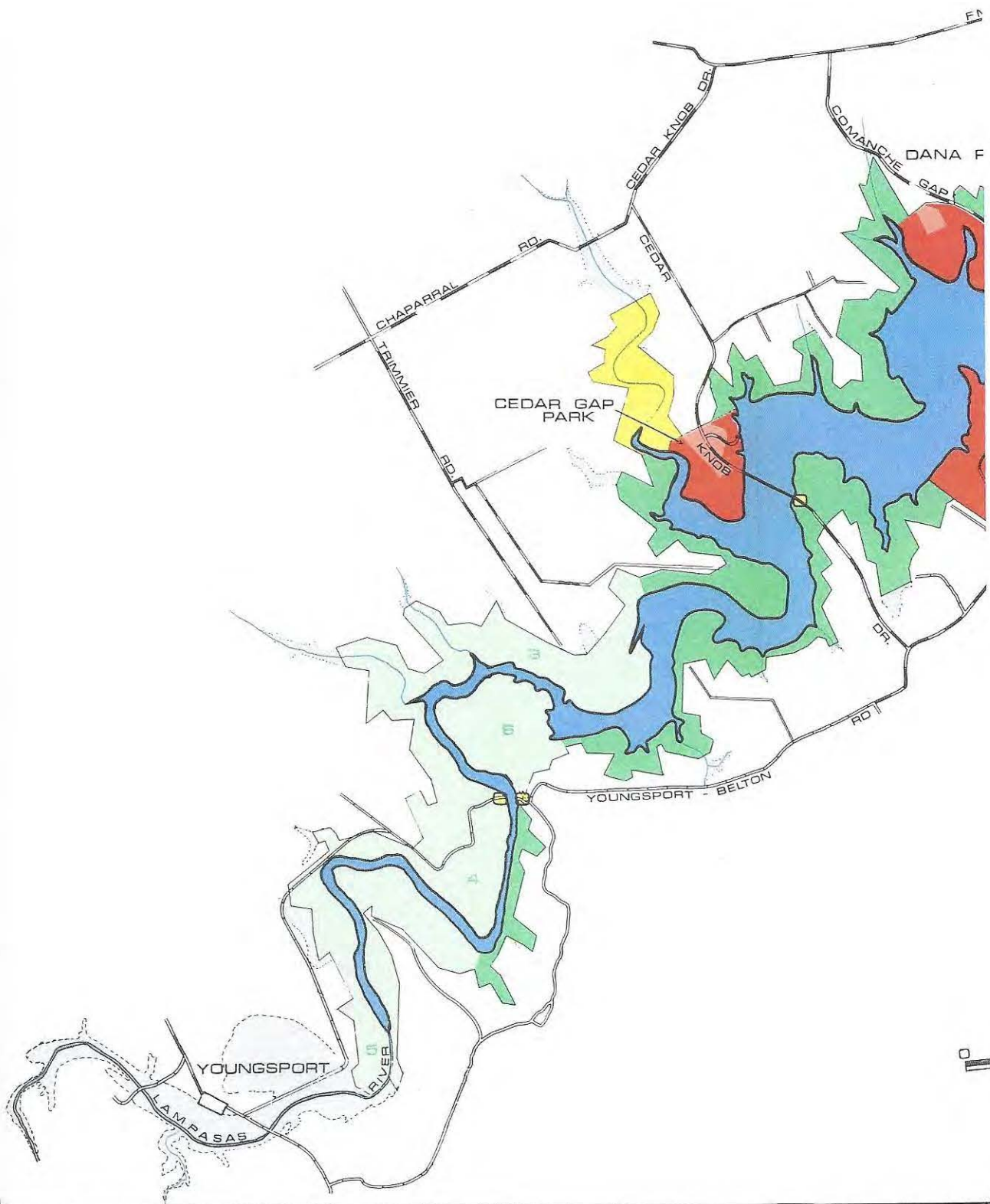
SCALE IN FEET
2000 0 2000 4000

U.S. ARMY ENGINEER DISTRICT, FORT WORTH SEPTEMBER 1963

TO ACCOMPANY DESIGN MEMORANDUM
NUMBER 11B - MASTER PLAN

FILE. BRAZ 512-24 NO. 11B PLATE 26

RELOCATION BY C. OF E.
VATION POOL - ELEVATION 622.0
POOL - ELEVATION 632.0
ONTOUR FOR FLOOD FLOWAGE
VATION 671.0
PROPERTY LINE



U. S. ARMY
ENGINEER DISTRICT
FORT WORTH
FT. WORTH, TEXAS

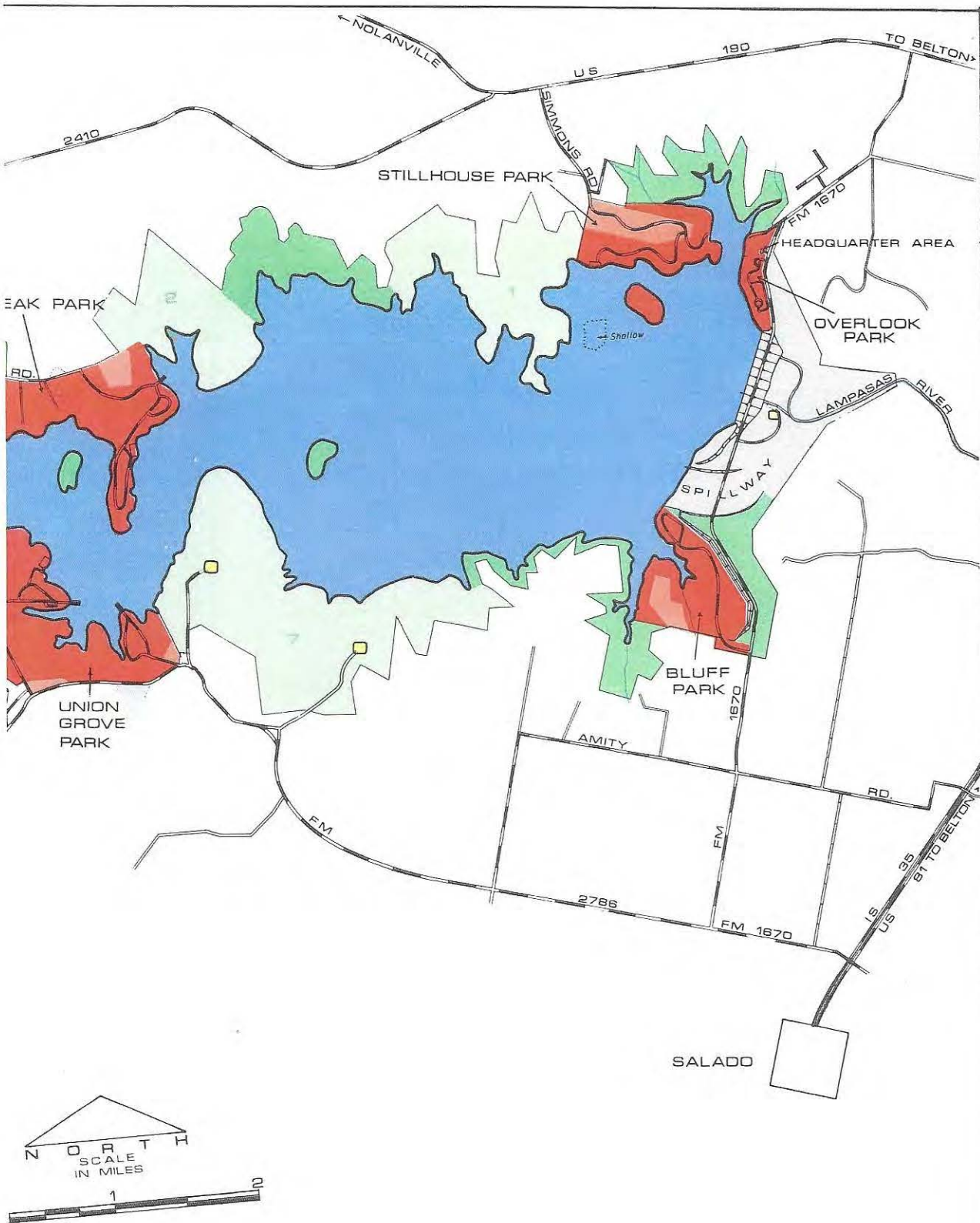
LEGEND

REFERENCE NUMBER-----3
MINOR ACCESS POINT-----O

OPERATIONS
PROJECT OPERATION-----
WILDLIFE MANAGEMENT-----
NATURAL AREA-----
FLOWAGE EASEMENT-----

LAND ALLOCA

OPEI
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IN



ION

ATIONS - RECREATION
 INTENSIVE USE
 MODERATE DENSITY USE
 WATER AREA
 INTENSIVE USE

WATER AREA
 ROAD (PAVED)
 ROAD (GRAVEL)
 ROAD (DIRT)
 GOV'T. FEE LINE

STILLHOUSE HOLLOW DAM
 LAND USE PLANNING
 LAMPASAS RIVER, TEXAS
 DATE DEC. 74

PLATE

2.1

NUMBER

B. Water Use Planning

1. General:

A water use planning map (Plate 2.2) indicates various restricted areas have been prepared so that a water safety program identifying the restricted areas can be implemented.

2. Zoning and Restrictions

a. Swimming Areas:

Beaches and swimming areas located in designated park areas will be so identified by buoys and proper signs. Only swimming and related activities are to be allowed in these areas. No boating or fishing will be permitted.

b. Restricted Areas: (Outlet and Intake Structures)

Water areas within 300 feet of outlet and intake structures are restricted from public use and will be so marked.

c. Low Speed Boating Areas:

Congested areas, such as boat ramp and marina mooring areas where high speed boating and the associated wakes create a potential for accidents and property damage, are designated as low speed boating areas.

d. Shallow Areas:

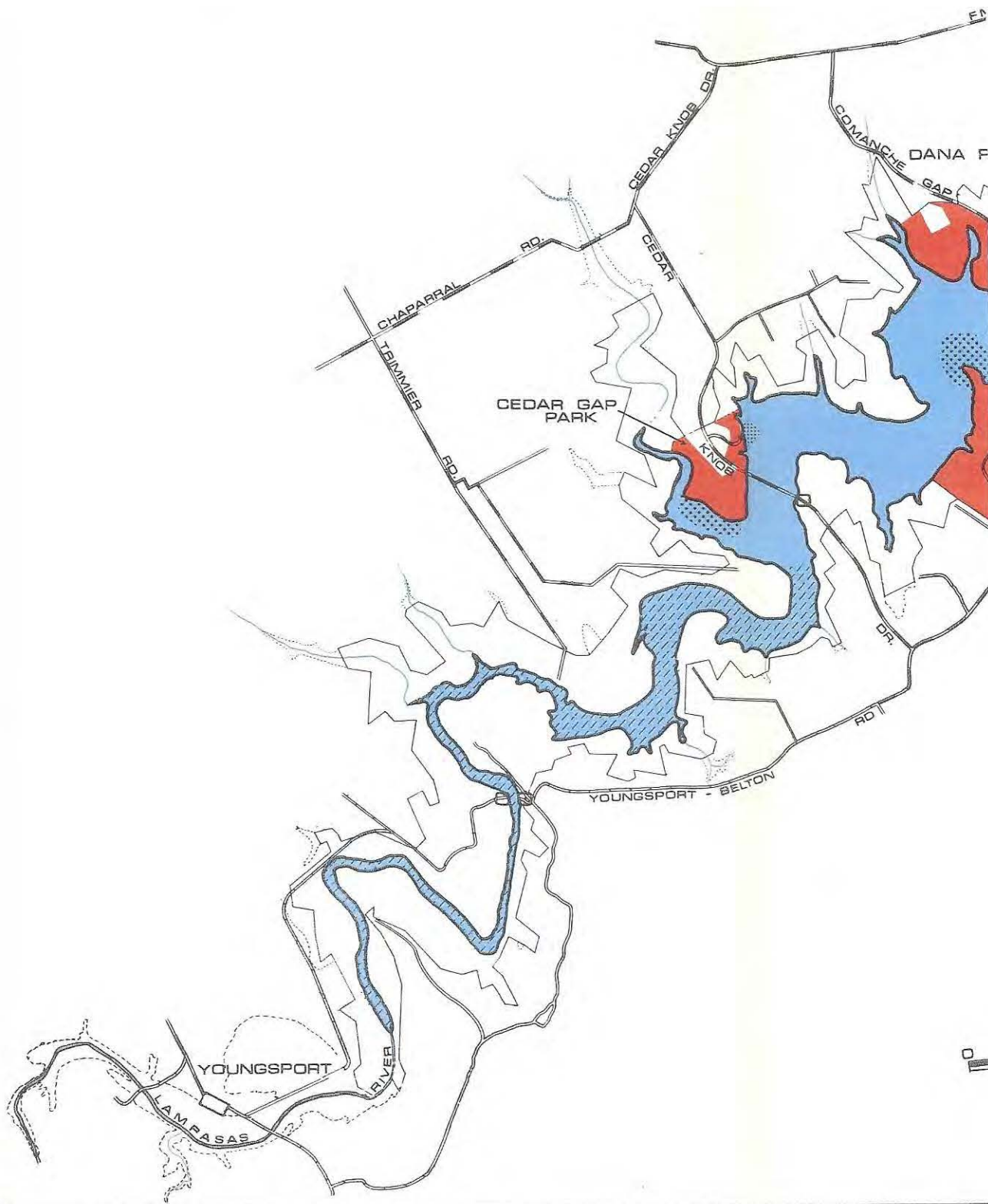
Areas that are intermittent with shallow and deep water will be managed as shallow areas in the interests of public safety. Floats advising the public of these areas will be maintained at the entrance or perimeter of the areas, whichever conditions warrant.

e. 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, the areas will be identified so that the public will be aware they exist.

f. Low Pool Hazards:

Low pool hazards are sub-surface structures such as old bridges, embankments, etc., which become hazardous to boaters at elevations lower than normal pool. These areas will be identified by appropriate markers.



J. S. ARMY
ENGINEER DISTRICT
FORT WORTH
FORT WORTH, TEXAS

LEGEND

RESTRICTED AREA
LOW SPEED BOATING
SHALLOW AREA



SWIMMING AREA
UNCLEARED AREA



LAND ALLOCATION

OPEF
INT
LO
REOF
INT

2.03 Management

A. General:

The protection and enhancement of natural and created resources will receive equal consideration to other project purposes. The key to successful use and upkeep of project resources is proper resource management. With this in mind, these guidelines are to be used within the context of Fort Worth District Regulation 1130-2-61 and Southwestern Division Regulation 1130-2-7, as well as applicable Engineer Regulations.

B. Human Resources

1. District Level:

The recruitment of additional resource specialists to aid in the resolution of problems encountered on the project and development of proper resource management plans is essential to provide proper guidance for project operation.

2. Project Level:

Proper implementation of this Revised Master Plan, including the resource management plans, is necessary to insure adequate stewardship of the project's resources. Protective measures include protection not only from natural elements such as fire, flood, etc., but also from overuse by the visiting public. This plan shall be a guide for such protection in addition to the resource management plan and applicable regulations. Individual protective measures shall include, but not be limited to, such items as prevention of the deterioration or destruction of resources through overuse (such as closing public use areas to allow for revegetation), reduction of mowing to allow for natural propagation of trees, limited clearing to leave a vegetative barrier between individual camp sites. Each year an annual questionnaire will be forwarded by the District to the project for completion by the Resource Manager. The purpose of this questionnaire is to provide a means for the Resource Manager to express himself on visitor management, new trends in

public use at the project, management problems encountered during the year, current project needs, and other resource management problems. Information from this questionnaire will be used in conjunction with user surveys to make adjustments in management programs and shall be reflected in the update of the project's Master Plan. Personnel for proper operation of facilities and for the management of the resources will be needed to accomplish the objectives for this report. These requirements are estimated to be as shown in Table 5, Page 2-11.

3. Required Inspections:

To insure management objectives and goals are being attained at project level, routine and random inspections of licensed areas, leased areas, and outgrants should be made by project personnel. The frequency and responsibility of the interim inspections shall be determined in the field by the Resource Manager. Required inspections, the frequency involved, and the personnel responsible are given in Table 6, Page 2-12.

TABLE 5
PERSONNEL REQUIREMENTS
STILLHOUSE HOLLOW

Administration

| <u>Title</u> | <u>Present Grade</u> | <u>Optimum Grade</u> |
|---|--------------------------|--------------------------|
| Resident Engineer (1/8 time) | GS-13 | GS-13 |
| Reservoir Manager (1/2 time) | GS-11 | GS-11 |
| Civil Engineering Technician (Res Ofc 1/6 time) | | GS-09 |
| Reservoir Clerk | GS-05 | GS-06 |
| Resident Office Clerk (1/8 time) | GS-05 | GS-06 |

Public Use

| <u>Title</u> | <u>Present Grade</u> | <u>Optimum Grade</u> |
|---------------------|--------------------------|--------------------------|
| Reservoir Ranger | GS-07 | GS-09 |
| 2 Reservoir Rangers | GS-05 | GS-07 |

Operation and Maintenance

| <u>Title</u> | <u>Present Grade</u> | <u>Optimum Grade</u> |
|--|--------------------------|--------------------------|
| Reservoir Maintenance Worker Foreman | WS-07 | WS-07 |
| 3 Reservoir Maintenance Workers | WG-08 | WG-08 |
| 2 Reservoir Maintenance Workers | | WG-05 |
| 1 Laborer | WG-03 | WG-03 |
| Seasonal employees as necessary for workload | | |

TABLE 6
REQUIRED INSPECTIONS

| <u>Type</u> | <u>Frequency</u> | <u>Purpose</u> | <u>Responsibility</u> |
|----------------------------|-------------------|---|--|
| Project Inspections | Annual | To evaluate the maintenance of the project and determine the condition of the project structures. | Operations Division |
| Periodic and Continuing | 1 to 5 Years | To make an engineering determination of the function and safety of project structures. | Engineering Division |
| Maintenance Inspections | Bi-monthly | To inspect dam and facilities | Reservoir Manager |
| Distress Inspections | Daily | To detect abnormal conditions | Reservoir Manager |
| Stilling Basin Inspections | 5 years | To insure conditions of the stilling basin. | Operations Division and Engineering Division |
| Compliance Inspections | Annual and Random | To insure compliance with lease, licenses, easements, permits, and regulations. | Real Estate Division and Operations Division |
| Utilization Inspections | Annual | Inspection of all project lands and facilities. | Real Estate Division and Operations Division |

C. Natural Resource Management

- 1. Fish and Wildlife Management:

a. Fisheries Management:

The fisheries resources of Stillhouse Hollow Dam are managed for the most part by the Texas Parks and Wildlife Department. Their regional fisheries crew is located at Waco, Texas. A routine annual program conducted on the lake by the regional fisheries crew consists of collecting fish species to arrive at an estimated rough fish-game fish ratio, and furnishing data for a complete fisheries composition index. Shoreline seining results usually give a good indication of relative abundance and species of forage fishes and the smaller sunfishes. Gill net settings made in various areas and depths of the lake contribute to identifying the majority of rough and game fish species. Varying the depths and areas of settings on the lake will generally catch individuals of all fishes in the lake. Supplemental stocking of game fishes is also made by the Texas Parks and Wildlife Department when the need arises and State hatchery stock are available. Introductory stocking of exotic game fish species is a possibility, but is dependent upon adequate study of the fish both in respects to its biological needs and the suitability of the water quality parameters. This type program is handled and coordinated by the Texas Parks and Wildlife Department, though water quality data collected by the Corps of Engineers may be requested for supplement information. The Corps of Engineers does not have a fisheries crew operating on Stillhouse Hollow Dam. Reservoir rangers help the Department in the field as much as possible on request, however, due to their many duties within the project they are not readily available for helping in any major undertaking such as creel censuses. A fisheries management program, however, will be initiated for Stillhouse Hollow Dam in the near future. Generally, any undertaking under the plan will be offered for bids under a commercial contract, due to the aforementioned lack of personnel knowledgeable in the fisheries field. Some assistance by the Corps of Engineers under the fisheries plan may include the installation of fishing piers, courtesy docks,

placements of pre-fabricated stake beds or other similar underwater devices used to attract fishes, or the gathering of water quality data supportive of types of information needed by the Texas Parks and Wildlife Department for Corps of Engineers Lakes. Generally, most of the work will be done by contract and supervised either by the Reservoir Manager and/or Reservoir Rangers, The Texas Parks and Wildlife Department personnel, or both, in a joint effort. Irregardless of who supervises the work, the Texas Parks and Wildlife Department will be contacted for coordination in all phases of fisheries work. In summary, the fisheries plans for Stillhouse Hollow Dam will be directed toward improving and providing increased habitat areas within the lake for aquatic life and improving accessibility to fishing areas. One further possibility under the plan may include marking off of specific areas of the lake by providing buoys at stake beds and similar good fishing areas unknown to the new visitor to the lake. Implementation of the Corps of Engineers fisheries plans will be a function of the operational and maintenance budget for the project. Also consideration must necessarily be weighed, for any major part of the plan, against other operational and maintenance needs on a priority basis.

b. Wildlife Management

(1) Game Species:

The major game species at Stillhouse Hollow Dam are white-tailed deer, Rio Grande turkeys, bobwhite, mourning dove and waterfowl. Other wildlife sought by hunters are red fox and gray fox, coyote, bobcat, skunk, opossum, and armadillo. There are no recorded hunter harvest figures, but deer, cottontails, swamp rabbits, bobwhite and mourning dove support heavy to moderately heavy hunting pressure. Waterfowl hunting is largely confined to the upper portions of the lake and hunting success varies from year to year. The red fox, raccoon, gray fox, and coyote provide some sport for hunters using predator calls or running dogs.

(2) Requirements For Game Species:

Project lands at Stillhouse Hollow Dam have small areas of good habitat for the white-tailed deer, fox squirrel, cottontail, swamp rabbit, raccoon, mourning dove, and bobwhite quail. A good variety of oaks, pecan, elms, hackberry willows, and cottonwood grow in the bottomlands and lower upland areas. Associated with these food producers are mesquite, chittamwood, sumac, and plums on the uplands. Grasses, sedges, forbs, and woody shrubs along creek drainageways provide excellent range for swamp rabbits. Mesquite and grasses, forbs, and miscellaneous sedges and shrubs make attractive upland coverts for cottontails. Pecan, cottonwood, and other trees along streams and in river bottoms provide good fox squirrel habitat. Waste grains, seeds, or fruits of sunflower, croton, hackberry, elm, ash, sumac, oak, pecan, chinaberry, chittamwood, and grapes, provide foods for game and non-game species of birds and mammals. Waterfowl find forage of waste grains available on crop lands up to 50 miles from the lake. Duck millets, sedges, or other foods grow wild in the creek bottoms, inlets, and pondweeds, naiad, and rushes grow in the shallow portions of the lake. Such wild foods supplement waste grains made available by farming activities. Habitat suited to bobwhites is co-inhabited by doves, cottontails, raccoons, skunks, foxes, and coyotes. Special food plots, or fields of millet, maize corn, and wheat would make the project into an attractive overwintering area for waterfowl.

(3) Hunting Restrictions:

Hunting should be permitted for all available game species on all land and water areas, according to state laws and regulations. State and federal laws provide for exemption of hunting in developed intensive use areas and those adjoining project structures. Project Managers may permit hunting in undeveloped portions of park areas and they may issue hunting permits to control hunting pressure according to their discretion. Waterfowl hunting should be allowed from permitted blinds, temporary land-based blinds, shore blinds, or by jump-shooting. Duck hunting can be safely permitted on most areas between the November and January dates usually set for the Texas season. Due to the lack of public access on private lands,

efforts should be made to develop hunting for quail and other small game in season where it can be conducted safely. Game management can be applied in undeveloped park areas to provide attractive habitat for all kinds of wildlife, as well as in low density recreation areas noted on the Land Use Planning Map. All hunting must conform to Title 36 and be restricted to areas designated for that specific use.

(4) Coordination and Cooperation:

Federal and State agencies have shown no interest in lands at Stillhouse Hollow Dam project so they will be managed by project personnel. State game laws are in effect at Stillhouse Hollow Dam and are enforced by Game Management Officers of the Texas Parks and Wildlife Department. Corps Rangers should gather information on game law violations to assist State Game Wardens. Coordination of vegetative development with wildlife management plans provided in Appendix D to this revised plan.

(5) Rare and Endangered Species:

The Texas red wolf, Southern American Bald Eagle, and American peregrine falcon, are the main species of the rare or endangered animals that may occur at Stillhouse Hollow Dam. Pure blooded red wolves are extremely rare in this area. Stillhouse Hollow Dam lies within the migratory range of the whooping crane, American peregrine falcon and the Arctic peregrine falcon. These medium sized hawks are classified as rare and have disappeared from many localities within their overall range. Preservation and enhancement of the present environment is vital to these species. Project personnel should familiarize themselves with the characteristics of these rare or endangered species in the event one is sighted. All sightings should be immediately reported to the Bureau of Sports Fisheries and Wildlife in Fort Worth, Texas.

c. Fish and Wildlife Management Plan:

Concepts for management are based on the fact that recreation is a project purpose and perpetuating wildlife for recreational pursuits such as hunting, fishing, bird watching, nature photography, and nature study is mandatory. Management by the Corps of Engineers is required because both the State of Texas and the United States Fish and Wildlife Service declined to accept management responsibility. 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. Measures employed to benefit and perpetuate game animals have nearly equal benefit for associated non-game birds and mammals. Pertinent to this concept, the various programs affecting soil conservation, vegetative covers, and wildlife will be coordinated to achieve the objectives outlined for wildlife management.

The objectives of the wildlife management program on Corps of Engineer Lakes are as follows:

(1) To perpetuate and enhance the habitat areas for all resident and migratory species and to make the common species available for sports use, education, and observation.

(2) To protect individuals and the habitats of resident or migratory species that are rare and endangered.

(3) To document plant and animal species comprising biotic communities.

(4) To analyze and ameliorate adverse impacts of recreational use on the project environment.

(5) To report on recreational use and refinements of management necessary to long-term availability.

Wildlife is a product of the land. Overall population densities reflect the quality of the soil, the diversity of vegetative life-forms, the interspersion of food and cover plants, and the intensity of land use exercised by mankind. Management will employ proven measures to enhance and improve the habitable areas for upland and aquatic species of wildlife. It is basically necessary to protect the soil, vegetation and wildlife resource. Fences, fireguards, and law enforcement will be necessary to effect protection of such natural resources. Regulated use will make it necessary to control grazing, cropping, and the number of hunters in order to facilitate maximum wildlife productivity. Food and cover will be managed, or provided, by fallow disking; planting grains, trees, or shrubs; thinning and clearing; by half-cut trees and building brush piles; prescribed burns, mowing and herbicides. Cover may be selectively controlled by use of grazing as a management tool. Grazing will be employed when it is the best tool available to achieve the objectives set forth for wildlife management. Assessment of wildlife species is a part of management evaluation and is necessary to refinement of the measures employed. Assessment includes compilation of taxonomic lists, censuses of breeding and post-breeding season populations, collection and reporting recreational use data, and collection, analysis, and reporting on food, age, and sex materials. Specific details of the management program will be given in the Fish and Wildlife Management Plan which is Appendix D to the Revised Master Plan.

2. Soil Management Concepts:

The soils at Stillhouse Hollow vary from sandy or silty loams to a fine montmorillonitic clay. These soils have developed from alluvial deposits, limestone, limestone-marl and colluvial deposits. Soil, being the basic resource, is a major consideration in determining the carrying capacity of any given area. Therefore soil protection and stabilization is a primary concern in resource management. Good soil management practices, both mechanical and vegetative, will be utilized to conserve this resource.

3. Vegetative Management

a. General:

In the recreational areas to be revitalized, vegetation that can withstand or resist overuse will be favored in order to preserve the beauty of the recreation areas.

b. Grasses and Forbs:

The grass and forb species at Stillhouse Hollow range from invaders and pioneers to the true climax species. Management methods will be used that will protect and propagate the desirable forbs (for wildlife and aesthetic beauty) and the climax grasses (for soil stabilization). Grazing will be used as a management tool for the control of grasses. Burning will encourage the native grasses and, if used in annual forbs, will stimulate the more desirable wildlife foods. Disking will provide a large variety of annuals and will induce perennials to seed. Compaction resistant grasses will be planted and maintained in recreation areas in order to maintain a permanent cover.

c. Woody Vegetation:

Woody species (trees and shrubs) can be managed by several different methods. These include thinning to open up the stand for the stimulation of ground cover and to promote improved growth for the residual stand; pruning to remove diseased or damaged limbs and to open up the eye-level view for aesthetics; planting of desirable trees for recreation areas as well as wildlife, and management of woody vegetation for traffic controls and screening. Relief of compaction is an important management operation in high impact areas such as around restrooms, bulletin boards, water fountains and parking lots. Any or all management methods can be used equally well for wildlife habitat improvement as for aesthetics or recreation.

d. Revegetation Plan:

Where soils are shallow and without ground cover, or have intense use, erosion becomes a critical problem. A revegetation plan has been developed for those areas with sparse vegetative cover. In developing this plan, the following was considered.

(1) These areas should be seeded with native grasses, forb, or shrubs that are adaptable to the area and can best withstand heavy use. Grasses such as coastal bermuda, Japanese millet or buffalograss are recommended for those areas that may be inundated for long periods of time.

(2) Irrigation systems should be considered at Stillhouse Hollow Dam because of recurrent droughts. During dry seasons, areas are especially in need of irrigation to maintain vegetation and prevent soil erosion.

(3) A shrub and tree planting program will be developed. Trees and shrubs native or adaptable to the area should be planted where determined necessary by the Reservoir Manager in coordination with District personnel. Plantings should be accomplished within a two year minimum period prior to any proposed recreational development and may be coordinated with wildlife management plantings.

(4) Brush control should be considered in the revegetation plan. Junipers are the major problem in this area. Junipers that exist on the marginal sites have invaded because of long periods of abuse to native vegetation. Brush control should take place only in areas where the brush is not desirable. Eradication should be done selectively on an individual area basis. Proper control measures must be taken so that no desirable vegetation is destroyed. The practice of spraying by planes and dragging by dozers will be avoided since there is little control of what is destroyed. Brush cleared should not be burned or hauled off, but piled or placed where wildlife can utilize it for protection. Brush that is piled should be left

lying where it falls, providing a place for grass to grow with some protection from grazing. This practice aids in preventing erosion.

(5) Grasses and trees in this area are well adapted to dry seasons, however, during drought periods, the carrying capacity of the land will be reduced to the point of virtually no use. Good land management must be practiced on grazing leases also. Proper management will include livestock distribution by fencing, water, saltblock placement, and feeding. Rotation systems for livestock should be established where practical. This allows for some areas to rest when it has been grazed adequately.

e. Vegetative Management Plan - Appendix B:

A vegetative management plan will be prepared in accordance with Engineer Regulation 1130-2-400 and will be presented as Appendix B to this Revised Master Plan. Appendix B will contain vegetative management details.

4. Water Management:

The lake water area will be zoned and buoys placed to identify hazardous areas and to control speed of watercraft at the spillway, boat ramps, courtesy docks, swimming areas, and other sites. During peak periods of visitation, measures must be taken to provide necessary control and to help maintain water safety.

a. Control of Floating Debris:

A continual check on floating debris will be made for water safety purposes. Cleanup measures will be taken where necessary.

b. Mooring Policy:

In order to (1) prevent the despoilment of the natural scenic beauty of the shoreline and preserve the shoreline area in as near the project natural state as possible, (2) protect the public in-

terest in the project from the standpoint of fire control and navigational safety, (3) safeguard public health by an effective program of water pollution control, and (4) provide for the general public use, in lieu of private use, of project lands and waters, no permits will be issued for private boathouses. Individuals who desire to store and moor boats, barges, and other vessels on the reservoir for periods in excess of three days at any one time shall arrange for such storage in selected storage areas leased to concessionaires. Such concessionaires shall be responsible for the care and protection of vessels stored with them when not in use, and for the movement of such vessels in case of fluctuation of the lake level, and in other emergencies. Permits will not be issued by the Corps of Engineers for the construction of permanent piers and docks, or for the permanent mooring of any individual boats, boat docks, boathouses, barges, houseboats, or vessels on Stillhouse Hollow Dam waters and project lands, at locations other than those included in concession lease areas. Written requests from county authorities or other government agencies for authority to construct access roads to reservoir waters, and build boat launching facilities and parking areas at the ends of such roads in order to serve adjoining real estate developments will be considered for approval. Bona fide yacht clubs will, upon written request, be given consideration to lease certain land and water areas for the purpose of providing collective multiple storage facilities for vessels belonging to members of the club in accordance with ER 1120-2-400. However, the requirements for yacht clubs will be accommodated through the use of marina concessions, in so far as practicable.

c. Lakeshore Management Plan:

A lakeshore management plan will be developed in accordance with current guidance and presented as Appendix F to this Revised Master Plan.

D. Created Resources

1. Dam and Pertinent Works:

The Operations and Maintenance Manual (Fort Worth District Regulation 1130-2-62) contains technical data on the operation and maintenance procedures for structures and equipment.

2. Park Areas:

a. General:

These areas will be generally administered and managed in accordance with Engineer Regulations 405-1-800, 405-1-830, 405-2-835, 1120-2-400, 1130-2-400, Southwestern Division Regulation 1130-2-7, the Operations and Maintenance Manual, the Revised Master Plan, and attached Appendices.

b. Inspection of Areas:

Park areas shall be continually monitored to detect problem areas, changes in use trends, soil or vegetation erosion, proper maintenance of facilities, and for the management of visitors.

c. Recreational Attitude:

The maintenance and operation of public management areas will reflect an attitude conducive to proper public service. Accomplishment will be through the presence of Rangers in park areas (24 hours when necessary), good sanitation measures, continual cleanup of recreation areas, and constant evaluation of maintenance procedures. Project personnel will continually offer aid to the visitors. Rangers will also inform the visiting public of their misuse as well as commend them on their good practices. Boating and camping habits, trash disposal practices and water safety habits are good examples of items Rangers should observe. Training will be provided for project personnel who have contact with the public in such areas as listed in Appendix E, paragraph 3, or the new Safety Regulation, Fort Worth District Regulation 385-1-90 dated 3 November 1971.

d. Park Evaluation:

Each park will be evaluated on a continuing basis to determine usage needs, public trends, public demands, and the condition of soil, vegetation, and facilities. Based on these evaluations, overused areas will be clearly marked and fenced to eliminate encroachments, stray cattle, and for visitor control. Clearing of any over-growth which obstructs the monuments should be done regularly.

e. Vandalism Control:

Stillhouse Hollow Dam has a unique vandalism problem created by high military usage. Vandalism will be curbed by providing Ranger presence on a 24-hour basis, if necessary. Contact with local law enforcement officials by Rangers should be maintained by radio where possible. Ranger vehicles should be equipped with dual radios for this purpose with at least one manned vehicle having this equipment in the lake area during each patrol period.

3. User Fee Management:

Section 210 of the Flood Control Act of 1968 (Public Law 90-383) prohibits the use of entrance fees at Corps of Engineers administered projects. Under existing laws and directives, it is the policy of the Corps of Engineers to charge user fees for highly developed camp areas and where special services are provided.

2.04 Special Activities

A. Fire Prevention:

A fire protection plan for Stillhouse Hollow Dam is being developed as Appendix C to this Revised Master Plan. The fire protection plan will establish policies, procedures, equipment, and training for personnel to protect project property at Stillhouse Hollow Dam from damage or destruction by fire. Additional information, concerning Fire Protection will be given in Appendix C, to this revised plan.

B. Safety:

A project safety plan for Stillhouse Hollow Dam is being developed as Appendix E to this Revised Master Plan. Under this plan, the Resource Manager will identify common, recurring hazards of unsafe conditions in each major phase or area of his operation. The plan will indicate the precautionary actions to be taken to prevent, reduce, or control such hazards. This plan will be coordinated with the District Safety Office for review and recommendations prior to submission to Southwestern Division for approval and attachment to this Revised Master Plan. It will be a guide for safety surveys, and inspections.

C. Public Health

1. General

Public health protection is one of the primary responsibilities of the O&M Program. All visitors must obey all Federal and State laws and regulations. State Health Department approval is required for all water and sewage systems on Government property. Bacteriological analyses are made weekly on all water supply sources. Chlorine is added to all surface water supplies for drinking purposes, and is also added to some wells where needed. Chlorine is a disinfecting agent which destroys most of the coliform bacteria that could contribute to pathogenic organisms in the water. Twice a year all surface water, and once a year, all well water, is given a complete water chemical analysis, to further assure the water supply as a

safe and potable supply. In the near future, designated swimming beach areas will also be checked for coliform bacteria and for pH. The pH measurement indicates the degree of acid-alkaline activity of lake water. These last two measurements will assure the lake water at beach areas is safe for prime recreation-contact use. Liquid and solid wastes are collected on schedule and disposed of in an approved manner. Camping, picnicking, and sanitary facilities are cleaned and serviced on regular schedule. The insect and animal control programs are designed to protect the health and well being of the visitors. Project personnel will attend the American Red Cross Standard First Aid Course and will participate actively in water safety programs under Fort Worth District Regulation 385-1-90, Project and Recreational Safety Program.

2. Sanitation:

Sanitation, or good housekeeping, is the most effective and economical method of protecting the public health. Therefore, strict sanitation programs are stressed and Federal and State rules and regulations are adhered to in design, construction and monitoring servicing facilities.

3. Insect and Animal Control

a. Insect Control:

(1) Control Problem:

Undesirable insects, ticks, chiggers, and spiders, attack man or his supplies, materials, structures, and both ornamental and natural vegetation. Many arthropods are detrimental to man's health or adversely affect his morale. It is therefore imperative that the projects maintain satisfactory control of undesirable species of insects and other arthropods.

(2) Management:

Project personnel will make routine inspections for insect damage and initiate control programs on an "as needed, where needed" basis. All chemicals used for control will be selected from an approved list by the working group of pesticides. Control programs on private property adjacent to Government land or where extension areas must be treated, will be accomplished in cooperation with the appropriate local, state, or Federal agencies having the authority or interest in the problem.

b. Animal Control

(1) Control Problem:

Rodents may serve as disease carriers, destroy supplies and materials, damage structures, cause losses by fire, and damage grasses and shrubs. Their burrows may also cause erosion problems. For these reasons, the projects must maintain a satisfactory degree of control over rodent populations. Predators and similar types of animals will not normally need to be controlled as they are a natural part of the ecosystem. However, in emergency or extreme instances, control will be accomplished in cooperation with Bureau of Sports Fisheries and Wildlife's Division of Wildlife Services in accordance with Executive Order 11643, dated 8 February 1972, subject, "Environmental Safeguards On Activities For Animal Damage Control On Federal Lands". *

(2) Management:

The most effective and economical management plan is a preventative program to avert possible outbreaks which could cause serious losses. Project personnel will make routine inspections for signs of rodent damage and initiate control programs when necessary. Control of predators should be accomplished by the Bureau of Sports Fisheries and Wildlife by means of shooting or trapping individual target animals. Measures such as placing poison baits or the use of "coyote getters" are prohibited.

* Control of wild dogs and other animals creating a nuisance will be handled by live-trapping or other measures by cooperating local authorities.

D. Law Enforcement:

Enforcement of civil and criminal laws at the lake on Government land and water remains 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 officers responsible for the enforcement of laws relative to civil actions, game and fish conservation, public health and sanitation, boating, and the prevention of pollution. The Corps of Engineers' citation authority governs refuse dumping and the provisions of Title 36 only. Where practicable, Reservoir Managers will provide Rangers to man or patrol selected park areas on a 24-hour basis during peak recreation periods to provide visitor protection and reduce vandalism. The Reservoir Manager will attempt to gain passage of local ordinances or laws which will encompass all Corps of Engineers rules and regulations.

2.05 Coordination With Other Agencies:

Coordination with local, state, and Federal agencies is imperative for the operation, management, and development of the natural and man-made resources at Stillhouse Hollow Dam. The Corps of Engineers has sustained a very strong working relationship with these agencies. This effort enables both interested agencies and the Corps of Engineers to exchange thoughts aimed at developing and managing the project's resources in the best interest of the public. The organizations contacted, with a summary of their contribution to the operation, management, and development of the resources at Stillhouse Hollow Dam are listed below:

A. Public Hearing:

1. During March 1961, representatives of the Fort Worth District talked with the following local representatives in Temple and Belton, Texas, regarding their interest in the development and management of public use areas at the project: the county judge of Bell County, the county engineer of Bell County, the mayor of Belton, the city manager of Temple, and the head of the Parks and Recreation Department of the city of Temple. All of these persons expressed an interest in the development of areas at Stillhouse Hollow Reservoir. On 7 December 1962, the city manager of Belton, Texas submitted a letter expressing the interest of the city of Belton in entering into a license agreement for Stillhouse Park.

2. On 29 August 1962, the mayor of the city of Bartlett, Texas submitted a request for the reservation of a park site at Stillhouse Hollow Reservoir for the city of Bartlett.

3. On 1 October 1962, the city administrator of Harker Heights, Texas submitted a letter expressing the wishes of the city of Harker Heights to license an area at the Stillhouse Hollow Reservoir for public use.

4. On 2 October 1962, the mayor of the city of Killeen, Texas submitted a request that Dana Peak Park be set aside as Killeen's

recreation area. This letter was followed by a visit to the district office by the manager and president of the Killeen Chamber of Commerce and the Director of Public Works for the city of Killeen to reaffirm the request of the city of Killeen for Dana Peak Park.

5. On 22 January 1963, the vice president of the Salado Chamber of Commerce, in a telephone call to the district office, expressed the desires of the city of Salado, Texas, to license Bluff Park.

6. On 21 October 1968, the city of Belton licensed Stillhouse Park; however, on 31 March 1969, the license was terminated at the request of the city.

7. At the time of the updating of this plan, there has been no further action by the above agencies, and no requests are pending.

B. National Park Service:

On 1 March 1960, representatives of the Region Three Office, National Park Service, and the Corps of Engineers conducted a field survey of the Stillhouse Hollow Reservoir area to evaluate the recreational potential of the project. The National Park Service submitted a report dated January 1962 commenting on the recreational use and development of Stillhouse Hollow Reservoir. A copy of this report is included in this updated design memorandum in Appendix B.

C. Federal and State Health Services:

In April 1961, the U.S. Public Health Service, in cooperation with the Texas State Department of Health, submitted a report entitled "Preliminary Evaluation Report on Vector Problems Related to the Proposed Corps of Engineers Stillhouse Hollow Reservoir, Lampasas River, Texas." A copy of this report was included in General Design Memorandum No. 5, Appendix IV. The Texas State Health Department furnishes weekly bacteriological analyses for all water supply sources. They also furnish annual or semi-annual chemical analyses depending upon the water source (surface waters are analyzed semi-annually while well waters are analyzed annually). They also approve plans for all sanitary facilities.

D. Texas A&M Extension Service:

The Corps of Engineers coordinates with Texas A&M Extension Service regarding insect and rodent control.

E. Department of Agriculture:

The Corps of Engineers coordinates with the Department of Agriculture regarding weed control. The Soil Conservation Service provides the Corps of Engineers with soils maps and pertinent information used as an aid in development of Corps of Engineers' parks and lands.

F. Federal Aviation Administration:

The Corps of Engineers coordinates with the Federal Aviation Administration for approval of all aerial applications for weed control.

G. Bureau of Sports Fisheries and Wildlife:

On 8 July 1960, the Bureau of Sport Fisheries and Wildlife,* of the U.S. Fish and Wildlife Service, submitted a report on the fish and wildlife resources of the Stillhouse Hollow project. A copy of this report was incorporated in Design Memorandum No. 11A, Preliminary Master Plan, as Appendix I. The report and its recommendations have been endorsed by the Texas Parks and Wildlife Department.

H. Texas Parks and Wildlife Department:

The Texas Parks and Wildlife Department has primary responsibility for management of the fish and wildlife resources at Stillhouse Hollow Dam. The Department conducts an annual test-netting program to determine species composition, growth rates, and general conditions of the fish population. The Corps of Engineers provides assistance to the Department when requested.

I. Texas Department of Public Safety:

The Corps of Engineers coordinates with the Texas Department of Public Safety concerning law enforcement problems and practices.

* Previously called the Fish and Wildlife Service.

III. PLAN OF DEVELOPMENT

3.01 General:

This plan is designed to be flexible enough to meet variable conditions and changing needs. It is to serve as a guide for the comprehensive management and development of the project through sound planning principles and basic site design criteria. Appropriate provisions are included in the plan for providing recreational facilities for current and projected design loads. It is also intended to provide sufficient services to meet the visitor's needs and demands within the desired carrying capacity of the resource.

3.02 Ecological Considerations:

Areas designated for public use as well as those designated for other land uses should be continually observed by project personnel to detect ecological imbalances. An example of this is soil erosion or vegetative wear due to heavy foot and/or vehicular traffic. Areas in question should be referred to qualified personnel at project level or District level as appropriate for further study.

3.03 Environmental Statement:

Reference is made to the requirement set forth in the National Environmental Policy Act of 1969 (Public Law 91-190). An environmental impact statement is being prepared for this project in accordance with current guidance.

3.04 Methodology:

Factors considered in selecting the areas for recreational development as presented in this Revised Master Plan are:

- A. Access to existing roads
- B. Topography of the area
- C. Scenery
- D. Location of the area with respect to the usable exposure of water for recreational activities
- E. Degree of shelter for protection
- F. Water depths
- G. Existing land use
- H. Drainage
- I. Soils surveys
- J. Wind-velocity and direction

3.05 Recreational Facilities:

The following concepts were used in development of this plan:

- A. Provide adequate facilities to handle the present and future annual visitation.
- B. Limit the development of recreational facilities to the desired carrying capacity of the area for protection of the resources.

3.06 Analyses:

Analyses were conducted to determine visitation projections, ultimate carrying capacity, and facilities required. The desired carrying capacity has not yet been determined. It will be determined in the future according to the criteria outlined in Paragraph A, Page 3-03.

A. Visitation Projection Analysis:

In formulating the estimated recreation visits, the population within the day use market area was projected through the year 2020. The population projections for Stillhouse Hollow Dam are based on a Series C population projection. The day use market area (the geographical area from which 80 percent of the daytime users originate) was determined to be 30 miles. The population projection for the market area is:

POPULATIONS PROJECTIONS FOR THE MARKET AREA

(SERIES C POPULATIONS)

| <u>1970</u> | <u>1980</u> | <u>1990</u> | <u>2000</u> | <u>2010</u> | <u>2020</u> |
|-------------|-------------|-------------|-------------|-------------|-------------|
| 139,900 | 190,600 | 251,200 | 317,600 | 391,600 | 472,033 |

The per capita use rates for the 30 mile zone were computed for 1970 and was adjusted through 2020. The existing per capita use rate is 6.58.

* The per capita rate factors used to adjust the existing per capita use rate through 2020 are:

| <u>1970</u> | <u>1980</u> | <u>1990</u> | <u>2000</u> | <u>2010</u> | <u>2020</u> |
|-------------|-------------|-------------|-------------|-------------|-------------|
| 1.00 | 1.22 | 1.44 | 1.62 | 1.80 | 1.96 |

The adjusted percapita use rate was applied to the population projections to arrive at the estimated visitation expected to originate from the day-market area. Then, by adding the additional projected visitation which originates beyond the day use market area (amounting to 20 percent of the total visitation), the total projected participation demand was computed. The projected annual visitation at Stillhouse Hollow Dam, based on the above population and per capita use participation rates are:

* Based on Project Area Evaluation 1/ by Recreation Section, Sacramento District, dated November 1968.

| <u>Year</u> | <u>Projected Annual Visitation</u> |
|-------------|--|
| 1975 | 1,269,200 |
| 1978 | 1,478,300 |
| 1980 | 1,910,100 |
| 1990 | 2,939,400 |
| 2000 | 4,227,300 |

1,500,000 - Ultimate Capacity

B. Ultimate Carrying Capacity:

A combination of related aspects which concern the ability of the project resources to sustain intense use were studied to determine an ultimate carrying capacity. This ultimate capacity is estimated to be 3,000,000 visitors per year. This figure is a reflection of the aspects of the size, location, sustained ecological balance, and other characteristics of the project. At Stillhouse Hollow Dam, the projected visitation demand in the decade 2000 is greater than the carrying capacity of the projected resources. Through observation and future visitor use trends, this capacity may change. Future updates will reflect any changes in this capacity due to changing conditions.

C. Desired Carrying Capacity:

The lands adjacent to the lake have a definite desired carrying capacity for recreation use. This capacity will be less than the ultimate carrying capacity eliminating overuse, deterioration, and misuse by the visiting public. As of this date, the desired carrying capacity has not been determined. Field office and District personnel shall monitor site deterioration in conjunction with user density and the influencing factors listed below to develop a desired carrying capacity for the natural resources at this project.

1. Access
2. Slope
3. Existing vegetation
4. Ecological consideration
5. Existing land use
6. Aesthetics
7. Scenic vistas
8. Drainage and soil types
9. Orientation - sun and wind
10. Social interaction zones

These factors will precede the detailed site planning phase at the time funds are appropriated for construction of the planned facilities listed in this Revised Master Plan.

D. Facilities Analysis:

Current and projected recreation visitation was broken into the following activities:

1. Design day load
2. Picnicking
3. Camping
4. Boat ramps for boating, fishing, and skiing
5. Beaches for swimming

For facility requirement computations, see Tables 7 thru 9, pages 3-07 thru 3-09.

E. Future Development:

The ultimate carrying capacity for public use at Stillhouse Hollow Dam is estimated to be 3,000,000 visitors annually. Facility requirements, determined by the recreation analysis, to support the ultimate visitation is 428 picnic units and 1071 camp units. Based on site analysis during field reconnaissance, this Revised Master Plan supports a total of 336 picnic

units and 632 camp units. The number of facilities required by the recreation analysis reflects demand, while the number of facilities supported in the Revised Master Plan reflects a measure of what can be supplied in areas that are feasible for development without permanent damage to the resource. Only through additional land acquisition or through intensive resource management, including visitor and physical resource management (tree planting, etc.), can existing land areas currently not feasible for development be made desirable for recreational development.

TABLE 7
FACILITY REQUIREMENTS - FY 75

Project: Stillhouse Hollow

Total annual attendance: 1,199,400

Design load computations: 13,285

Design Day Load

1,199,400 total annual attendance X 0.45 visits during summer months X 0.64 which occurs on weekends = 345,427 total number of weekend users.

Total number of weekend users ÷ 26 weekend days = 13,285 design day load.

Picnicking

Design day load X 0.22 of total are picnickers = number of picnickers.

Number of picnickers X 0.40 of picnickers requiring facilities = number of picnickers requiring facilities.

Number of picnickers requiring facilities ÷ turnover rate of 2.5 ÷ 3.1 persons per vehicle = 150 picnic units required.

Camping

Design day load X 0.10 of total are campers = number of campers.

Number of campers ÷ 3.1 persons per vehicle = 428 camping units required.

Boat Ramps

Design day load ÷ load factor of 3.1 = number of vehicles.

Number of vehicles X 0.25 of vehicles with boats = number of boats.

Number of boats ÷ 40 launchings per day = 27 boat launching ramps required.

Beaches

Design day load X 0.60 swimmers = number of swimmers.

Number of swimmers X 0.60 swimmers on beach = number of beach users.

Number of beach users ÷ turnover rate of 3 = number of users on beach at any one time.

Number of users on beach at same time X 50 square feet of beach per person = 1.82 acres of land area required for sand beaches.

Number of swimmers X 0.30 are swimmers in water = number of swimmers in water.

Number of swimmers in water ÷ turnover rate of 3 = number of swimmers in water at any one time.

Number of swimmers in the water at any one time X 100 square feet of water surface per user = 1.82 acres water surface required.

10% of swimmers need no additional land.

TABLE 8
FACILITY REQUIREMENTS - FY 79

Project: Stillhouse Hollow

Total annual attendance: 1,478,300

Design load computations: 16,325

Design Day Load

1,478,300 total annual attendance X 0.45 visits during summer months X 0.64 which occurs on weekends = 425,750 total number of weekend users.

Total number of weekend users ÷ 26 weekend days = 16,325 design day load.

Picnicking

Design day load X 0.25 of total are picnickers = number of picnickers.

Number of picnickers X 0.40 of picnickers requiring facilities = number of picnickers requiring facilities.

Number of picnickers requiring facilities ÷ turnover rate of 2.5 ÷ 3.1 persons per vehicle = 211 picnic units required.

Camping

Design day load X 0.10 of total are campers = number of campers.

Number of campers ÷ 3.1 persons per vehicle = 528 camping units required.

Boat Ramps

Design day load ÷ load factor of 3.1 = number of vehicles.

Number of vehicles X 0.25 of vehicles with boats = number of boats

Number of boats ÷ 40 launchings per day = 33 boat launching ramps required.

Beaches

Design day load X 0.60 swimmers = number of swimmers.

Number of swimmers X 0.60 swimmers on beach = number of beach users.

Number of beach users ÷ turnover rate of 3 = number of users on beach at any one time.

Number of users on beach at same time X 50 square feet of beach per person = 2.25 acres of land area required for sand beaches.

Number of swimmers X 0.30 are swimmers in water = number of swimmers in water.

Number of swimmers in water ÷ turnover rate of 3 = number of swimmers in water at any one time.

Number of swimmers in the water at any one time X 100 square feet of water surface per user = 2.25 acres water surface required.

10% of swimmers need no additional land.

TABLE 9

FACILITY REQUIREMENTS - ULTIMATE

Project: Stillhouse Hollow

Total annual attendance: 3,000,000

Design load computations: 33,230

Design Day Load

3,000,000 total annual attendance X 0.45 visits during summer months X 0.64 which occurs on weekends = 864,000 total number of weekend users.

Total number of weekend users ÷ 26 weekend days = 33,230 design day load.

Picnicking

Design day load X 0.25 of total are picnickers = number of picnickers.

Number of picnickers X 0.40 of picnickers requiring facilities = number of picnickers requiring facilities.

Number of picnickers requiring facilities ÷ turnover rate of 2.5 ÷ 3.1 persons per vehicle = 428 picnic units required.

Camping

Design day load X 0.10 of total are campers = number of campers.

Number of campers ÷ 3.1 persons per vehicle = 1071 camping units required.

Boat Ramps

Design day load ÷ load factor of 3.1 = number of vehicles.

Number of vehicles X 0.25 of vehicles with boats = number of boats.

Number of boats ÷ 40 launchings per day = 67 boat launching ramps required.

Beaches

Design day load X 0.60 swimmers = number of swimmers.

Number of swimmers X 0.60 swimmers on beach = number of beach users.

Number of beach users ÷ turnover rate of 3 = number of users on beach at any one time.

Number of users on beach at same time X 50 square feet of beach per person = 4.5 acres of land area required for sand beaches.

Number of swimmers X 0.30 are swimmers in water = number of swimmers in water.

Number of swimmers in water ÷ turnover rate of 3 = number of swimmers in water at any one time.

Number of swimmers in the water at any one time X 100 square feet of water surface per user = 4.5 acres water surface required.

10% of swimmers need no additional land.

3.07 Development

A. General Planning Considerations:

1. Selection of Areas:

New areas were selected and some old areas were designated or redesignated for camping, picnicking, and other uses based upon site characteristics, recreation demands, and resource management objectives, including the new administration policy regarding cost sharing and recovery of O&M&R cost as outlined in ER's 1130-2-121 & 123.

- a. Control visitor use.
- b. Separate non-compatible uses
(day use - overnight use).
- c. Define activity areas.
- d. Manage and control each area as a separate unit.
- e. Utilize screened or buffered areas.
- f. User Fee Management.

2. Road Developments:

New area circulation roads have been proposed while some existing roads are scheduled to be deleted. The objectives in constructing new area circulation roads and deleting some of the old roads are:

- a. To provide uniform and defined traffic flow.
- b. To provide vehicular access to existing and proposed camp or picnic units via means of individual pullouts.
- c. To prevent excessive through-traffic.
- d. To provide traffic control in fee areas.

The circulation roads will be sited in the field. The centerlines of these roads are secondary in importance to the preservation of existing tree cover.

3. Sanitary Facilities:

The primary sanitation facilities existing at Stillhouse Hollow Dam are wooden frame toilets which are below standards set forth in

EM 1110-2-400 for existing visitor loads placed upon the facilities. The facilities are also highly susceptible to vandalism and deterioration. Replacement of these inadequate sanitary facilities with upgraded facilities capable of supporting current and anticipated visitor loads is urgently needed. Additional sanitary facilities are proposed to meet visitor needs and demands. Waste treatment plants and other pollution abatement facilities are planned where the load is extremely heavy and the soils will not accommodate septic tanks. The following criteria was used in determining the number and location of sanitary facilities:

- a. Anticipated visitor use of each area.
- b. Accessibility by visitors within an area.
- c. EM 1110-2-400.

4. Additional Picnic and Camp Units:

The number of additional picnic and camp units was based upon the recreation analysis, and criteria presented in EM 1110-2-400. Each area's site characteristics and existing development were considered before any additional units were scheduled.

5. Traffic Control Gates:

Traffic control gates are proposed at strategic locations. These gates are to be used as a management tool and have the following functions.

- a. Define and separate areas.
- b. Provide visitor direction and control.
- c. Provide control for fee areas.
- d. Provide a means of closing areas during quiet hours in overnight areas, and during construction, revegetation, and revitalization periods.

6. Traffic Control Barriers:

Barriers are to be used to complement the use of traffic control gates in areas where it is necessary or desirable to exclude vehicles. This will also aid in the prevention of vandalism and illegal dumping on government property. Barriers should be constructed of natural materials local to the area whenever possible.

7. Courtesy Docks:

Courtesy docks have been incorporated in the development of public use areas. These facilities are to be located adjacent to boat launching sites and at selected sites within management areas. Courtesy docks are to be used only for loading or unloading passengers and gear. No boats will be allowed to anchor to the docks except when loading. Appropriate signs will be placed at the docks informing visitors of this restriction.

8. Boat Launch Sites:

Additional boat launching sites are proposed at strategic locations around the lake and in areas of intense proposed development. Three boat launch sites (11 lanes) are proposed in the five year development plan with an additional 4 sites (14 lanes) to be developed in the future.

B. Project Works Area:

No new development is planned in this Revised Master Plan for the operations and maintenance area.

C. Public Use Areas

1. General Description:

There are 6 public use areas encompassing 1,905 acres of land area adjacent to the lake's 58 mile shoreline. The parks are characterized by steep to moderately sloping terrain with dense to sparse tree cover consisting primarily of juniper and several species of oaks, with live oaks

TABLE 12 (Continued)

DANA PEAK PARK

(Planned Dev - Amounts in Thousands of Dollars)

| Item Number | Item | Unit | Unit Cost | 5 Yr Dev Plan | | (Future) | | Total Planned Dev | |
|-------------|--|------|-----------|---------------|---------|----------|-------|-------------------|---------|
| | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 6 | UTILITIES: | L.F. | | | | | | | |
| | A. Water Distribution Lines | | .003 | 11900 | 35.7 | 23000 | 69.0 | 34900 | 104.7 |
| | B. Electric Service Lines | | .002 | 1300 | 2.6 | 8100 | 16.2 | 9400 | 18.8 |
| | C. Electric Distribution Lines (Underground) | | .004 | 10500 | 42.0 | 12500 | 50.0 | 23000 | 92.0 |
| | D. Electric Hookups | Ea | 0.1 | 103 | 10.3 | 108 | 10.8 | 211 | 21.1 |
| | E. Water Hookups | Ea | 0.05 | 130 | 6.5 | 128 | 6.4 | 258 | 12.9 |
| | F. Drinking Fountains | Ea | 0.5 | 2 | 1.0 | | | 2 | 1.0 |
| 7 | PICNIC AND CAMP UNITS: | | | | | | | | |
| | A. Picnic Units | Ea | 0.9 | 18 | 16.2 | 38 | 34.2 | 56 | 50.4 |
| | B. Camp Units | | 1.1 | 80 | 88.0 | 108 | 118.8 | 188 | 206.8 |
| 8 | TABLE SHELTERS: | | | | | | | | |
| | Single (1-Table) | Ea | 0.7 | 98 | 68.6 | 146 | 102.2 | 244.0 | 170.8 |
| 9 | COURTESY DOCK: (Boating) | Ea | 3.5 | 1 | 3.5 | 5 | 17.5 | 6 | 21.0 |
| 10 | SIGNS: (Directional) | Job | Job | 1-Job | 2.2 | 1-Job | 2.3 | 2-Job | 4.5 |
| 11 | SITE PREPARATION: | Job | Job | 1-Job | 5.7 | 1-Job | 8.2 | 2-Job | 13.9 |
| 12 | TRAFFIC CONTROL GATES: | Ea | 0.5 | 5 | 2.5 | 4 | 2.0 | 9 | 4.5 |
| 13 | TRAILS: (Hiking) | Mile | 2.0 | | | 1 | 2.0 | 1 | 2.0 |
| 14 | ENTRANCE STATION: | Ea | 10.0 | 1 | 10.0 | | | 1 | 10.0 |
| | SUBTOTALS | | | | 1,065.4 | 1,321.9 | | | 2,387.4 |

DANA PEAK PARK

Dana Peak Park is located on the north side of the lake and contains approximately 613 acres of land. Access is available over an existing paved county road leading from FM 2410. Terrain of most of the park varies from steep at the waters edge to rolling on the higher ground. However, the large peninsula on the west end of the park is rather flat to gently sloping at the waters edge, providing excellent shoreline for various recreational activities. This feature helps to account for the large visitation the park receives. Tree cover ranges from sparse to scattered in the developed areas and dense in the undeveloped areas of the park.

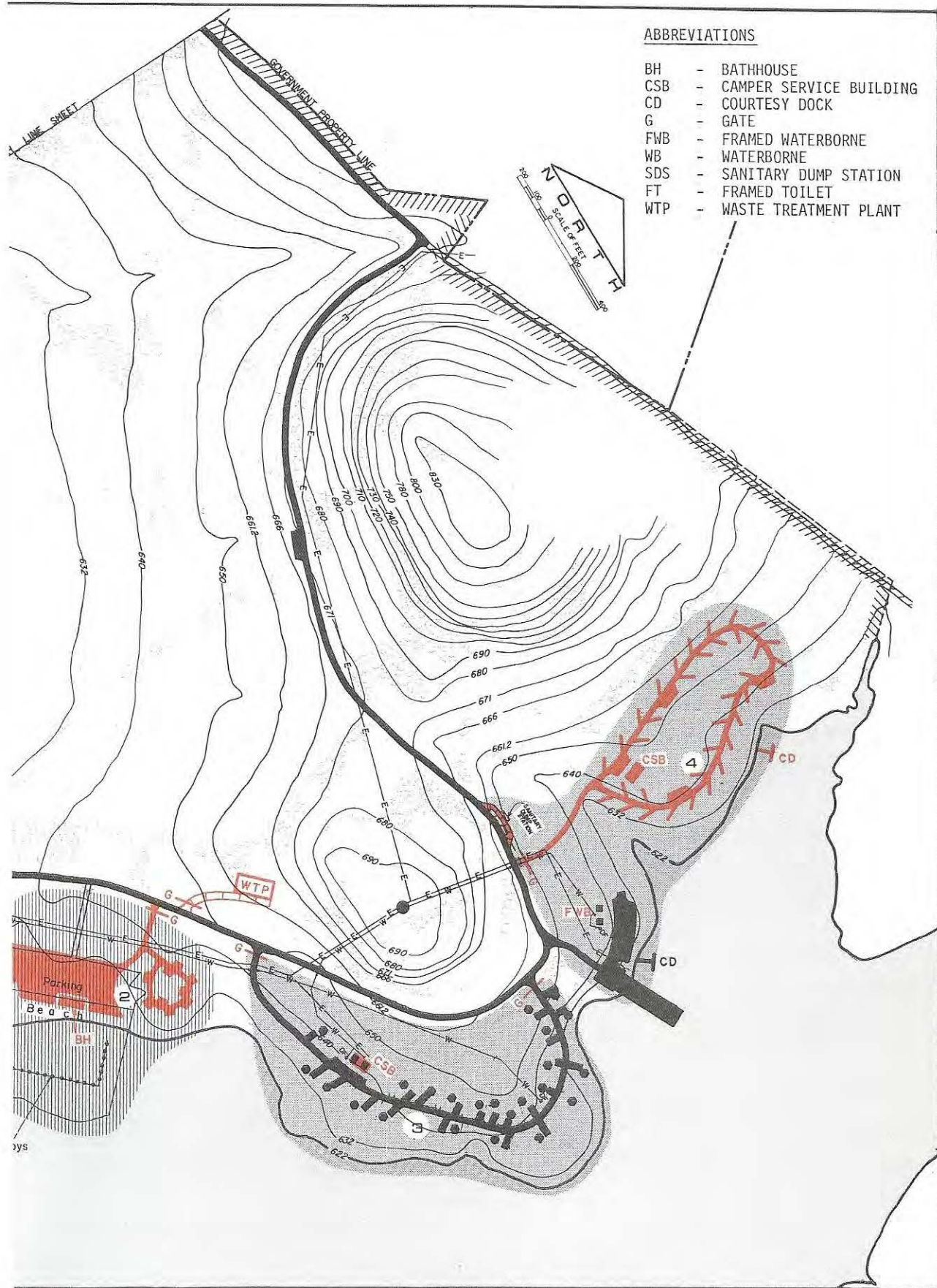
| Management Area | Existing Facilities | Proposed Facilities | |
|----------------------------|--|---|--------------------|
| | | 5-Year Development | Future Development |
| 1 Camping Area | 45 camp units 12 w/shelters 3 drinking fountains 2 pair frame toilets | 40 camp units w/pullouts, shelters,water and electrical hookups 26 water hookups for existing units Waterborne toilet 1 pair frame waterborne toilets Camper service building Four lane boat launch complex w/30 car and trailer parking spaces Traffic control gate | |
| 2 Day Use Beach Area | Buoyed swimming beach (sanded) | Bathhouse w/toilets Parking area 2 drinking foun- tains Loop road w/9 two car pullouts 18 day use units w/shelters 6 water hydrants Traffic control gates | |

| Management Area | Existing Facilities | Proposed Facilities | |
|--------------------|--------------------------|--|--|
| | | 5-Year Development | Future Development |
| 3 Camping Area | 23 camp units w/pullouts | 23 electrical and water hookups for existing units | |
| | 1 pair frame toilets | Replace frame toilets w/camper service building | |
| | 1 drinking fountain | 2 traffic control gates | |
| 4 Camping Area | 4 lane launch complex | Convert/or replace frame toilet to waterborne frame toilet | |
| | 1 pair frame toilets | 35 camp units w/pullouts, shelters, water and electrical hookups | |
| | | Camper service building | |
| | Courtesy dock | Courtesy dock | |
| | Sanitary dump station | Traffic control gates | |
| 5 Day Use | | | 38 day use units w/shelters 10 water hydrants 2 waterborne toilets 4 lane launch complex w/30 car and trailer parking spaces 2 courtesy docks Nature trails |
| 6 Camping Areas | | | 61 camp units w/pullouts, shelters, water and electrical hookups Camper service building Courtesy dock 2 traffic control gates |
| 7 Camping Area | | | 22 camp units w/pullouts, shelters, water and electrical hookups 4 lane launch complex w/30 car and trailer parking spaces Waterborne toilet 2 courtesy docks |

| Management Area | Existing Facilities | Proposed Facilities | |
|--------------------|------------------------|-----------------------|---|
| | | 5-Year Development | Future Development |
| 8 Camping Area | | | 25 camp units w/ pullouts, shelters, water and electrical hookups Camper service building Traffic control gate |

ADDITIONAL SUPPORTING FACILITIES:

| | | |
|----------------------------|---------------------|---------------------|
| 3.6 mi paved park road | (See Cost Estimate) | (See Cost Estimate) |
| 4,472 sq yds paved parking | | |
| 7,403 lin ft water line | | |
| Pressurized well | | |



ABBREVIATIONS

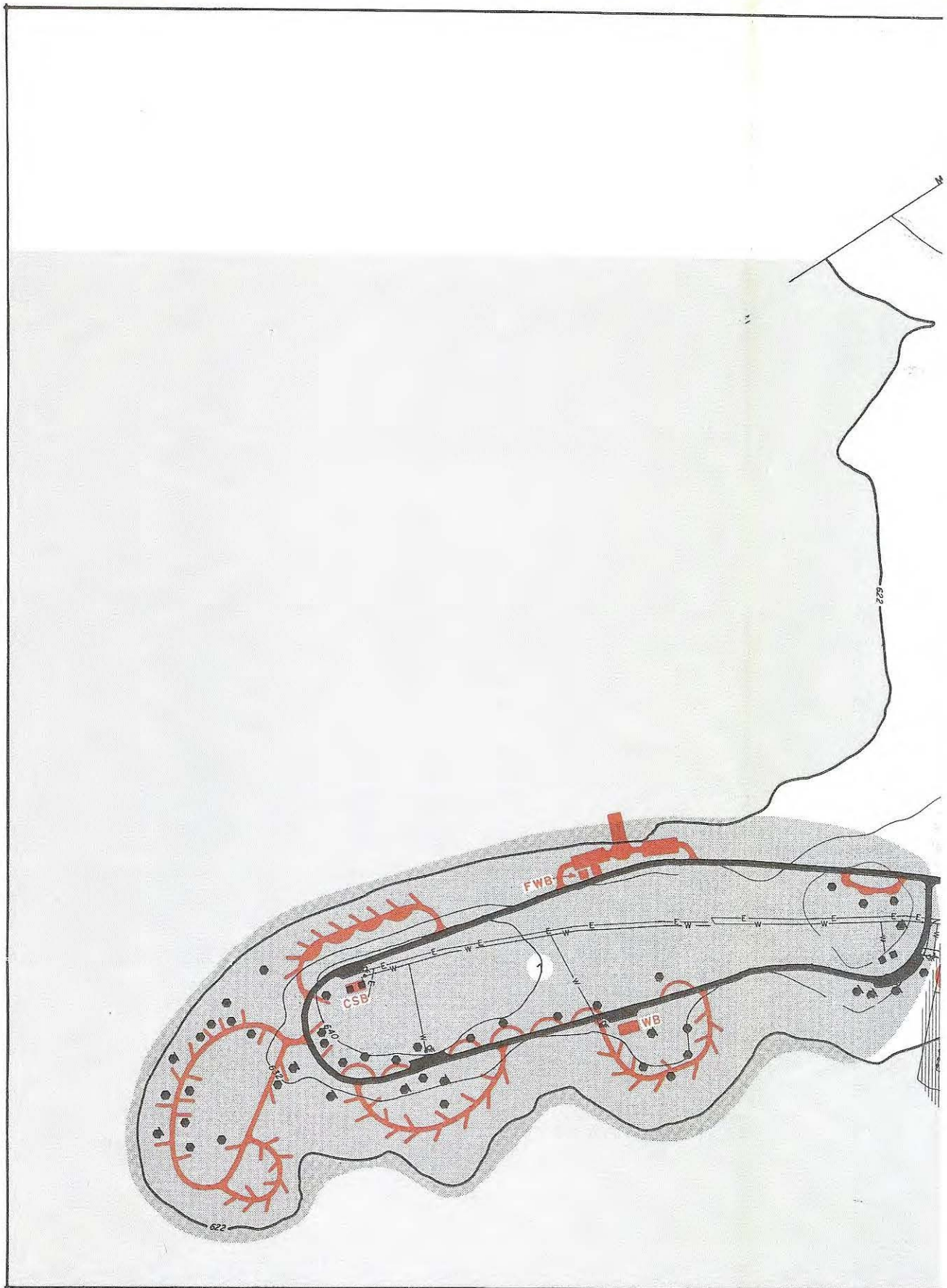
| | | |
|-----|---|-------------------------|
| BH | - | BATHHOUSE |
| CSB | - | CAMPER SERVICE BUILDING |
| CD | - | COURTESY DOCK |
| G | - | GATE |
| FWB | - | FRAMED WATERBORNE |
| WB | - | WATERBORNE |
| SDS | - | SANITARY DUMP STATION |
| FT | - | FRAMED TOILET |
| WTP | - | WASTE TREATMENT PLANT |

PARK LIMIT
TRAIL
DUMP STATION
BUILDING
WATER AREA

DRINKING FOUNT. \bullet DF
PICNIC UNIT \bullet
TREES \bullet
CONTOURS \sim 70
GOV'T. FEE LINE $---$

PARK MASTER PLAN
STILLHOUSE HOLLOW DAM
DANA PEAK PARK
LAMPASAS RIVER, TEXAS
DATE DEC. 1974

PLATE
3.4
A
NUMBER



U. S. ARMY
ENGINEER DISTRICT
FORT WORTH
FT. WORTH, TEXAS

| | MANAGEMENT | AREAS |
|----------|------------|-------|
| EXISTING | OVERNIGHT | DAY |
| 5 YEAR | NA | NA |
| ULTIMATE | NA | NA |

ALL PROPOSED
ROADS, TRAILS,
AND OTHER TYPES
OF DEVELOPMENT
WILL BE SHOWN
IN THESE COLORS.

NA

LEGEND

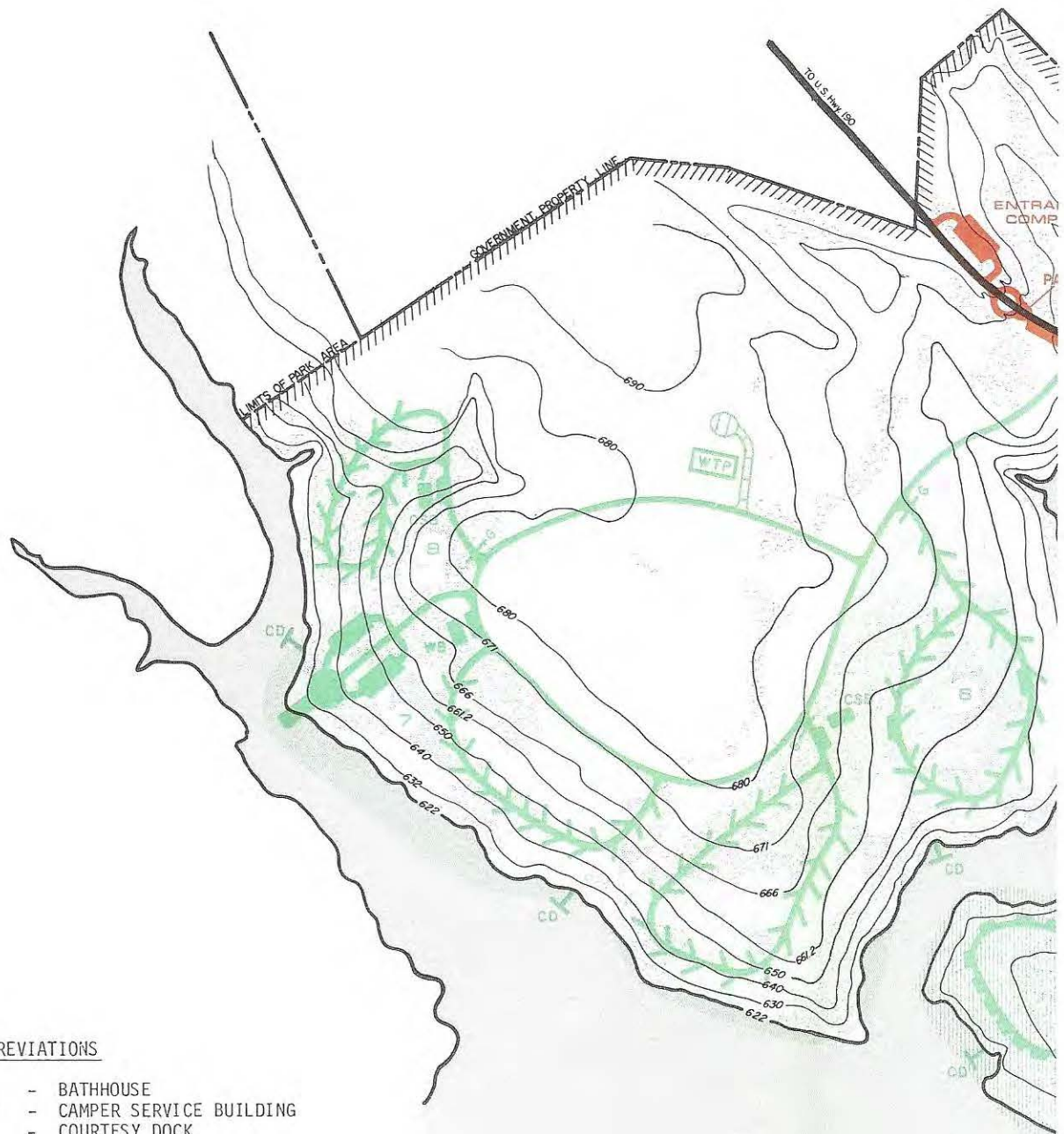
REFERENCE NO. 2

ROAD (PAVED)

ROAD (OTHER)

LAUNCH SITE

SWIMMING



ABBREVIATIONS

| | | |
|-----|---|-------------------------|
| BH | - | BATHHOUSE |
| CSB | - | CAMPER SERVICE BUILDING |
| CD | - | COURTESY DOCK |
| G | - | GATE |
| FWB | - | FRAMED WATERBORNE |
| WB | - | WATERBORNE |
| SDS | - | SANITARY DUMP STATION |
| FT | - | FRAMED TOILET |
| WTP | - | WASTE TREATMENT PLANT |

U. S. ARMY
ENGINEER DISTRICT
FORT WORTH
FT. WORTH, TEXAS

| | MANAGEMENT | AREAS |
|----------|------------|-------|
| | OVERNIGHT | DAY |
| EXISTING | | |
| 5 YEAR | NA | |
| ULTIMATE | | NA |

ALL PROPOSED
ROADS, TRAILS,
AND OTHER TYPES
OF DEVELOPMENT
WILL BE SHOWN
IN THESE COLORS.



| REFERENCE NO. | 2 |
|---------------|---|
| ROAD (PAVED) | |
| ROAD (OTHER) | |
| LAUNCH SITE | |
| SWIMMING | |



DRINKING FOUNT. • DF
PICNIC UNIT
TREES
CONTOURS — 76 —
GOV'T. FEE LINE ———

PLATE
3.4
B
NUMBER

TABLE 13

CEDAR GAP PARK

(Planned Dev - Amounts in Thousands of Dollars)

| Item Number | Item | Unit | Unit Cost | 5 Yr Dev Plan | | (Future) | | Total Planned Dev | |
|-------------|---|---------|-----------|---------------|------|----------|-------|-------------------|-------|
| | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 1 | ROADS: | Mile | | | | | | | |
| | A. Primary (Bit) | | 110.0 | 0.4 | 44.0 | | | 0.4 | 44.0 |
| | B. Area Circulation 1-way | | 65.0 | 0.8 | 52.0 | 0.4 | 26.0 | 1.2 | 78.0 |
| | C. Area Circulation 2-way | | 90.0 | 0.7 | 63.0 | 0.5 | 45.0 | 1.2 | 108.0 |
| | D. Gravel (Service) 2-way | | 48.0 | 0.3 | 14.4 | 0.2 | 9.6 | 0.5 | 24.0 |
| 2 | PARKING AREAS: | Sq. Yd. | | | | | | | |
| | A. Paved - Group | | .008 | 2063 | 16.5 | 700 | 5.6 | 2763 | 22.1 |
| | B. Gravel - Group | | .006 | 138 | 0.8 | | | 138 | 0.8 |
| | C. Paved | | .008 | 3680 | 29.4 | 3293 | 26.3 | 6973 | 55.7 |
| 3 | BOAT LAUNCHING RAMPS: (Conc) 3-Lane 50 Ft Wide | Sq. Yd. | 0.40 | 850 | 34.0 | | | 850 | 34.0 |
| 4 | WATER SUPPLY SYSTEM: | Ea | 20.0 | 1 | 20.0 | | | 1 | 20.0 |
| 5 | SANITARY FACILITIES: | Ea | | | | | | | |
| | A. Waterborne Toilet | | 46.0 | 1 | 46.0 | | | 1 | 46.0 |
| | B. Camper Service Bldg w/showers | | 60.0 | 1 | 60.0 | 1 | 60.0 | 2 | 120.0 |
| | C. Frame Toilets | | 3.0 | 3 Pr | 18.0 | | | 3 Pr | 18.0 |
| | D. Sanitary Dump Station (Trailer) | | 5.5 | 1 | 5.5 | | | 1 | 5.5 |
| | E. Waste Treatment Plant | Ea | 100.0 | | | 1 | 100.0 | 1 | 100.0 |
| 6 | UTILITIES: | | | | | | | | |
| | A. Water Distribution Lines | L.F. | .003 | 7300 | 21.9 | 6200 | 18.6 | 13500 | 40.5 |
| | B. Electric Service Lines | | .002 | 1000 | 2.0 | 1000 | 2.0 | 2000 | 4.0 |
| | C. Electric Distribution Lines (Underground) | | .004 | 5200 | 20.8 | 3600 | 14.4 | 8800 | 35.2 |
| | D. Electric Hookups | Ea | 0.1 | 32 | 3.2 | 32 | 3.2 | 64 | 6.4 |
| | E. Water Hookups | | .05 | 38 | 1.9 | 40 | 2.0 | 78 | 3.9 |

TABLE 13 (Continued)

CEDAR GAP PARK

(Planned Dev - Amounts in Thousands of Dollars)

| Item Number | Item | Unit | Unit Cost | 5 Yr Dev Plan | | (Future) | | Total Planned Dev | |
|----------------|-------------------------------------|------|--------------|---------------|-------|----------|-------|-------------------|-------|
| | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 7 | PICNIC AND CAMP UNITS: | Ea | | | | | | | |
| | Picnic Units | | 0.9 | 22 | 19.8 | 12 | 10.8 | 34 | 30.6 |
| | Camp Units | | 1.1 | 50 | 55.0 | 37 | 40.7 | 87 | 85.8 |
| 8 | TABLE SHELTERS: Single (1-Table) | Ea | 0.7 | 54 | 37.8 | 49 | 34.3 | 103 | 72.1 |
| 9 | COURTESY DOCK (Boating): | Ea | 3.5 | 3 | 10.5 | 1 | 3.5 | 4 | 14.0 |
| 10 | SIGNS (Directional): | Job | Job | 1-Job | 0.8 | 1-Job | 0.6 | 2-Job | 1.4 |
| 11 | SITE PREPARATION: | Job | Job | 1-Job | 2.7 | 1-Job | 2.5 | 2-Job | 5.2 |
| 12 | TRAFFIC CONTROL GATES: | Ea | 0.5 | 3 | 1.5 | 1 | 0.5 | 4 | 2.0 |
| 13 | TRAILS (Hiking): | Mi | 2.0 | 0.5 | 1.0 | 0.6 | 1.2 | 1.1 | 2.2 |
| 14 | FENCING: | Mi | 3.75 | .53 | 2.0 | | | .53 | 2.0 |
| | SUBTOTALS | | | | 584.5 | | 406.8 | | 991.3 |

CEDAR GAP PARK

Cedar Gap Park is located in the upper reaches and is on the north-west side of the lake. The park consists of approximately 153 acres of land. Cedar Knob road, which spans the lake and divides the park in half, provides paved access from the north and south. This park's accessibility has made it a popular area for boat launching although only one lane is available and facilities development has been limited to frame toilets and parking area. The area to the west of Cedar Knob road should be fenced immediately to prevent further household trash dumping, by the public, until the park can be developed. Terrain ranges from steep at the waters edge to rolling on the higher ground. Tree cover in the park is dense and consists mainly of junipers and oaks.

| Management Area | Existing Facilities | Proposed Facilities | |
|-------------------|----------------------|---|--------------------|
| | | 5-Year Development | Future Development |
| 1 Day Use Area | 1 pair frame toilets | Replace frame toilets with waterborne facilities | |
| | Launch site - 1 lane | Expand launch site by 3 lanes | |
| | Courtesy dock | Loop road w/pullouts 10 day use units w/shelters 3 water hydrants Courtesy dock | |
| 2 Day Use Area | | Loop road w/6 2 car pullouts 12 day use units w/shelters 3 water hydrants | |
| 3 Camp Area | | 32 camp units w/shelters, water and electrical hookups Camper service building 2 courtesy docks | |

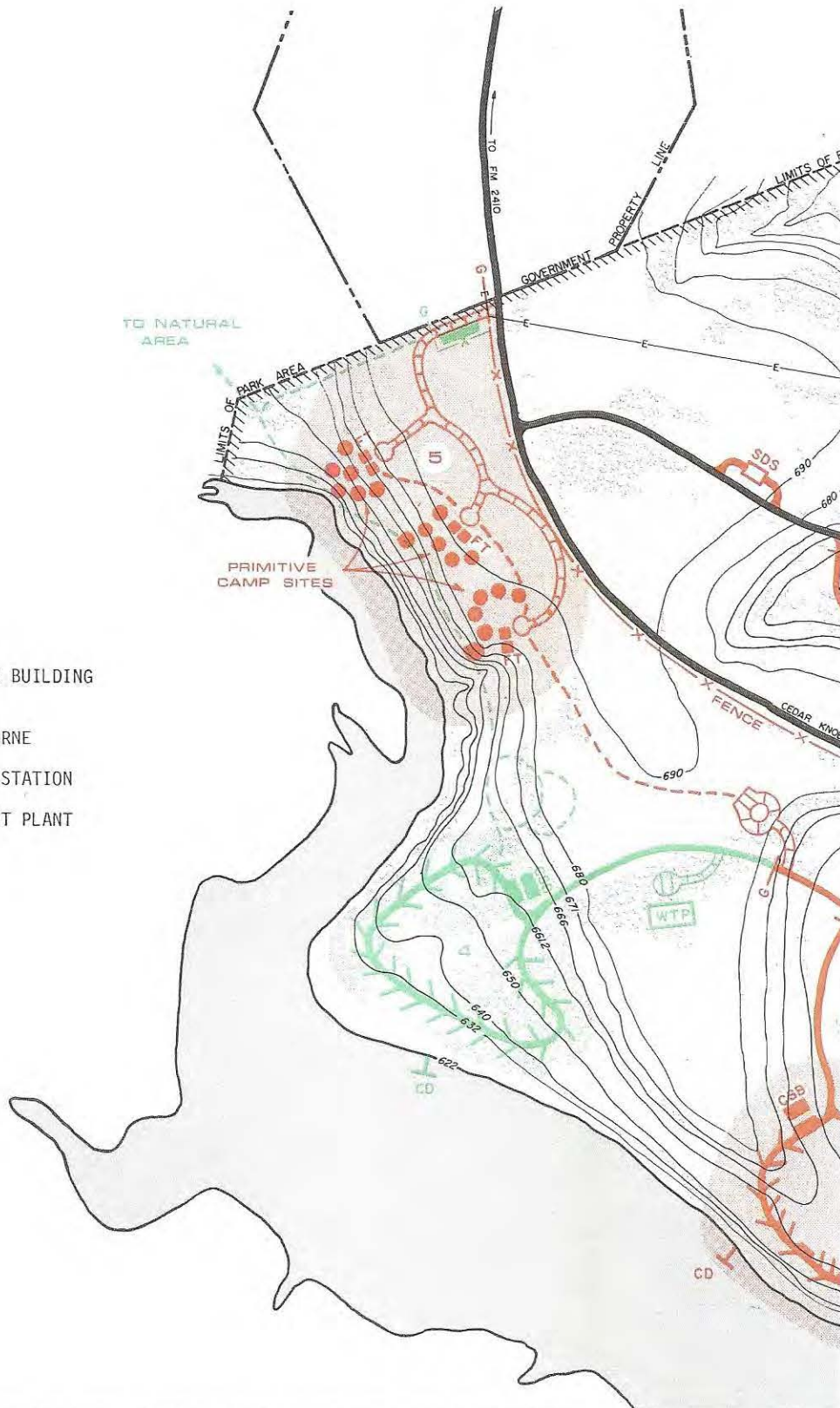
| Management Area | Existing Facilities | Proposed Facilities | |
|--|------------------------|--|--|
| | | 5-Year Development | Future Development |
| 4 Camp Area | | | 37 camp units w/shelters, water and electrical hookups Camper service building Courtesy dock Trails |
| 5 Hike-in Primitive Camp Area | | 3 primitive group camps each consisting of 6 camp units and 1 pair frame toilets Service road to camp areas Trails | Parking area for hiking trails in natural area Traffic control gate |
| 6 Day Use Area | | | 12 day use units w/shelters 3 water hydrants |

Additional Supporting Facilities:

0.4 mi primary park road
1,000 sq yds paved parking (See Cost Estimate) (See Cost Estimate)

ABBREVIATIONS

| | | |
|-----|---|-------------------------|
| BH | - | BATHHOUSE |
| CSB | - | CAMPER SERVICE BUILDING |
| CD | - | COURTESY DOCK |
| G | - | GATE |
| FWB | - | FRAMED WATERBORNE |
| WB | - | WATERBORNE |
| SDS | - | SANITARY DUMP STATION |
| FT | - | FRAMED TOILET |
| WTP | - | WASTE TREATMENT PLANT |



J. S. ARMY
ENGINEER DISTRICT
FORT WORTH
FT. WORTH, TEXAS

| | MANAGEMENT | AREAS |
|----------|------------|-------|
| | OVERNIGHT | DAY |
| EXISTING | | |
| 5 YEAR | | |
| ULTIMATE | | |

ALL PROPOSED
ROADS, TRAILS,
AND OTHER TYPES
OF DEVELOPMENT
WILL BE SHOWN
IN THESE COLORS.



LEGEND

| | |
|-----------------|--|
| REFERENCE NO. 2 | |
| ROAD (PAVED) | |
| ROAD (OTHER) | |
| LAUNCH SITE | |
| SWIMMING | |

TABLE 14
UNION GROVE PARK - WEST

(Planned Dev - Amounts in Thousands of Dollars)

| Item Number | Item | Unit | Unit Cost | 5 Year Dev Plan | | (Future) | | Total Planned Dev | |
|-------------|---|---------|-----------|-----------------|-------|----------|------|-------------------|-------|
| | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 1 | ROADS: | Mile | | | | | | | |
| | A. Primary (Bit): | | 110.0 | 1.1 | 121.0 | | | 1.1 | 121.0 |
| | B. Area Circulation 1-way | | 65.0 | 1.2 | 78.0 | 0.8 | 52.0 | 2.0 | 130.0 |
| | C. Area Circulation 2-way | | 90.0 | 0.9 | 81.0 | 0.1 | 9.0 | 1.0 | 90.0 |
| | D. Gravel (Service) 2-way | | 48.0 | 0.1 | 4.8 | | | 0.1 | 4.8 |
| 2 | PARKING AREAS: | | | | | | | | |
| | A. Paved - Group | Sq. Yd. | .008 | 6217 | 49.7 | 2860 | 22.9 | 9077 | 72.6 |
| | B. Paved - Pullouts | | .008 | 10240 | 81.9 | 5080 | 40.6 | 15320 | 122.5 |
| 3 | BOAT LAUNCHING RAMPS: (Conc) 4-Lane 68 Ft Wide | Sq. Yd. | .040 | | | (1) 1254 | 50.2 | (1) 1254 | 50.2 |
| 4 | SANITARY FACILITIES: | Ea | | | | | | | |
| | A. Waterborne Toilet | | 46.0 | 1 | 46.0 | 1 | 46.0 | 2 | 92.0 |
| | B. Camper Service Bldg w/showers | | 60.0 | 3 | 180.0 | 1 | 60.0 | 4 | 240.0 |
| | C. Sanitary Dump Station (Trailer) | | 5.5 | 1 | 5.5 | | | 1 | 5.5 |
| | D. Waste Treatment Plant | | 100.0 | 1 | 100.0 | | | 1 | 100.0 |
| 5 | UTILITIES: | | | | | | | | |
| | A. Water Distribution Lines | L.F. | .003 | 23160 | 69.5 | 9700 | 29.1 | 32860 | 98.6 |
| | B. Electric Service Lines | | .002 | 3800 | 7.6 | 6000 | 12.0 | 9800 | 19.6 |
| | C. Electric Distribution Lines (Underground) | | .004 | 13000 | 52.0 | 4300 | 17.2 | 17300 | 69.2 |
| | D. Electric Hookups | Ea | 0.1 | 118 | 11.8 | 61 | 6.1 | 179 | 17.9 |
| | E. Water Hookups | | 0.5 | 128 | 6.4 | 61 | 3.1 | 189 | 9.5 |

TABLE 14 (Continued)

UNION GROVE PARK - WEST

(Planned Dev - Amounts in Thousands of Dollars)

| Item Number | Item | Unit | Unit Cost | 5 Year Dev Plan | | (Future) | | Total Planned Dev | |
|----------------|-------------------------------------|------|--------------|-----------------|---------|----------|-------|-------------------|---------|
| | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 6 | CAMP UNITS: | Ea | 1.1 | 118 | 129.8 | 61 | 67.1 | 179 | 196.9 |
| 7 | TABLE SHELTERS: Single (1 Table) | Ea | 0.7 | 118 | 82.6 | 61 | 42.7 | 179 | 125.3 |
| 8 | DOCKS: | | | | | | | | |
| | A. Courtesy (Boating) | Ea | 3.5 | 3 | 10.5 | 1 | 3.5 | 4 | 14.0 |
| | B. Fishing | | 10.0 | 1 | 10.0 | | | 1 | 10.0 |
| 9 | SIGNS: Directional | Job | Job | 1-Job | 3.9 | 1-Job | 1.0 | 2-Job | 4.9 |
| 10 | SITE PREPARATION: | Job | Job | 1-Job | 6.0 | 1-Job | 3.1 | 2-Job | 9.1 |
| 11 | TRAFFIC CONTROL GATES: | Ea | 0.5 | 6 | 3.0 | 2 | 1.0 | 8 | 4.0 |
| 12 | TENT PAD: | Ea | 0.1 | 22 | 2.2 | | | 22 | 2.2 |
| 13 | PLAY EQUIPMENT: | Unit | 2.0 | 2 | 4.0 | 1 | 2.0 | 3 | 6.0 |
| 14 | ENTRANCE STATION: | Ea | 10.0 | 1 | 10.0 | | | 1 | 10.0 |
| | SUBTOTALS | | | | 1,157.2 | | 468.6 | | 1,625.8 |

UNION GROVE PARK (WEST)

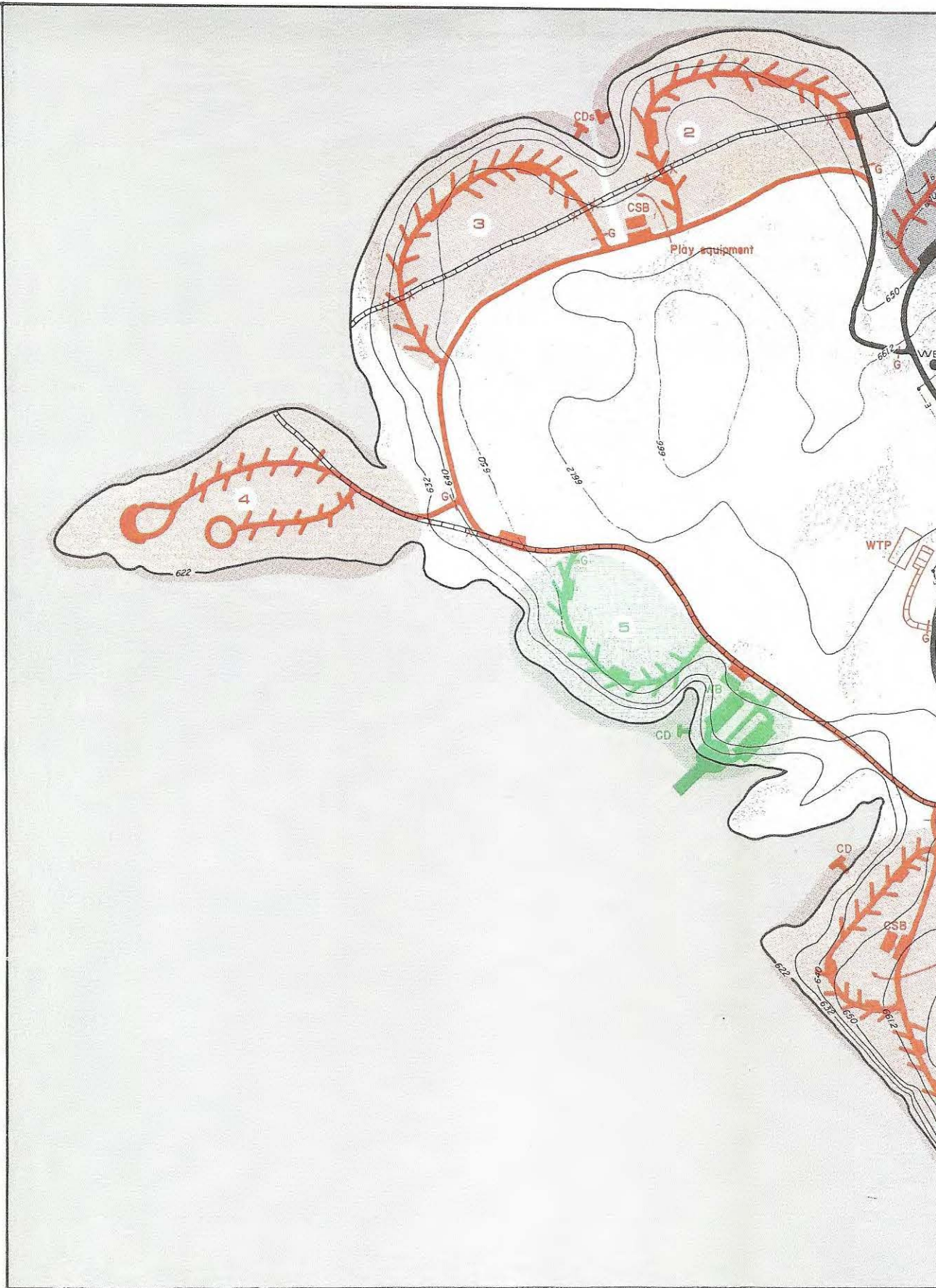
Union Grove Park (s) is located on the south side of the lake and consists of approximately 547 acres of land. Access is available over FM 2786 which connects to Interstate 35 (U.S. Highway 81) approximately 8 miles away. The park (s) has two separate existing entrances, one each at the east and west portions of the park (s), with no interlinking development. In view of current guideline to minimize multiple entrances and to separate day and overnight use for ease of user fee administration, this plan proposes that the two areas be developed and administered separately. Union Grove (west) is designed extensively for camping, while Union Grove (east) is designed for day use activities. No development is proposed in the buffer zone between the two areas.

| Management Area | Existing Facilities | Proposed Facilities | |
|-------------------|---------------------------------------|---|--------------------|
| | | 5-Year Development | Future Development |
| 1 Camping Area | Launch site 4-lane | Loop road w/29 pullouts | |
| | 10 camp units w/o shelters | 19 additional camp units w/ shelters, water and electrical hookups | |
| | 1 pair frame toilets | Replace frame toilets with waterborne facility | |
| | 4 drinking fountains Courtesy dock | Fishing pier | |
| 2 Camping Area | | 21 camp units w/ shelters, water, and electrical hookups | |
| | | Camper service building Play equipment Courtesy dock Traffic control gates | |
| 3 Camping Area | | 23 camp units w/ shelters, water and electrical hookups | |
| | | Courtesy dock Traffic control gate | |

| Management Area | Existing Facilities | Proposed Facilities | |
|-------------------|---------------------|---|---|
| | | 5-Year Development | Future Development |
| 4 Camping Area | | 22 camp units w/ shelters, water and electrical hookups 22 tent pads Traffic control gate | |
| 5 Camping Area | | | 15 camp units w/shelters, water and electrical hookups Waterborne toilet 4-lane launch complex w/ 30 car and trailer parking spaces Courtesy dock Traffic control gate |
| 6 Camping Area | | 33 camp units w/ shelters, water and electrical hookups Camper service building Play equipment Courtesy dock Traffic control gates | |
| 7 Camping Area | | | 21 camp units w/shelters, water and electrical hookups Camper service building Play equipment Courtesy dock |
| 8 Camping Area | | | 25 camp units w/shelters, water and electrical hookups |

ADDITIONAL SUPPORTING FACILITIES:

| | | |
|---------------------------------|---------------------|---------------------|
| 1.4 mi paved park road | (See Cost Estimate) | (See Cost Estimate) |
| 0.2 mi gravel road | | |
| 6,961 sq yd paved parking | | |
| Pressurized well | | |
| 2,715 lin ft water line | | |
| Sanitary dump station (trailer) | | |



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FT. WORTH, TEXAS

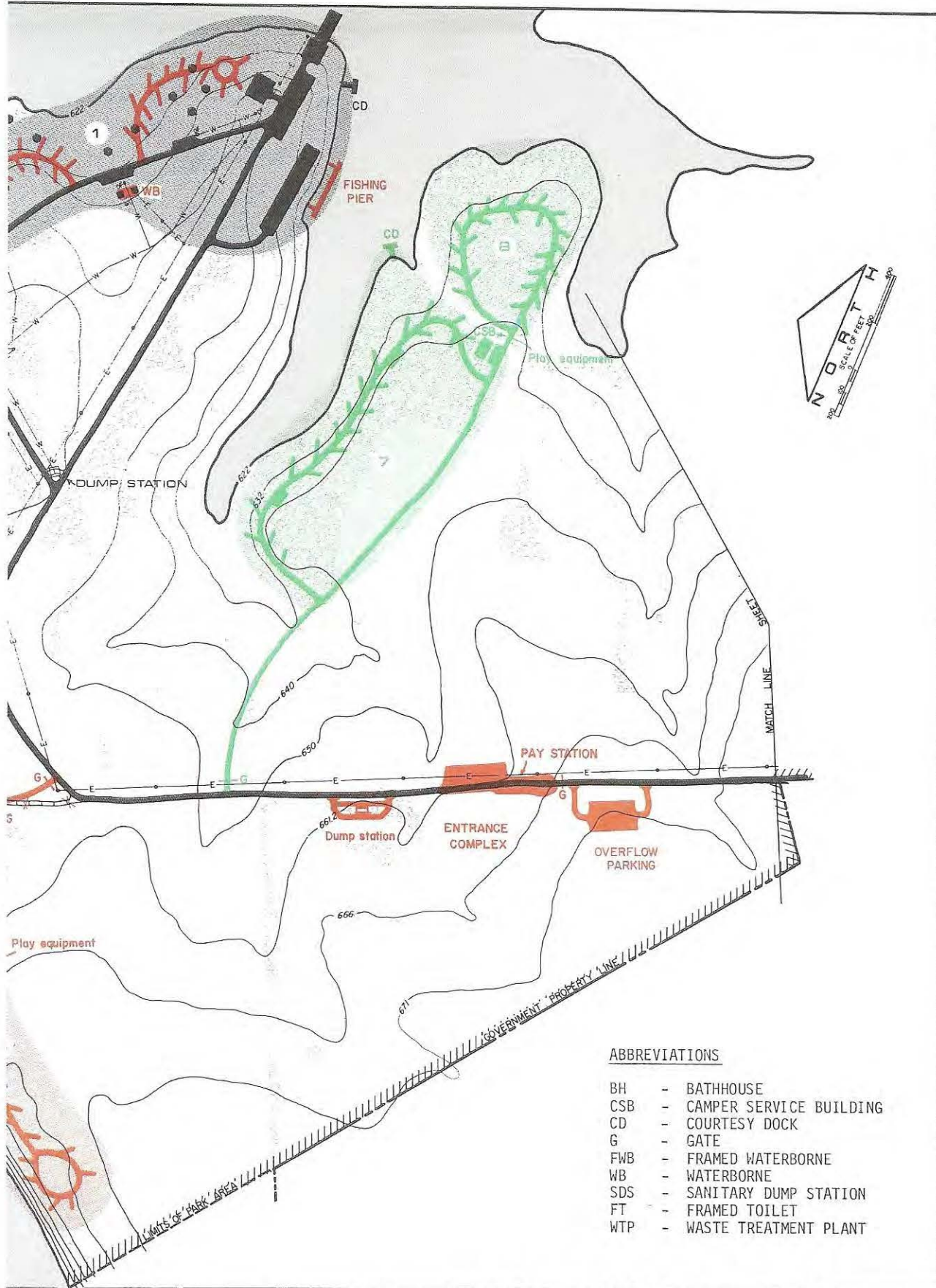
MANAGEMENT
OVERNIGHT
EXISTING
5 YEAR
ULTIMATE

AREAS
DAY

ALL PROPOSED
ROADS, TRAILS,
AND OTHER TYPES
OF DEVELOPMENT
WILL BE SHOWN
IN THESE COLORS.

LEGEND

REFERENCE NO. 2
ROAD (PAVED)
ROAD (OTHER)
LAUNCH SITE
SWIMMING



ABBREVIATIONS

| | | |
|-----|---|-------------------------|
| BH | - | BATHHOUSE |
| CSB | - | CAMPER SERVICE BUILDING |
| CD | - | COURTESY DOCK |
| G | - | GATE |
| FWB | - | FRAMED WATERBORNE |
| WB | - | WATERBORNE |
| SDS | - | SANITARY DUMP STATION |
| FT | - | FRAMED TOILET |
| WTP | - | WASTE TREATMENT PLANT |

PARK LIMIT
TRAIL
DUMP STATION
BUILDING
WATER AREA

DRINKING FOUNT. OF
PICNIC UNIT
TREES
CONTOURS
GOV'T. FEE LINE

PARK MASTER PLAN
STILLHOUSE HOLLOW DAM
UNION GROVE PARK
LAMPASAS RIVER, TEXAS
DATE DEC. 1974

PLATE
3.6
A
NUMBER

TABLE 15

UNION GROVE PARK - EAST

(Planned Dev - Amounts in Thousands of Dollars)

| Item Number | Item | Unit | Unit Cost | 5 Yr Dev Plan | | (Future) | | Total Planned Dev | |
|----------------|---|---------|--------------|---------------|------|----------|-------|-------------------|-------|
| | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 1 | ROADS: | Mile | | | | | | | |
| | A. Primary (Bit) | | 110.0 | | | 0.7 | 77.0 | 0.7 | 77.0 |
| | B. Area Circulation 1-way | | 65.0 | 0.5 | 32.5 | 0.9 | 58.5 | 1.4 | 91.0 |
| | C. Area Circulation 2-way | | 90.0 | 0.2 | 18.0 | | | 0.2 | 18.0 |
| | D. Gravel (Service) 2-way | | 48.0 | | | 0.1 | 4.8 | 0.1 | 4.8 |
| 2 | PARKING AREAS: | Sq. Yd. | | | | | | | |
| | A. Paved-Group | | .008 | 388 | 3.1 | 2600 | 20.8 | 2988 | 23.9 |
| | B. Paved-Pullouts | | .008 | 840 | 6.7 | 1360 | 10.9 | 2200 | 17.6 |
| 3 | BOAT LAUNCHING RAMPS: (Conc) 2 Lane 32 Ft wide | Sq. Yd. | 0.04 | | | (1) 533 | 21.3 | (1) 533 | 21.3 |
| 4 | SANITARY FACILITIES: | Ea | | | | | | | |
| | A. Waterborne Toilet | | 46.0 | 1 | 46.0 | 2 | 92.0 | 3 | 138.0 |
| | B. Frame Waterborne Toilets | Pr | 15.0 | 1 Pr | 15.0 | | | 1 pr | 15.0 |
| | C. Waste Treatment Plant | Ea | 100.0 | | | 1 | 100.0 | 1 | 100.0 |
| | D. Sanitary Dump Station (Trailer) | | 5.5 | | | 1 | 5.5 | 1 | 5.5 |
| 5 | UTILITIES: | | | | | | | | |
| | A. Water Distribution Lines | L.F. | .003 | 3000 | 9.0 | 6500 | 19.5 | 9500 | 28.5 |
| | B. Electric Service Lines | | .002 | 200 | 0.4 | 3500 | 7.0 | 3700 | 7.4 |
| | C. Water Hookups | Ea | 0.05 | 14 | 0.7 | 18 | 0.9 | 32 | 1.6 |
| | D. Drinking Fountains | Ea | 0.5 | | | 1 | 0.5 | 1 | 0.5 |
| 6 | PICNIC UNITS: | Ea | 0.9 | 34 | 30.6 | 44 | 39.6 | 78 | 70.2 |

TABLE 15 (Continued)

UNION GROVE PARK - EAST

(Planned Dev - Amounts in Thousands of Dollars)

| Item Number | Item | Unit | Unit Cost | 5 Yr Dev Plan | | (Future) | | Total Planned Dev | |
|----------------|--------------------------|------|--------------|---------------|-------|----------|-------|-------------------|--------|
| | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 7 | TABLE SHELTERS: | Ea | | | | | | | |
| | A. Group - 3 Tables | | 6.0 | 1 | 6.0 | 1 | 6.0 | 2 | 12.0 |
| | B. Single - 1 Table | | 0.7 | 34 | 23.8 | 44 | 30.8 | 78 | 54.6 |
| 8 | COURTESY DOCK: (Boating) | Ea | 3.5 | | | 1 | 3.5 | 1 | 3.5 |
| 9 | SIGNS: Directional | Job | Job | 1-Job | 0.7 | 1-Job | 1.0 | 2-Job | 1.7 |
| 10 | SITE PREPARATION: | Job | Job | 1-Job | 1.8 | 1-Job | 2.6 | 2-Job | 4.4 |
| 11 | TRAFFIC CONTROL GATES | Ea | 0.5 | 1 | 0.5 | 1 | 0.5 | 2 | 1.0 |
| 12 | TRAILS: (Hiking) | Mile | 2.0 | | | 1.3 | 2.6 | 1.3 | 2.6 |
| 13 | PLAY EQUIPMENT: | Unit | 2.0 | 1 | 2.0 | 1 | 2.0 | 2 | 4.0 |
| 14 | ENTRANCE STATION: | Ea | 10.0 | 1 | 10.0 | | | 1 | 10.0 |
| | SUBTOTALS | | | | 206.8 | | 507.3 | | 714.10 |

UNION GROVE PARK (EAST)

| Management Area | Existing Facilities | Proposed Facilities | |
|-----------------------|--|---|--|
| | | 5-Year Development | Future Development |
| 1 Day Use | 7 day use units w/o shelters 2 pair frame toilets Launch site 4-lanes Courtesy dock 3 drinking fountains | 18 additional day use units w/shelters Replace 1 pair frame toilets w/waterborne facility Loop road w/13 two car parking areas 9 water hydrants | |
| 2 Day Use | 3 day use units w/o shelters | 10 additional day use units w/shelters Loop road w/5 two car parking areas 5 water hydrants | |
| 3 Group Day Use | | 6 day use units and group shelter (3-table) Frame waterborne toilet Traffic control gate | |
| 4 Day Use | | | Day use area w/16 two car parking areas 32 day use units w/shelters 12 water hydrants Waterborne toilet Play equipment Group shelter (3-table) |
| 5 Day Use | | | Day use area w/6 two car parking areas 12 picnic units w/shelters 5 water hydrants 2-lane launch complex w/15 car and trailer parking areas Waterborne toilet Courtesy dock |

| Management Area | Existing Facilities | Proposed Facilities | |
|--------------------|------------------------|-----------------------|-----------------------|
| | | 5-Year Development | Future Development |

ADDITIONAL SUPPORTING FACILITIES:

| | | |
|---------------------------|---------------------|---------------------|
| 1.3 mi paved park road | (See Cost Estimate) | (See Cost Estimate) |
| 2,800 sq yd paved parking | | |
| Pressurized well | | |
| 2,197 lin ft water line | | |



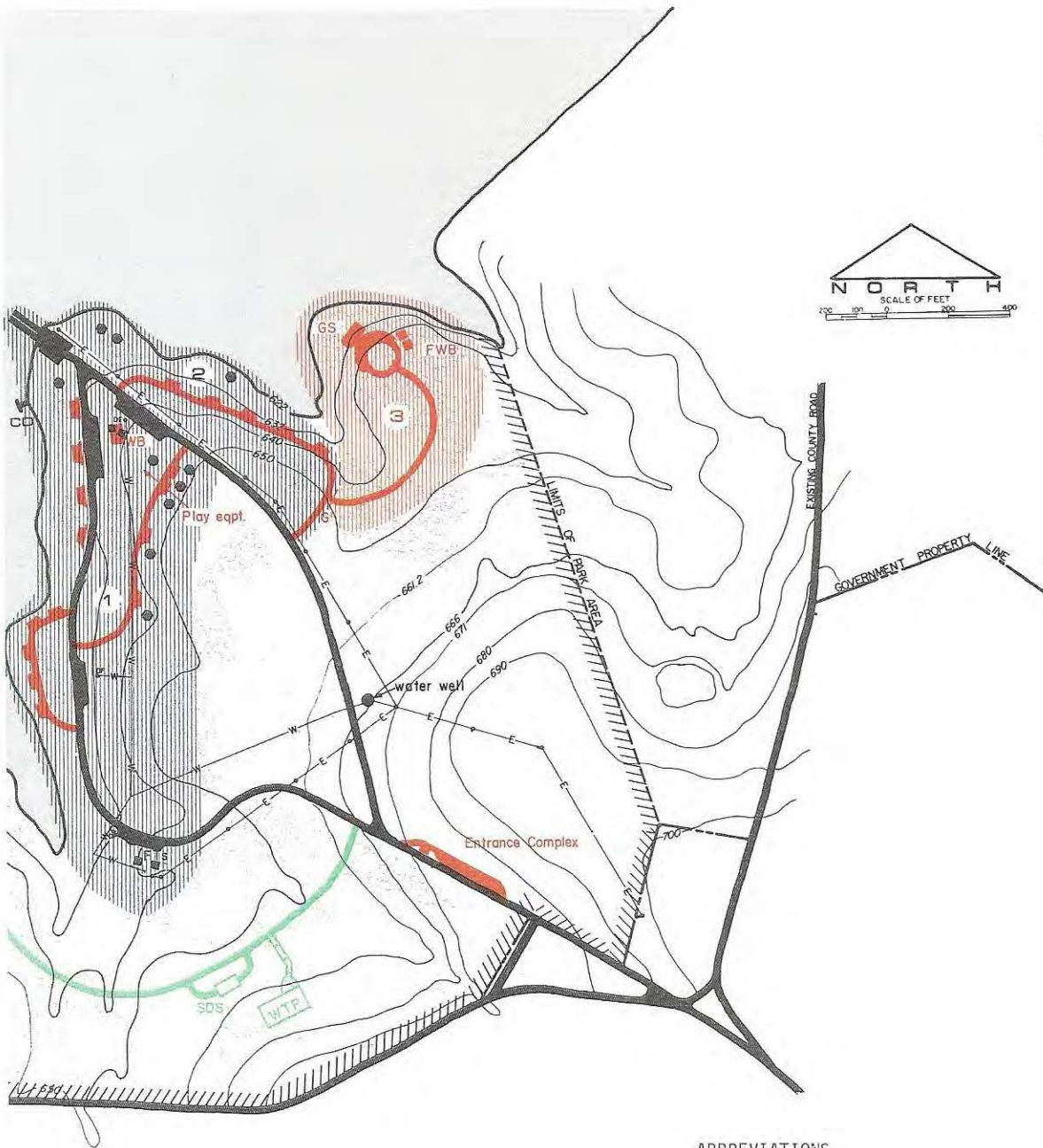
U. S. ARMY
ENGINEER DISTRICT
FORT WORTH
FT. WORTH, TEXAS

| | MANAGEMENT AREAS | OVERNIGHT | DAY |
|----------|------------------|-----------|-----|
| EXISTING | | | |
| 5 YEAR | | | |
| ULTIMATE | | | |

ALL PROPOSED
ROADS, TRAILS,
AND OTHER TYPES
OF DEVELOPMENT
WILL BE SHOWN
IN THESE COLORS.

LEGEND

REFERENCE NO. **2**
ROAD (PAVED)
ROAD (OTHER)
LAUNCH SITE
SWIMMING



ABBREVIATIONS

| | | |
|-----|---|-------------------------|
| BH | - | BATHHOUSE |
| CSB | - | CAMPER SERVICE BUILDING |
| CD | - | COURTESY DOCK |
| G | - | GATE |
| FWB | - | FRAMED WATERBORNE |
| WB | - | WATERBORNE |
| SDS | - | SANITARY DUMP STATION |
| FT | - | FRAMED TOILET |
| WTP | - | WASTE TREATMENT PLANT |

PARK LIMIT
TRAIL
DUMP STATION
BUILDING
WATER AREA

DRINKING FOUNT. DF
PICNIC UNIT
TREES
CONTOURS 76
GOV'T. FEE LINE

PARK MASTER PLAN
STILLHOUSE HOLLOW DAM
UNION GROVE PARK
LAMPASAS RIVER, TEXAS
DATE DEC. 1974

PLATE
3.6
B
NUMBER

TABLE 16

BLUFF PARK

(Planned Dev - Amounts in Thousands of Dollars)

| Item Number | Item | Unit | Unit Cost | 5 Yr Dev Plan | | (Future) | | Total Planned Dev | |
|-------------|--|------|-----------|---------------|------|----------|-------|-------------------|-------|
| | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 1 | ROADS: | Mile | | | | | | | |
| | A. Primary (Bit) | | 110.0 | 0.3 | 33.0 | | | 0.3 | 33.0 |
| | B. Area Circulation 1-way | | 65.0 | 0.2 | 13.0 | 1.1 | 71.5 | 1.3 | 84.5 |
| | C. Area Circulation 2-way | | 90.0 | | | 1.0 | 90.0 | 1.0 | 90.0 |
| | D. Gravel (Service) 2-way | | 48.0 | | | 0.4 | 19.2 | 0.4 | 19.2 |
| 2 | PARKING AREAS: | S.Y. | | | | | | | |
| | A. Paved - Group | | .008 | 2222 | 17.8 | 394 | 3.2 | 2614 | 21.0 |
| | B. Gravel - Group | | .006 | | | 394 | 2.4 | 394 | 2.4 |
| | C. Paved - Pullouts | | .008 | 660 | 5.3 | 6465 | 51.7 | 7125 | 57.0 |
| 3 | BOAT LAUNCHING RAMP: (Conc) 2-Lane - 32 Ft wide | S.Y. | .04 | (1) 533 | 21.3 | | | (1) 533 | 21.3 |
| 4 | WATER SUPPLY SYSTEM | Ea | 20.0 | | | 1 | 20.0 | 1 | 20.0 |
| 5 | SANITARY FACILITIES | Ea | | | | | | | |
| | A. Waterborne Toilet | | 46.0 | 1 | 46.0 | | | 1 | 46.0 |
| | B. Camper Service Bldg w/showers | | 60.0 | | | 2 | 120.0 | 2 | 120.0 |
| | C. Conversion to Waterborne | | 17.2 | 1 | 17.2 | | | 1 | 17.2 |
| | D. Frame Toilets | | 3.0 | | | 1 Pr | 6.0 | 1 Pr | 6.0 |
| | E. Sanitary Dump Sta (Trailer) | | 5.5 | | | 1 | 5.5 | 1 | 5.5 |
| | F. Waste Treatment Plant | | 100.0 | | | 1 | 100.0 | 1 | 100.0 |

TABLE 16 (Continued)

Bluff Park

(Planned Dev - Amounts in Thousands of Dollars)

| Item Number | Item | Unit | Unit Cost | 5 Yr Dev Plan | | (Future) | | Total Planned Dev | |
|-------------|--|------|-----------|---------------|-------|----------|-------|-------------------|-------|
| | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 6 | UTILITIES: | | | | | | | | |
| | A. Water Distribution Lines | L.F. | .003 | 2500 | 7.5 | 11800 | 35.4 | 14300 | 42.9 |
| | B. Electric Service Lines | | .002 | | | 3900 | 7.8 | 3900 | 7.8 |
| | C. Electric Distribution Lines (Underground) | | .004 | 450 | 1.8 | 6900 | 27.6 | 7350 | 29.4 |
| | D. Electric Hookups | Ea | 0.1 | | | 38 | 3.8 | 38 | 3.8 |
| | E. Water Hookups | | .05 | 9 | .4 | 67 | 3.3 | 76 | 3.7 |
| 7 | PICNIC AND CAMP UNITS: | Ea | | | | | | | |
| | A. Picnic | | .9 | | | 30 | 27.0 | 30 | 27.0 |
| | B. Camp | | 1.1 | | | 38 | 41.8 | 38 | 41.8 |
| 8 | TABLE SHELTER: Group (3 tables) | Ea | 6.0 | | | 1 | 6.0 | 1 | 6.0 |
| 9 | COURTESY DOCK: (Boating) | Ea | 3.5 | 1 | 3.5 | 3 | 10.5 | 4 | 14.0 |
| 10 | SIGNS - (Directional): | Job | | 1-Job | 1.0 | 1.0-Job | 1.2 | 2-Job | 2.2 |
| 11 | SITE PREPARATION: | Job | | 1-Job | 0.5 | 1 Job | 4.0 | 2-Job | 4.5 |
| 12 | TRAFFIC CONTROL GATES: | Ea | 0.5 | | | 5 | 2.5 | 5 | 2.5 |
| 13 | ENTRANCE COMPLEX: | Ea | 10.0 | 1 | 10.0 | | | 1 | 10.0 |
| | SUBTOTALS | | | | 178.3 | | 660.4 | | 838.7 |

BLUFF PARK

Bluff Park, which contains approximately 268 acres of land, is located at the south end of the dam adjacent to the spillway. Like Overlook Park, this area is located on top of a high bluff overlooking the lake. Terrain is rolling to flat on top of the bluff and very steep at the waters edge, limiting shoreline access. Tree cover in the park consists mostly of junipers and is dense in most areas of the park. Visitor use of this park has been low because a boat launching complex has not yet been provided.

| Management Area | Existing Facilities | Proposed Facilities | |
|-------------------|----------------------------------|--|--|
| | | 5-Year Development | Future Development |
| 1 Day Use Area | 20 day use units 2/w shelters | 12 two car pull-outs | |
| | Masonry vault toilet | Convert existing masonry vault toilet to water-borne facility | |
| | 2 drinking fountains | 5 water hydrants | |
| 2 Day Use Area | 9 day use units 1/w shelter | Loop road w/8 two car pullouts for existing units | |
| | 1 pair frame toilets | Replace frame toilets w/wb facility | |
| | 1 drinking fountain | 2 lane launch complex w/30 car and trailer parking area 1 courtesy dock | |
| 3 Day Use Area | | | 30 day use units w/shelters 10 water hydrants 1 traffic control gate |

| Management Area | Existing Facilities | Proposed Facilities | |
|--------------------------------------|------------------------|-----------------------|--|
| | | 5-Year Development | Future Development |
| 4 Camp Area | | | 28 camp units w/shelters, water and electrical hookups Camper service building 2 courtesy docks Traffic control gate |
| 5 Primitive Group Camp Area | | | 10 camp units w/shelters Frame toilets Group shelter |
| 6 Camp Area | | | 29 camp units w/shelters, water and electrical hookups Camper service building Courtesy dock 1 traffic control gate |

Additional Supporting Facilities:

| | | |
|---------------------------------|---------------------|---------------------|
| 1.8 mi paved park road | (See Cost Estimate) | (See Cost Estimate) |
| 1,333 sq yds paved parking well | | |
| Trailer dump station | | |



U. S. A R M Y
ENGINEER DISTRICT
FORT WORTH
FT. WORTH, TEXAS

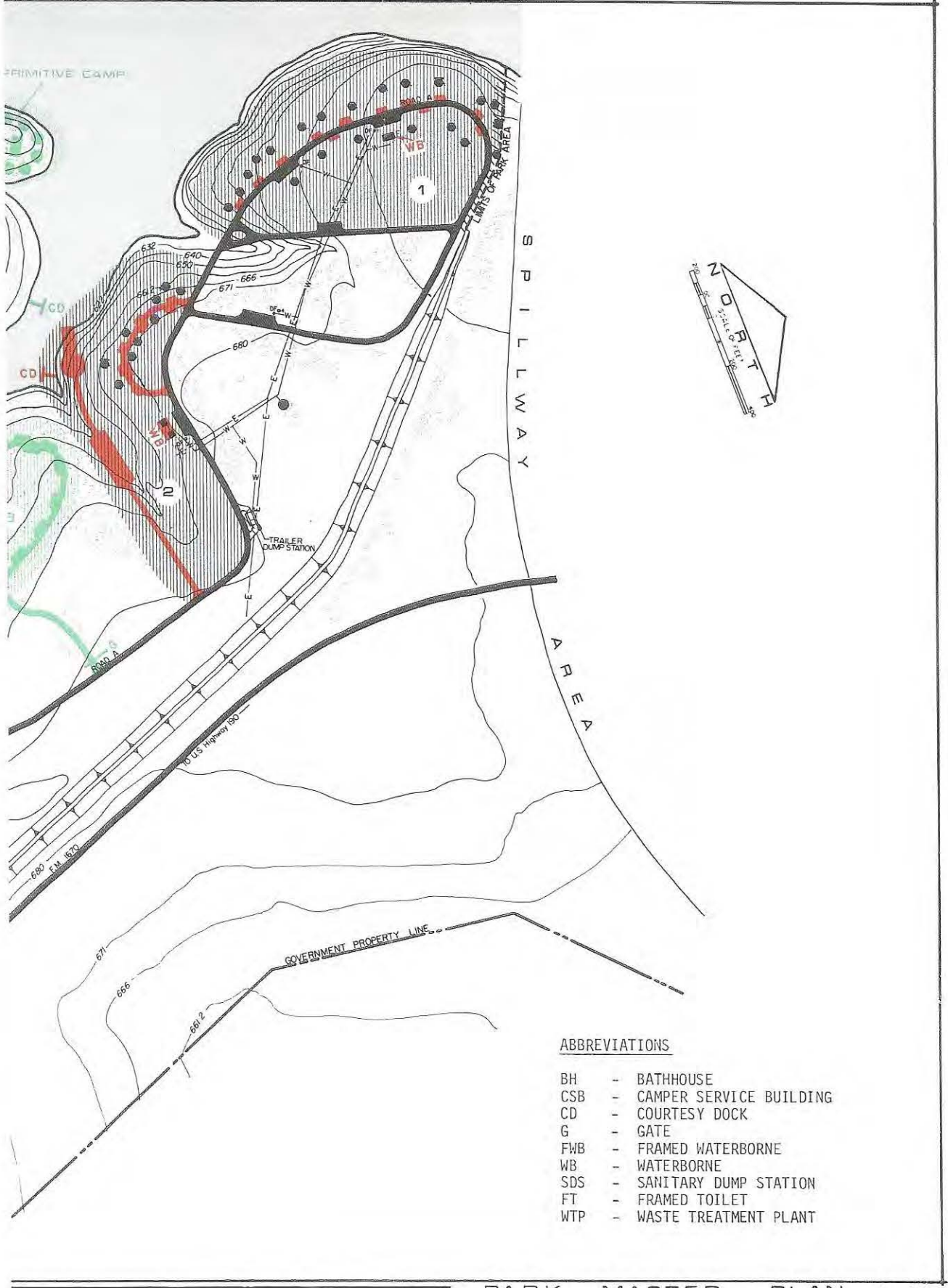
| | MANAGEMENT AREAS | |
|----------|------------------|-----|
| | OVERNIGHT | DAY |
| EXISTING | | |
| 5 YEAR | | |
| ULTIMATE | | |

ALL PROPOSED
ROADS, TRAILS,
AND OTHER TYPES
OF DEVELOPMENT
WILL BE SHOWN
IN THESE COLORS.

LEGEND

REFERENCE NO. **2**
ROAD (PAVED)
ROAD (OTHER)
LAUNCH SITE
SWIMMING





ABBREVIATIONS

- BH - BATHHOUSE
- CSB - CAMPER SERVICE BUILDING
- CD - COURTESY DOCK
- G - GATE
- FWB - FRAMED WATERBORNE
- WB - WATERBORNE
- SDS - SANITARY DUMP STATION
- FT - FRAMED TOILET
- WTP - WASTE TREATMENT PLANT

PARK LIMIT
 TRAIL
 DUMP STATION
 BUILDING
 WATER AREA

DRINKING FOUNT. ● OF
 PICNIC UNIT
 TREES
 CONTOURS
 GOV'T. FEE LINE

PARK MASTER PLAN PLATE
 STILLHOUSE HOLLOW DAM
 BLUFF PARK
 LAMPASAS RIVER, TEXAS
 DATE DEC. 1974
 NUMBER 3.7

TABLE 17
MINOR ACCESS POINT
CEDAR KNOB ROAD

(Planned Dev - Amounts in Thousands of Dollars)

| Item Number | Item | Unit | Unit Cost | <u>5 Yr Dev Plan</u> | | <u>(Future)</u> | | <u>Total Planned Dev</u> | |
|----------------|--|-------|--------------|----------------------|--------|-----------------|------|--------------------------|--------|
| | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 1 | ROADS: Area Circulation 2-way | Mile | 110.0 | 0.9 | 99.0 | | | 0.9 | 99.0 |
| 2 | PARKING AREAS: Paved Group | Sq Yd | .008 | 1890 | 15.2 | | | 1890 | 15.2 |
| 3 | BOAT LAUNCHING RAMP: Conc 2-Lane - 32 Ft Wide | Sq Yd | .04 | (1) 533 | 21.3 | | | (1) 533 | 21.3 |
| 4 | SANITARY FACILITIES: Frame Toilets | Each | 3.0 | 1 Pr | 6.0 | | | 1 Pr | 6.0 |
| 5 | FENCING: | Mile | 3.75 | 1.0 | 3.75 | | | | 3.75 |
| | SUBTOTALS | | | | 145.25 | | | | 145.25 |
| | Engineering and Design | | | | 13.09 | | | | 13.09 |
| | Supervision and Administration | | | | 8.71 | | | | 8.71 |
| | | | | | 167.05 | | | | 167.05 |

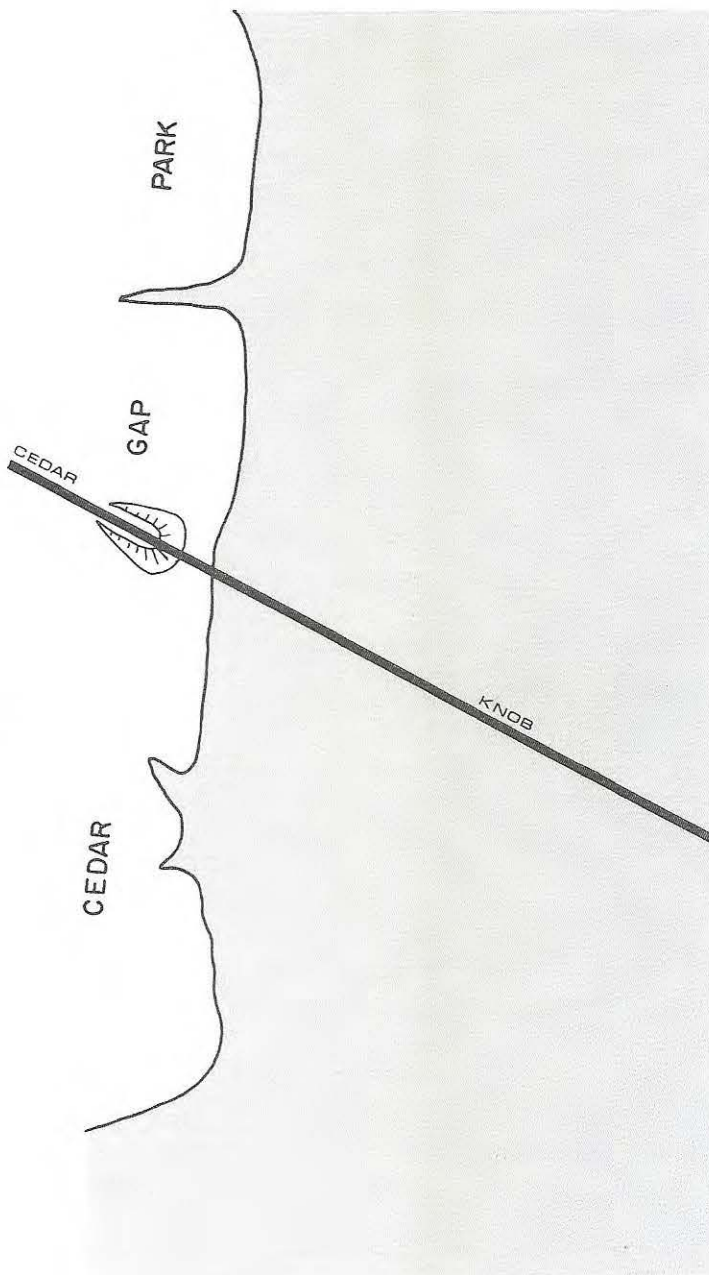
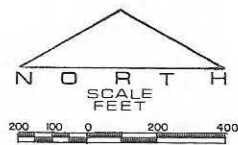
MINOR ACCESS POINT

CEDAR KNOB ROAD

Site conditions at this area display considerable wear from usage as a natural launching site for fishing and pleasure boats over the past few years. The development plan and estimate is provided in the event that the state or county may one day be interested in cost-sharing the launching complex or leasing this area. The estimate for the development is not included in the account 711 estimate for the park areas. Until cost-sharing with a non-Federal public agency is a reality for this area, it will be managed as a minor access point with development limited to a natural launching area, gravel parking area, and perimeter fencing for management control.

PROPOSED FACILITIES:

0.9 mi circulation road
2-lane launch complex w/30 car
and trailer park
One - 35 X 100 head-in parking area
1 pair frame toilets
Fencing

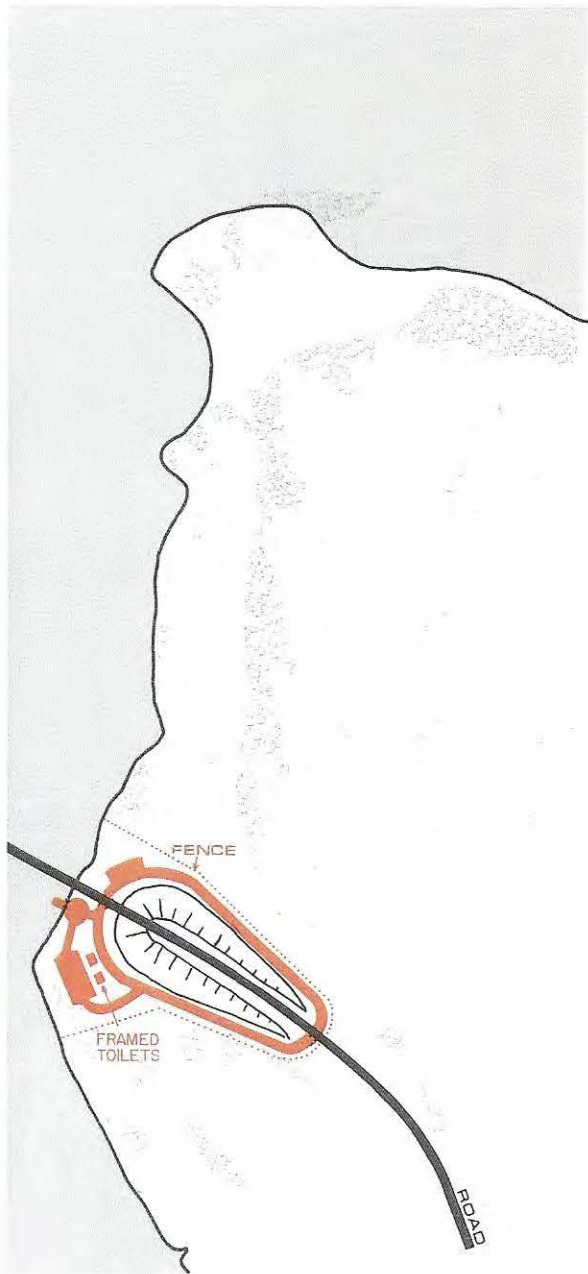


U. S. A R M Y
ENGINEER DISTRICT
FORT WORTH
FT. WORTH, TEXAS

| | MANAGEMENT AREAS | |
|----------|------------------|-----|
| | OVERNIGHT | DAY |
| EXISTING | | |
| 5 YEAR | | |
| ULTIMATE | | |

ALL PROPOSED
ROADS, TRAILS,
AND OTHER TYPES
OF DEVELOPMENT
WILL BE SHOWN
IN THESE COLORS.

| LEGEND | |
|------------------------|--|
| REFERENCE NO. 2 | |
| ROAD (PAVED) | |
| ROAD (OTHER) | |
| LAUNCH SITE | |
| SWIMMING | |



PARK LIMIT
TRAIL
DUMP STATION
BUILDING
WATER AREA

TREES
CONTOURS
GOV'T. FEE LINE

PARK MASTER PLAN PLATE
STILLHOUSE HOLLOW DAM
MINOR ACCESS POINT
CEDAR KNOB ROAD
LAMPASAS RIVER, TEXAS
DATE DEC. 1974
NUMBER 3.8

3.08 Facility Design Concepts

A. Planning For An Indigenous Character:

The recreational development will endeavor to maintain an indigenous character which will complement the existing environment. Before a structure is designed for any location, a physiographical analysis of the land shall be performed to include the guidelines in the Plan of Development. Each of these processes interact with the other and has implications which can affect facility design solutions. The design of any structure shall blend into the natural environment using indigenous materials which best relate to the character of the region.

B. Standard Construction Methods

1. General Guidelines

a. Flexibility:

All facilities shall be designed to adapt to various sizes as local needs dictate. Building components which are mobile and adaptable to a variety of construction types should be considered.

b. Simplicity:

Any proposed design shall be harmonious with its surroundings and simple to build. Good recreation planning and design principals shall be employed to assure that appropriate designs are developed. For example, austerity does not necessarily degrade designs, nor does standardization result in stereotyped facilities.

2. Facilities Descriptions:

Engineer Regulations 1110-2-400, 1120-2-400, 1130-2-400, and 1165-2-400 as well as the following comments will be used as guides in planning new facilities. Every effort shall be made to meet program requirements and preserve natural resource qualities.

a. Roads and Rights-of-Way:

Clearing for road rights-of-way in public access areas will be confined within the top of the back slope and/or the toe of the fill where this type of construction is used. Where no cuts or fills are made, clearing will only extend as far as it is needed on either side of the road. Where possible clearing will be the width of the base course only. In order to prevent the needless destruction of desirable trees and shrubs, the back slope shall be warped around such growth. Excessive ditching will be eliminated in order that vegetation may grow as close to the road as possible. Selective plantings will be performed to encourage desirable growth on the back slopes. Selective clearing will be performed or supervised by trained district personnel by an on-the-site analysis. In all cases natural vegetation and understory should continue to grow as close to the road as possible to maintain a park-like appearance as well as to discourage off-road use. Area circulation roads, except in extreme instances, will conform to the following general practices in order to lessen their impact on the park environment:

- (1) Use minimum cuts or fills
- (2) Follow lay of land
- (3) Natural drainage pattern to continue
- (4) Maximum width for one way roads will be 12 feet (10 feet minimum) with no shoulders
- (5) Maximum width for two way roads will be 20 feet (18 feet minimum) with 2 feet shoulders

These roads will complement units and facilities and will be designed to make these facilities accessible to vehicular traffic via paved pullouts. It is not the intent to design these roads solely for the purpose of moving traffic. Consequently, site designs with specific unit locations will determine where access is needed. Designation of road centerlines will take place during relocation of the existing units to conform to new or proposed road patterns that will prevent possible management problems such as off-road use, multiple access, clustering, overcrowding, etc.

b. Controlled Access Ways:

Means will be developed to control the access routes into the project areas. For example, vegetation programs and physical barriers using indigenous materials such as berms, wooden posts, rustic fence, rock out-croppings, and existing natural vegetation can be used to control access into and within park areas.

3. Summary of Cost Estimates

a. General:

The cost estimates for the planned development used in the Cost Estimates Tables are based on:

- (1) Adjusted July 1974 price levels
- (2) Experienced cost of similar facilities
- (3) Estimated cost of facilities not previously constructed

The total cost for all recreational facilities presented in this plan is an increase of \$5,696,200 over the total cost estimate for development in the Updated Master Plan approved by the Chief of Engineers, dated May 1970. The increase in cost is due to the following conditions:

- (1) Additional recreational facilities needed to accommodate the general public use of the project as indicated in the Facilities Analysis under Section III of this plan.
- (2) Upgrading of basic facilities to current standards.
- (3) Inclusion of waterborne sanitary facilities and waste treatment facilities.
- (4) Increase in unit prices to reflect the estimated 1 July 1973 construction price level increase.

b. The planned development cost for the five-year and future development plan is presented as Table 17, page 3-44. The total existing and planned facilities supported by this Master Plan is presented as Table 18, page 3-45. A summary of cost, by park, is presented as Table 19, page 3-46.

c. Funds required for operation and maintenance at Stillhouse Hollow Dam are shown in Table 20, page 3-47.

TABLE 18

SUMMARY OF EXISTING & PLANNED FACILITIES

| Item Number | Item | Unit | Unit Cost | Existing Facilities Thru FY 75 | 5 Yr Dev Plan | | (Future) | | Total Planned Dev | |
|-------------|------------------------------------|---------|-----------|--------------------------------|---------------|-------|----------|-------|-------------------|-------|
| | | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 1 | ROADS: | Mile | | | | | | | | |
| | A. Primary | | 110.0 | 11.9 | 2.0 | 220.0 | 1.9 | 209.0 | 3.9 | 429.0 |
| | B. Area Circulation 1-way | | 65.0 | | 4.7 | 305.5 | 5.10 | 331.5 | 9.8 | 637.0 |
| | C. Area Circulation 2-way | | 90.0 | | 2.7 | 243.0 | 2.2 | 198.0 | 4.9 | 441.0 |
| | D. Gravel (Service) 2-way | | 48.0 | 1.7 | 0.8 | 38.40 | 1.5 | 72.0 | 2.3 | 110.4 |
| 2 | PARKING AREAS: | Sq. Yd. | | | | | | | | |
| | A. Paved-Group | .008 | | 30187 | 21326 | 170.6 | 14166 | 113.4 | 35490 | 284.0 |
| | B. Paved-Pullouts | .008 | | | 26435 | 211.5 | 26163 | 209.2 | 52598 | 420.7 |
| | C. Gravel-Group | .006 | | | 915 | 5.4 | 1558 | 9.4 | 2473 | 14.8 |
| 3 | BOAT LAUNCHING RAMPS: | Sq. Yd. | | | | | | | | |
| | A. (Conc) 1-Lane 14 Ft Wide | | | (1) | | | | | | |
| | B. (Conc) 2-Lane 32 Ft Wide | 0.4 | | | (2) 1066 | 42.6 | (1) 533 | 21.3 | (3) 1599 | 63.9 |
| | C. (Conc) 3-Lane 50 Ft Wide | .04 | | | (1) 850 | 34.0 | | | (1) 850 | 34.0 |
| | D. (Conc) 4-Lane 68 Ft Wide | .04 | | (4) | (1) 1133 | 45.3 | (3) 3520 | 140.8 | (4) 4653 | 186.1 |
| 4 | WATER SUPPLY SYSTEMS: | Ea | 2.0 | 5 | 1 | 20.0 | 2 | 40.0 | 3 | 60.0 |
| 5 | SANITARY FACILITIES: | | | | | | | | | |
| | A. Waterborne Toilet | Ea | 46.0 | 1 | 7 | 322.0 | 5 | 230.0 | 12 | 552.0 |
| | B. Camper Service Bldg w/showers | | 60.0 | | 7 | 420.0 | | 360.0 | 13 | 780.0 |
| | C. Bathhouse w/showers | | 60.0 | | 2 | 120.0 | | | 2 | 120.0 |
| | D. Frame-Waterborne Toilet | Pr | 15.0 | | 5 | 75.0 | | | 5 | 75.0 |
| | E. Convert MV to Waterborne | Ea | 17.2 | | 1 | 17.2 | | | 1 | 17.2 |
| | F. Masonry Concrete Vault | | | 2 | | | | | | |
| | G. Frame Toilets | | 3.0 | 11 Pr | 3 Pr | 18.0 | 7 Pr | 42.0 | 10 Pr | 60.0 |
| | H. Chemical Toilets | | 2.5 | | | | 1 Pr | 5.0 | 1 Pr | 5.0 |
| | I. Sanitary Dump Station (Trailer) | | 5.5 | 3 | 4 | 22.0 | 2 | 11.0 | 6 | 33.0 |
| | J. Waste Treatment Plant | | 100.0 | | 3 | 300.0 | 4 | 400.0 | 7 | 700.0 |

TABLE 18 (Continued)

SUMMARY OF EXISTING & PLANNED FACILITIES

| Item Number | Item | Unit | Unit Cost | Existing Facilities Thru FY 75 | 5 Yr Dev Plan | | (Future) | | Total Planned Dev | |
|-------------|---|----------|-----------|--------------------------------|---------------|-------|----------|-------|-------------------|-------|
| | | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 6 | UTILITIES: | | | | | | | | | |
| | A. Water Distribution Lines | L.F. | .003 | 23940 | 54210 | 162.7 | 57200 | 171.6 | 111410 | 334.3 |
| | B. Electric Service Lines | | .002 | As Req'd | 8200 | 16.4 | 22500 | 45.0 | 30700 | 61.4 |
| | C. Electric Distribution Line (Underground) | | .004 | | 29650 | 118.6 | 27300 | 109.2 | 56950 | 227.8 |
| | D. Electric Hookups | Ea | 0.1 | | 273 | 27.3 | 239 | 23.9 | 512 | 51.2 |
| | E. Water Hookups | | 0.05 | | 379 | 18.9 | 314 | 15.7 | 693 | 34.6 |
| | F. Drinking Fountains | | 0.5 | 27 | 4 | 2.0 | 1 | 0.5 | 5 | 2.5 |
| 7 | PICNIC & CAMP UNITS: | Ea | | | | | | | | |
| | A. Picnic Units | Ea | 0.9 | 90 | 110 | 99.0 | 136 | 122.4 | 246 | 221.4 |
| | B. Camp Units | Ea | 1.1 | 78 | 281 | 308.0 | 274 | 301.4 | 554 | 609.4 |
| 8 | TABLE SHELTERS: | Ea | | | | | | | | |
| | A. Single (1-Table) | | 0.7 | 37 | 360 | 252.0 | 300 | 210.0 | 660 | 462.0 |
| | B. Group (3-Tables) | | 6.0 | | 1 | 6.0 | 5 | 30.0 | 6 | 36.0 |
| | C. Group (10-Tables) | | 18.0 | | 2 | 36.0 | | | 2 | 36.0 |
| 9 | DOCKS: | Ea | | | | | | | | |
| | A. Courtesy (Boating) | | 3.5 | 5 | 8 | 28.0 | 12 | 42.0 | 20 | 70.0 |
| | B. Fishing | | 10.0 | | 1 | 10.0 | | | 1 | 10.0 |
| 10 | IMPROVED SWIMMING BEACHES | | | 2 | | | | | | |
| 11 | SIGNS: (Directional) | Lump Sum | | As Req'd | | 9.6 | | 6.1 | | 15.7 |
| 12 | SITE PREPARATION: | Lump Sum | | As Req'd | | 19.0 | | 20.4 | | 39.4 |

TABLE 18 (Continued)

SUMMARY OF EXISTING & PLANNED FACILITIES

| Item Number | Item | Unit | Unit Cost | Existing Facilities Thru FY 75 | 5 Yr Dev Plan | | (Future) | | Total Planned Dev | |
|----------------|------------------------------|------|--------------|--------------------------------------|---------------|--------|----------|--------|-------------------|--------|
| | | | | | Quan | Cost | Quan | Cost | Quan | Cost |
| 13 | TRAFFIC CONTROL GATES: | Ea | 0.5 | | 18 | 9.0 | 16 | 8.0 | 34 | 17.0 |
| 14 | TRAILS: (Hiking) | Mile | 2.0 | | 0.5 | 1.0 | 4.9 | 9.8 | 5.4 | 10.8 |
| 15 | TENT PADS: | Ea | 0.1 | | 34 | 3.4 | 30 | 3.0 | 64 | 6.4 |
| 16 | FOOT BRIDGE: | Ea | 50.0 | | | | 1 | 50.0 | 1 | 50.0 |
| 17 | PLAY EQUIPMENT: | Unit | 2.0 | | 3 | 6.0 | 2 | 4.0 | 5 | 10.0 |
| 18 | ENTRANCE STATIONS: | Ea | 10.0 | | 4 | 40.0 | | | 4 | 40.0 |
| 19 | FENCING: | Mile | 3.75 | | .53 | 2.0 | | | .53 | 2.0 |
| | TOTAL DIRECT COST | | | | | 3805.5 | | 3565.6 | | 7371.0 |
| | ENGINEERING & DESIGN | | | | | 342.5 | | 320.9 | | 663.4 |
| | SUPERVISION & ADMINISTRATION | | | | | 228.3 | | 213.9 | | 442.3 |
| | TOTALS | | | | | 4376.3 | | 4100.4 | | 8476.7 |

TABLE 19
SUMMARY OF ESTIMATED COST FOR
ADDITIONAL RECREATIONAL FACILITIES BY AREA

| <u>Account Number</u> | <u>Park Areas</u> | <u>Estimated Cost</u> |
|---------------------------|---------------------------------------|-----------------------|
| 711 | <u>Recreational Facilities:</u> | |
| | Overlook Park | \$ 92,200 |
| | Stillhouse Park | 721,500 |
| | Dana Peak Park | 2,387,400 |
| | Cedar Gap Park | 991,300 |
| | Union Grove Park (West) | 1,625,800 |
| | Union Grove Park (East) | 714,100 |
| | Bluff Park | 838,700 |
| | | <hr/> |
| | TOTAL DIRECT COST | \$ 7,371,000 |
| 30 | <u>Engineering and Design</u> | 663,400 |
| 31 | <u>Supervision and Administration</u> | 442,300 |
| | | <hr/> |
| | | \$ 8,476,700 |

SWDCO-R (SWFOD-M 21 Jan 76) 1st Ind
SUBJECT: Vegetative Management Plan, Appendix B to Design Memorandum
No. 11C, Stillhouse Hollow Dam and Lake, Brazos River Basin,
and Lampasas River, Texas

DA, Southwestern Division, Corps of Engineers, Main Tower Building,
1200 Main Street, Dallas, TX 75202 9 MAR 1976

TO: District Engineer, Fort Worth, ATTN: SWFOD-M

1. Appendix B, Vegetative Management Plan to Design Memorandum No. 11C, Stillhouse Hollow Dam and Lake, is approved subject to the following comments or inclusions, whichever is appropriate:

a. Paragraph 1.01. The paragraph should be revised to more nearly reflect objectives expressed in ER 1130-2-400, paragraph 5d(1) and DM 11C, revised master plan, approved 11 July 1975, paragraph 2.01b. Specifically, the first sentence should state, in a positive manner, the purposes of management, and succeeding sentences should enumerate briefly the major items to be accomplished. The penultimate sentence should be deleted since this subject is adequately covered in the master plan proper, paragraph 2.02a4b(1).

b. Paragraph 2.01. A reference should be made to the detailed soils information contained in the master plan proper.

c. Table 2. In view of discussion contained in paragraph 5.02b1 & 2, the purpose of the table should be explained. In addition, a note should be added that hardy, long-lived plants which require minimal maintenance should be favored when possible.

d. Paragraph 3.05 & 3.06e. Referenced paragraph should be revised to reflect the results of the study and determination as to what areas will be grazed and for what purposes.

e. Paragraph 3.06, page B-17. This page is misplaced and should go under "Pesticide Use," not "Erosion Control."

f. Paragraph 3.06. Pest control information contained on pages b-17 and b-19 through 23 should be deleted for the following reasons:

(1) It contains descriptions of only the most common insect pests that might be encountered.

(2) The control measures are constantly being revised.

(3) In case of an insect problem, the person responsible for control would by necessity refer to other references for controls and possibly for identification.

SWDCO-R (SWFOD-M 21 Jan 76) 1st Ind

9 MAR 1976

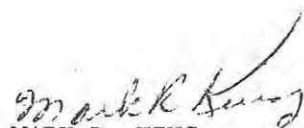
SUBJECT: Vegetative Management Plan, Appendix B to Design Memorandum
No. 11C, Stillhouse Hollow Dam and Lake, Brazos River Basin,
and Lampasas River, Texas

g. Section IV, General. This section should be expanded to list the approximate amounts of each practice plan and the order in which they would be applied.

2. This appendix should be reviewed and updated annually. Minor pen and ink changes can be approved by the District. This plan should be completely reevaluated and submitted for approval within five years from the date of this indorsement.

FOR THE DIVISION ENGINEER:

wd all incl


MARK R. KING

Acting Chief, Construction-
Operations Division

CF: w/incl

HQDA (DAEN-CWO-R) 2 cys

REVISED MASTER PLAN

APPENDIX (B)

VEGETATIVE MANAGEMENT PLAN

FOR

STILLHOUSE HOLLOW DAM & LAKE

BRAZOS RIVER BASIN

LAMPASAS RIVER, TEXAS



U.S. ARMY ENGINEER DISTRICT

FORT WORTH, TEXAS

AUGUST 1975

COPY NUMBER



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

REPLY TO
ATTENTION OF:

SWFOD-M

21 January 1976


SUBJECT: Vegetative Management Plan, Appendix B, to Design Memorandum
No. 11C, Stillhouse Hollow Dam and Lake, Brazos River Basin,
and Lampasas River, Texas

Division Engineer, Southwestern
ATTN: SWDCO-OR

1. Reference Engineer Regulation 1130-2-400 dated 28 May 1971, SWDPL-R letter dated 8 March 1972, subject: Recreation Resource Planning and Management, and 2nd Indorsement thereto dated 17 May 1972.
2. In accordance with schedules previously furnished, seven copies of Appendix B, Vegetative Management Plan for Stillhouse Hollow Dam and Lake, Brazos River Basin, and Lampasas River, Texas are submitted for approval.

FOR THE DISTRICT ENGINEER:

1 Incl (7 cys)
As stated


JAMES D. LESLEY
Acting Chief,
Operations Division



APPENDIX B
VEGETATIVE MANAGEMENT PLAN
STILLHOUSE HOLLOW DAM & LAKE

REVISIONS AND UPDATES

Date

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APPENDIX B

VEGETATIVE MANAGEMENT PLAN

I. INTRODUCTION

1.01 Purpose:

The purpose of the Stillhouse Hollow Dam Vegetative Management Plan is to conserve natural soil, timber, grassland, water, and wildlife resources by reducing waste and preventing uncontrolled burning. The plan prescribes applicable maintenance procedures that will improve and increase the usefulness and promote natural beauty of the land while correcting or preventing problems such as soil erosion, storm damage due to poor drainage, and undesired vegetation. The Corps of Engineers, as public land management agency, is responsible for managing the natural resources on the land held in public trust. The agri-grazing business is entered by the Corps of Engineers only as a means of obtaining management objectives for wildlife management and both water and land oriented recreation. Commercial timber management will not be attempted.

1.02 Authority:

The Vegetative Management Plan is developed in accordance with Public Law 86-717, Engineer Regulations 405-1-830 (Section II, paragraph 18, 19, 20a(2), and 22), 405-2-835 (paragraphs 4c, 5d, 6, 7, and 8), 1130-2-400, Southwestern District Regulation 1130-2-7, and the Project Operation and Maintenance Manual.

1.03 History:

Stillhouse Hollow Dam was approved under the Flood Control Act (Public Law 780, 83rd Congress) on 3 September 1954. Acquisition of land was completed in 1965 with deliberate impoundment initiated on 19 February 1968. Before acquisition, the lands were approximately 1/3 bushland and the remainder was in crops or pasture. The land around the project is still agriculturally

inclined with cattle raising becoming more important. In areas adjacent to the lake boundary, subdivisions have been established and are increasing in size and number.

1.04 Market:

There is a ready market for hay production and grazing leases for ranches in the immediate area. This offers an opportunity to improve large areas, through lease contracts, with the management objectives of improving ground cover on the land. There is no commercial timber market for trees on the project land. The only timber that is sold is when it is storm damaged or when some similar emergency situation occurs.

II. PHYSICAL CHARACTERISTICS

2.01 Soils:

Soil is a major factor in the type of vegetation that grows on a site. Soils at Stillhouse Hollow range from very shallow limestone-derived soils to deep clay and clay loams. The Crawford and Bosque clay loams, San Saba clay and Krum, Altoga and Frio silty clays are characterized by moderately deep to deep profiles. These clay and clay loams are very productive and produce 3,500 pounds to 6,500 pounds of air-dry herbage per acre/year. The balance of the soils include Real, Purves and Stoney clay loams, Speck and Venus clays and Tarrant stoney clays. They are characterized by very shallow depth to bedrock (primarily limestone), excessive permeability and stoniness.

2.02 Meteorology:

Stillhouse Hollow Dam is located in a temperate zone characterized by a sub-tropical climate due to air movement from the Gulf of Mexico. Temperature and precipitation data were obtained from the Project weather station located near the Project Headquarters.

TEMPERATURES

| <u>High</u> <u>Average</u> | <u>Low</u> <u>Average</u> | <u>Annual</u> <u>Average</u> | <u>Extreme</u> <u>High</u> | <u>Extreme</u> <u>Low</u> | <u>Freeze Dates</u> | |
|-------------------------------|------------------------------|---------------------------------|-------------------------------|------------------------------|---------------------|-------------|
| | | | | | <u>First</u> | <u>Last</u> |
| July 95.6° | Jan 33.6° | 65° F | 106° F | 9° F | 21 Nov | 11 Mar |

PRECIPITATION

| <u>Average</u> | <u>High</u> | <u>Low</u> | <u>Low Period</u> |
|----------------|--------------|--------------|-------------------|
| 39.9" | Oct 7.29" | Dec 0.44" | Sep-Nov 15.3" |

2.03 Ground Cover Classification:

Ground cover types may be broken down into three basic groups.

These are:

A. Former Crop and Pasture Lands:

These are now mainly grazing leases and have been seeded with bermuda grass or allowed to return to such grasses as johnsongrass and various native species. Most of the leasees have kept the lands free of undesirable vegetation.

B. High Lands and Slopes:

Most of these areas are covered with post oak and Juniper with lesser numbers of cedar, elm, sumac and other species. Ground cover under this overstory is generally sparse. It usually consists of Texas wintergrass and various sedges and forbs.

C. Low Lands and Water's Edge:

In moist areas, black willow and cottonwoods exist with a ground cover of johnsongrass, sedges, and various forbs. In many areas, Junipers are present to the edge of the water. Ground cover exists in the form of Texas wintergrass, bermudagrass and assorted forbs.

TABLE 1

REPRESENTATIVE LIST OF VEGETATION

TREES AND SHRUBS

boxelder
Texas madrone
coyote brush
pecan
allegheeny chinakapin
sugarberry
common buttonbush
redbud
gray dogwood
hawthorn
Texas persimmon
white ash
Texas ash
black walnut
ashe juniper
eastern redcedar
osage orange
chinaberry
American sycamore
eastern cottonwood
mesquite
dwarf live oak
shin oak
Texas oak
post oak
live oak
shining sumac
black willow
western soapberry
mescalbean
American elm
cedar elm
prickly ash

Acer negundo
Arbutus texana
Baccharis pilularis
Carya illinonensis
Castanea pumila
Celtis laevigata
Cephalanthus occidentalis
Cercis canadensis
Cornus spp.
Crataegus spp.
Diospyros texana
Fraxinus americana
F. texensis
Juglans nigra
Juniperus ashei
J. virginiana
Maclura pomifera
Melia azedarach
Plantus occidentalis
Populus deltoides
Prosopis juliflora
Quercus minima
Q. mohriana
Q. shumardii var. texana
Q. stellata
Q. virginiana
Rhus copallina
Salix nigra
Sapindus drummondii
Sophora secundiflora
Ulmus americana
Ulmus crassifolia
Zanthoxylum clava-herculis

WOODY PLANTS

peppervine
agarito
rattan
ephedra
yaupon
honeysuckle
catclaw mimosa
cherry
poison ivy
black berry
greenbriar
coralberry
summer grape

Ampelopsis arborea
Berberis trifoliata
Calamus spp.
Ephedra spp.
Ilex vomitoria
Lonicera spp.
Mimosa spp.
Prunus spp.
Rhus radicans
Rubus trivialis
Smilax spp.
Sophora affinis
Vitis aestivalis

FORBS

fern acacia
western ragweed
white prickly poppy
milkweed
Gray gold water
heath aster
Indian paintbrush
partridge pea
dalea
larkspur
tick clover
fleabane
button snakeroot
bluebells
brush sunflower
maximilian sunflower
western indigo
trailing ratany
lespedeza
bluebonnets
burclover
sweetclover
buttercups
prickly pear cactus
penstemon
scurfpea
Mexican hat
blackberry
pitchers sage
sensitivebriar
trompillo
trailing wildbean
seep muhly
crimson clover
verbena
ironweed
smooth vetch
hairy vetch

Acacia spp.
Ambrosia psilostachya
Argemone albiflora
Asclepias spp.
Aster spp.
A. spp.
Castilleja indivisa
Chamaecrista fasciculata
Dalea spp.
Delphinium spp.
Desmodium spp.
Erigeron spp.
Eupatorium spp.
Esutoma grandiflorum
Helianthus spp.
H. spp.
Indigofera spp.
Krameria spp.
Lespedeza spp.
Lupinus texensis
Medicago spp.
Melilotus spp.
Oenothera serrulata
Opuntia lindheimeri
Penstemon spp.
Psoralea tenuiflora
Ratibida columnaris
Rudus spp.
Salvia spp.
Schrankia portoricensis
Solanum elaeagnifolium
Strophostyles helvola
Suxaeda spp.
Trifolium incarnatum
Verbena spp.
Vernonia spp.
Vicia villosa var. glabrescens
V. villosa

GRASSES

angelton bluestem
Turkestan bluestem
King Ranch bluestem
silver bluestem
little bluestem
sideoats grama
slender grama
hairy grama
rescuegrass
buffalograss
Virginia wildrye
lovegrass
reed fescue
thatchgrass
perennial ryegrass
blue panic
vine-mesquite
switchgrass
dallisgrass
brownseed paspalum
johnsongrass
Indiangrass
needle-and-thread
Texas wintergrass
seep muhly
hairy triden
Eastern gramagrass

Andropogon furcatus
A. ischaemum
A. ischaemum var.
A. saccharoides
A. scoparius
Bouteloua curtipendula
B. filiformis
B. hirsuta
Bromus catharticus
Buchloe dactyloides
Elymus virginicus
Eragrostis spp.
Festuca elatior var. arundinacea
Hyparrhemia hirta
Lolium perenne
Panicum antidotale
Panicum obtusum
P. virgatum
Paspalum dilatatum
P. plicatulum
Sorghum halepense
Sorghastrum nutans
Stipa comata
Stipa levcotricha
Suxaeda spp.
Tridens pilosus
Tripsacum dactyloides

TABLE 2

PLANT SELECTION GUIDE

I. Parking Strips

A. Consistent Performers, Easy, Neat

| <u>Plant Name</u> | <u>Kind</u> | <u>Sun Location*</u> | <u>Height-Apx.</u> |
|---|-------------|----------------------|--------------------|
| E* <u>Hedera helix</u> (Ivy) | Vine | 0 0 | 6-12" |
| E. <u>Juniperus horizontalis plumosa</u> | Shrub | 0 0 | 18" |
| E. <u>J. japonica</u> 'San Jose' | Shrub | 0 0 | 2' |
| E. <u>J. sabina tamariscifolia</u> (Tamarix Juniper) | Shrub | 0 0 | 3' |
| E. <u>Vinca minor</u> or <u>V. major</u> (Periwinkle) | Perennial | 0 0 | 8-10" |

B. Choice, Need Some Extra Attention

| | | | |
|---|-----------|-------|------|
| E. <u>Ajunga reptans</u> (Carpet Bugle) | Perennial | 0 0 0 | 6-8" |
| E. <u>Mahonia aquifolium</u> 'Compacta' (Oregon Grape) | Shrub | 0 0 | 4' |
| E. <u>Rosmarinus officinalis</u> 'Prostratus' Dwarf (Rosemary) | Shrub | 0 0 | 2' |
| E. <u>Trachelospermum jasminoides</u> (Star Jasmine) | Vine | 0 0 0 | 1-2' |

II. Lawn Substitutes

| | | | |
|---|--------------|-------|--------|
| E. <u>Ajuga reptans</u> (Carpet Bugle) | Perennial | 0 0 0 | 6-8" |
| E. <u>Cotoneaster dammeri</u> | Shrub | 0 0 | 3-6" |
| E. <u>Euonymus fortunei</u> (Winter Creeper Eu.) | Shrub | 0 0 0 | 6"-2' |
| E. <u>Hedera</u> (Ivy) | Vine | 0 0 | 6-12" |
| E. <u>Hypericum calycinum</u> (Creeping St. Johnswort) | Shrub | 0 0 0 | 1' |
| E. <u>Juniperus</u> (Species) | Ground Cover | 0 0 | Vary |
| E. <u>Lonicera japonica</u> 'Halliana' | Vine | 0 0 | Climbs |
| E. <u>Pyracantha</u> 'Santa Cruz' | Shrub | 0 0 | 3' |
| E. <u>Trachelospermum jasminoides</u> (Star Jasmine) | Shrub | 0 0 0 | 1-2' |
| E. <u>Vinca minor</u> (Periwinkle) | Perennial | 0 0 | 8-10" |

III. Windbreaks

| | | | |
|--|------------|-------|---------|
| E. <u>Bambusa falcata</u> (Dwarf Bamboo) | Bamboo | 0 0 0 | 6-10' |
| E. <u>Cupressus arizonica</u> (Arizona Cypress) | Tree | 0 0 | 40-50' |
| D* <u>Elaeagnus angustifolia</u> (Russian Olive) | Tree | 0 | 15-20' |
| E. <u>Juniperus scopulorum</u> (Rocky Mountain Juniper) | Shrub-Tree | 0 | 30-40' |
| E. <u>J. virginiana</u> (Eastern Redcedar) | Shrub-Tree | 0 | 40-50' |
| E. <u>Ligustrum lucidum</u> (Glossy Privet) | Tree | 0 0 | 25-35' |
| E. <u>Nerium oleander</u> (Oleander) | Shrub | 0 0 | 8-12' |
| D. <u>Populus nigra</u> 'Italica' (Lombardy Poplar) | Tree | 0 | 40-100' |
| E. <u>Prunus carolina</u> (Carolina Laurelcherry) | Shrub-Tree | 0 0 | 30-40' |
| D. <u>Syringa vulgaris</u> (Common Purple Lilac) | Shrub | 0 0 0 | 20' |
| E. <u>Thuja</u> (Arborvitae) | Shrub-Tree | 0 0 | Vary |

* E - Evergreen
D - Deciduous

Sun Location
0 - Full sun
0 - Partial shade
0 - Full shade

IV. Dry Places

A. Perennials and Others

| Plant Name | Kind | Sun Location | Height-Apx. |
|---|-----------|--------------|-------------|
| <u>Achillea tomentosa</u> (Yarrow) | Perennial | 0 | 6-8" |
| <u>Buchloe dactyloides</u> (Buffalograss) | Grass | 0 | 4-6" |
| <u>Cerastium tomentosum</u> (Snow-in Summer) | Perennial | 0 0 | 8-10" |
| <u>Cynodon dactylon</u> (Common Bermudagrass) | Grass | 0 | 4-6" |
| E* <u>H. helix</u> (English Ivy) | Vine | 0 0 | 6-12" |
| <u>Thymus</u> (Thyme) | Perennial | 0 | 1-2" |
| E. <u>Vinca</u> (Species) | Perennial | 0 0 | Vary |
| E. <u>Yucca</u> (Species) | Perennial | 0 | Vary |

B. Trees and Shrubs

| | | | |
|---|------------|-------|--------|
| ½E. <u>Acacia berlandieri</u> (Guajillo) | Shrub-Tree | 0 | 15' |
| D* <u>A. farnesiana</u> (Sweet Acacia) | Tree | 0 | 20' |
| E. <u>Berberis mentorensis</u> (Mentor Barberry) | Shrub | 0 0 0 | 4-5' |
| E. <u>Buxus microphylla japonica</u> (Japanese Littleleaf Box) | Shrub | 0 0 | 4-6' |
| ½E. <u>Cassia artemisioides</u> (Wormwood Senna) | Shrub | 0 0 | 3-5' |
| D. <u>Cercis occidentalis</u> (Red Bud) | Shrub-Tree | 0 0 | 10-18' |
| D. <u>Cotinus coggygria</u> (Common Smoketree) | Tree | 0 | 20-25' |
| D. <u>Cotoneaster</u> (species) | Shrub | 0 0 | Vary |
| D. <u>Eleagnus angustifolia</u> (Russian Olive) | Tree | 0 | 15-20' |
| E. <u>Hypericum calycinum</u> (Creeping St. Johnswort) | Shrub | 0 0 0 | 1' |
| E. <u>Juniperus</u> (species) | Shrub | 0 0 | Vary |
| D. <u>Lagerstroemia indica</u> (Common Crapemyrtle) | Shrub | 0 0 | 10-25' |
| E. <u>Mahonia aquifolium</u> (Oregon Grape) | Shrub | 0 0 | 6-8' |
| E. <u>Nerium oleander</u> (Oleander) | Shrub | 0 0 | 8-12' |
| E. <u>Olea europaea</u> (Olive) | Tree | 0 | 25-30' |
| E. <u>Pinus</u> (species) | Tree | 0 | Vary |
| E. <u>Prunus caroliniana</u> (Carolina Laurelcherry) | Shrub-Tree | 0 0 | 30-40' |
| E. <u>Pyracantha</u> (species) | Shrub | 0 0 | Vary |
| D. <u>Robinia pseudoacacia</u> (Locust) | Tree | 0 | 30-50' |
| E. <u>Rosmarinus officinalis</u> | Shrub | 0 0 | 2-6' |
| E. <u>R. o. 'Prostratus'</u> (Dwarf Rosemary) | Shrub | 0 0 | 2' |

* E - Evergreen
D - Deciduous

Sun Location
0 - Full sun
0 - Partial shade
0 - Full shade

V. Wet Places

A. Perennials and Others

| <u>Plant Name</u> | <u>Kind</u> | <u>Sun Location*</u> | <u>Height-Apx.</u> |
|--|-------------|----------------------|--------------------|
| E* <u>Bambusa</u> (Bamboo) | Grass | 0 0 0 | Vary |
| E. <u>Lonicera japonica</u> 'Halliana' (Hall's Honeysuckle) | Vine | 0 0 | Climbs |
| <u>Nymphaea</u> (Water Lily) | Water Plant | 0 | Floats |
| E. <u>Vinca minor</u> or <u>major</u> | Perennial | 0 0 | Vary |
| <u>Watercress</u> | Perennial | 0 0 0 | 2-3" |

B. Trees and Shrubs

| | | | |
|--|-------|-------|---------|
| D* <u>Betula nigra</u> (River Birch) | Tree | 0 0 | 50-70' |
| D. <u>Chaenomeles lagenaria</u> (Common Flowering Quince) | Shrub | 0 | 6-9' |
| <u>Ligustrum</u> (Privet) | Shrub | 0 0 0 | Vary |
| E. <u>Nerium oleander</u> (Oleander) | Shrub | 0 0 | 8-12' |
| D. <u>Platanus occidentalis</u> (Sycamore) | Tree | 0 0 | 80-150' |
| D. <u>Populus candicans</u> (Cottonless Cottonwood) | Tree | 0 | 80-100' |
| D. <u>Populus deltoides</u> (Eastern Cottonwood) | Tree | 0 | 80-140' |
| D. <u>Salix</u> (Willows) | Tree | 0 0 | Vary |

VI. Hillside Cover and Erosion Control

A. Grasses, Shrubs and Others

| | | | |
|--|--------|-------|--------|
| <u>Andropogon scoparius</u> (Little Bluestem) | Grass | 0 | 2-4' |
| <u>Buchloe dactyloides</u> (Buffalograss) | Grass | 0 | 4-6" |
| <u>Cotoneaster</u> (Low growing species) | Shrub | 0 0 | Vary |
| <u>Cynodon dactylon</u> (Common Bermudagrass) | Grass | 0 | 4-6" |
| <u>Eragrostis curvula</u> (Weeping Lovegrass) | Grass | 0 0 | 15-20" |
| <u>E. trichodes</u> (Sand Lovegrass) | Grass | 0 | 2-3' |
| <u>Gaillardia pulchella</u> (Indian Blanket) | Annual | 0 | 8-15" |
| E. <u>Hedera</u> (Ivy) | Vine | 0 0 | Vary |
| <u>Helianthus annuus</u> (Common Sunflower) | Annual | 0 | 4-7' |
| E. <u>Hypericum calycinum</u> (Creeping St. Johnswort) | Shrub | 0 0 0 | 1' |
| E. <u>Jasminum mesnyi</u> (Primrose Jasmine) | Shrub | 0 0 | 5-8' |
| E. <u>Junipers</u> (Low growing species) | Shrub | 0 0 | Vary |
| E. <u>Lonicera japonica</u> 'Halliana' (Hall's Honeysuckle) | Vine | 0 0 | Climbs |
| <u>Lupinus subcarneus</u> (Texas Bluebonnet) | Annual | 0 | 8-15" |
| <u>Melilotus officinalis</u> (Yellow Sweet Clover) | Annual | 0 | 30-40" |
| D. <u>Parthenocissus quinquefolia</u> (Virginia Creeper) | Vine | 0 0 0 | Climbs |
| E. <u>Rosmarinus officinalis</u> (Rosemary) | Shrub | 0 0 | 2' |

* E - Evergreen
D - Deciduous

Sun Location
0 - Full sun
0 - Partial shade
0 - Full shade

| Plant Name | Kind | Sun Location* | Height-Apx. |
|---|------------|---------------|-------------|
| E* <u>Trachelospermum jasminoides</u> (Star Jasmine) | Vine | 0 0 0 | 1-2' |
| <u>Trifolium repens</u> (White Dutch Clover) | Perennial | 0 | 5-8" |
| <u>Vicia villosa</u> Roth (Hairy Vetch) | Annual | 0 | 15-20" |
| B. Trees | | | |
| D* <u>Cercis canadensis reiniformis</u> (Texas Redbud) | Tree | 0 | 30' |
| D. <u>Diospyrus texana</u> (Texas Persimmon) | Shrub-Tree | 0 | 40' |
| D. <u>Eleagnus angustifolia</u> (Russian Olive) | Tree | 0 | 15-20' |
| E. <u>Juniperus ashei</u> (Ashe Juniper) | Tree | 0 | 20-60' |
| D. <u>Ulmus crassifolia</u> (Cedar Elm) | Tree | 0 | 60-80' |
| VII. <u>Wildlife Cover and Food Plants</u> | | | |
| A. Grasses | | | |
| <u>Andropogon scoparius</u> (Little Bluestem) | Grass | 0 | 2-4' |
| <u>Eragrostis curvula</u> (Weeping Lovegrass) | Grass | 0 0 | 15-20' |
| E. <u>Trichodes</u> (Sand Lovegrass) | Grass | 0 | 2-3' |
| <u>Leptochloa dubia</u> (Green Spangletop) | Grass | 0 | 12-20" |
| <u>Panicum antidotale</u> (Blue Panicum) | Grass | 0 | 4-7' |
| <u>P. virgatum</u> (Switchgrass) | Grass | 0 | 3-6' |
| B. Ground Covers and Others | | | |
| E. <u>Hedera</u> (Ivy) | Vine | 0 0 | Vary |
| <u>Helianthus annuus</u> (Common Sunflower) | Annual | 0 | 4-7' |
| <u>Melilotus officinalis</u> (Yellow Sweet Clover) | Perennial | 0 | 2-4' |
| D. <u>Parthenocissus quinquefolia</u> (Virginia Creeper) | Vine | 0 0 0 | Climbs |
| <u>Trifolium repens</u> (White Dutch Clover) | Perennial | 0 | 5-8" |
| <u>Vicia villosa</u> Roth (Hairy Vetch) | Annual | 0 | 15-20" |
| C. Shrubs and Trees | | | |
| D. <u>Albizia julibrissin</u> (Silk Tree) | Tree | 0 | 35' |
| D. <u>Bumelia lanuginosa</u> (Gum Bumelia) | Shrub-Tree | 0 | 40' |
| D. <u>Carya illinoensis</u> (Pecan) | Tree | 0 | 100' |
| <u>Cotoneaster species</u> | Shrubs | 0 0 | Vary |
| E. <u>Diospyros texana</u> (Texas Persimmon) | Shrub-Tree | 0 | 40' |
| D. <u>Eleagnus</u> (species) | Shrub | 0 | Vary |
| E. <u>Feijoa sellowiana</u> (Feijoa) | Shrub | 0 0 | 6-9' |
| E. <u>Illex species</u> (Holly) | Shrub | 0 | Vary |
| <u>Ligustrum species</u> (Privet) | Shrub | 0 0 0 | Vary |
| E. <u>Mahonia aquifolium</u> (Oregon Grape) | Shrub | 0 0 | 6-8' |
| D. <u>Melia azedarach</u> (Chinaberry) | Tree | 0 0 0 | 30-50' |
| D. <u>Morus alba</u> (Mulberry) | Tree | 0 0 | 30-40' |
| D. <u>Morus microphylla</u> (Texas Mulberry) | Shrub-Tree | 0 0 | 10-20' |

* E - Evergreen
D - Deciduous

Sun Location
0 - Full sun
0 - Partial shade
0 - Full shade

| <u>Plant Name</u> | <u>Kind</u> | <u>Sun Location</u> * | <u>Height-Apx.</u> |
|---|-------------|-----------------------|--------------------|
| D* <u>Photinia serrulata</u> (Chinese Photinia) | Shrub | 0 0 | 15' |
| <u>Prunus</u> species | Shrub | 0 0 | Vary |
| E* <u>Pyracantha</u> species | Shrub | 0 0 | Vary |
| <u>Quercus</u> species (Oak) | Tree | 0 0 | Vary |
| D. <u>Rhus aromatica</u> (Skunk Bush Sumac) | Shrub-Tree | 0 0 0 | 12-20' |
| D. <u>Rhus copallina</u> (Flame-Leaf Sumac) | Shrub-Tree | 0 | 25' |
| D. <u>Rosa multiflora</u> (Many-flowered Rose) | Shrub | 0 | 20' |

* E - Evergreen
D - Deciduous

Sun Location
0 - Full Sun
0 - Partial shade
0 - Full shade

III. GENERAL MANAGEMENT

3.01 Inventory of Use:

Listed below are the amounts of land used for various purposes as of 15 October 1974.

| | |
|---|--------------|
| Total water acreage (at conservation pool) | 6,430 |
| Total land fee acreage | <u>8,933</u> |
| Total | 15,363 |
| Project operations | 627 |
| Corps of Engineers Parks | 1,934 |
| Easements and licenses | 864 |
| Agri-grazing leases | 5,071 |
| Non-leased area | 1,110 |

The project has 6,430 acres of its 15,363 acres forming the normal conservation pool. At the flood stage of 666.0 feet, 11,830 acres are under water. Utilization of project lands is governed by the land-use allocations contained in the main body of the Master Plan. These allocations will be revised as necessary to accommodate changing requirements of the projects resources and project users.

3.02 Administration:

Administration is directed by the Office, Chief of Engineers, Southwestern Division and Fort Worth District policies. All plans are implemented at the Project level with guidelines and assistance from the Fort Worth District Office on matters concerning the Operations and Real Estate division.

3.03 Treatment Since Acquisition:

Most of the reservoir land outside of the parks has been primarily utilized for grazing purposes. There are 35 leases in force at present and all will expire on 31 December 1975. When these leases were let out, a clause in the contract of most of the leases required the sprigging of the lease with bermudagrass. Approximately 10 percent of the planted grass survived. The low rate of survival was due primarily to the extremely hot, dry weather that follows

planting. The surviving sprigs have taken hold and are spreading to a limited extent. The sprigging will improve the ground cover in a manner to prevent erosion and improve grazing conditions. Wildlife such as rabbits and some species of birds will nest in the grass. Deer feed upon forbs more than grasses and this sprigging is of limited value to deer management.

3.04 Present Uses:

There were 8,963 acres of fee land above normal conservation pool as of October 1974. Parks involve 1,925 acres. Visitation for 1974 numbered 1,129,770. This figure has been projected ahead to the year 2000 for an expected visitation of 4,227,300. Such pressure will be hard on vegetation in parks and will require strict usage control and maintenance. Measures will include enforcement of Title 36, Section 327.2 which prohibits operating motor vehicles off of approved roads. This will help prevent soil compaction, erosion and destruction of native vegetation. Compaction caused by foot traffic around picnic tables and on foot trails can be relieved by aeration of the soil during winter months. Due to soil compaction, disease, fire or old age, a certain percentage of the park trees can be expected to die each year. Trees that are to be replaced will be replaced with the same species when possible. Shrubs will be treated in the same manner. A program of fertilization and maintenance will be developed and followed on a year-round basis.

3.05 Proposed Usage:

On 31 December 1975, all grazing leases will terminate and will not be renewed before a in-depth study of all areas can be made. This will give the grazing areas time to recover from intensive grazing. After this study, some areas may be opened for grazing as a management tool. The number of cattle permitted on each lease will be regulated and certain vegetative improvements will be required. Many of the areas now under grazing will be used for wildlife management and public hunting. Any areas that are currently mismanaged will be withdrawn from public use and corrective measures applied.

3.06 Proposed Treatment:

A. Recreation Use Control:

The use and/or abuse of recreation facilities by the general public leads to one or more of the following problems:

1. Destruction of ground cover.
2. Soil compaction
3. Soil erosion of footpaths and roads.
4. Litter and dumping of household trash.

Most of the damage is caused by vehicles being driven on unauthorized roads. Lake users have driven their vehicles off the paved roads and up to the lake's edge or back into the wooded areas. These roads often wind through a park and frequently parallel the paved road or the water's edge. The proposed treatment is multi-stepped but will serve to correct other needs. First, signs will be located along the paved roads informing the public to drive and park in approved areas. Rangers will enforce the regulation as necessary. Some of the unauthorized roads may require open ditches across them or other physical barriers such as boulders or guard posts and plant materials to prevent their usage. Next, the undesired roads will be disked and planted with a ground cover such as hairy vetch, bermuda, buffalo grass or other drought resistant species. Unauthorized roads that serve a purpose may be developed into the secondary road system. Foot paths to the water or wooded areas will be maintained or developed. This treatment will remove unauthorized roads, correct soil compaction, combat erosion, provide wildlife forage and increase the beauty of the lake.

B. Erosion Control:

Soil erosion is confined almost entirely to unauthorized roads and foot paths. During heavy rains, water flows rapidly down these roads, causing gullies and potholes. The treatment prescribed for reducing these unauthorized roads will stop this soil erosion. Secondary roads that are preserved will be constantly checked to insure that proper drainage exists and erosion is controlled.

The Federal Environmental Pesticide Control Act of 1972

(Public Law 92-515) in part prohibits the application of any pesticide in a manner inconsistent with its labeling. This means that a pesticide cannot be used unless it is registered for the specific pest on the specific plant as indicated on the product label. Consequently, some chemicals formerly used by homeowners and pesticide applicators can no longer be used.

The pesticide user is always responsible for the effects of pesticide residues on his own plants as well as problems caused by drift from his property to other properties or plants. Always read and follow carefully all instructions on the product label.

Avoid prolonged skin contact with lindane or BHC. Chemicals may be absorbed by the skin and produce harmful effects. Wash exposed skin areas with generous amounts of soap and water. Lindane and BHC are toxic to fish and wildlife. Avoid contaminating water impoundments and drainage basins.

The most effective means of preventing pest infestations is to eliminate the source. The old adage, "An ounce of prevention is worth a pound of cure," applies to any pest control program. Through vigilance and proper surveillance, new or small infestations of unwanted pests can be located and eliminated to prevent further spread. Indirect control of insects or diseases may be achieved by practicing two basic principles which are:

1. A diversified uneven-aged stand is less subject to damage than a single species even-age stand.

2. Healthy plants are less subject to damage than weak ones.

However, even with proper maintenance practices, sometimes chemical controls are needed. The following information will help identify pests and suggest the proper chemical for use in a pesticide control program. Please remember that the status of insecticide label clearances is subject to change and changes may have occurred since this publication was printed. (County Extension agents and Extension entomologists are notified as these changes occur).

C. Proposed Treatment for Parks:

1. Soil Compacted Use Areas: In areas of high use, such as around some picnic tables and drinking fountains which have shown an inability to support a ground cover, a more durable base (i.e. crushed rock) should be laid to reinforce these areas, minimize maintenance and improve aesthetics. The areas around more moderately used picnic tables need only to be disked and reseeded to prepare them for next summer's visitation.

2. Plantings: Special planting priorities will be given to visitor focal points such as: around comfort stations, park entrances, the project office, and construction scars. Desirable species for use in a particular situations will be determined to a large degree by the soil type, appearance, climate, and low maintenance qualities for each situation. A mixed planting of deciduous and evergreen trees and shrubs are desirable when feasible. Species should be mixed to enhance the aesthetic value and to reduce the chance of disease or insect attack that could destroy the entire stand. When plantings are done, plantation-type planting should be avoided to keep the land natural looking. Irregular spacing is more desirable. Before planting, soil should be prepared by cultivation and fertilization to enhance the initial growth of the trees. Coordination with the District Recreation Management Branch will be carried out in any planting programs.

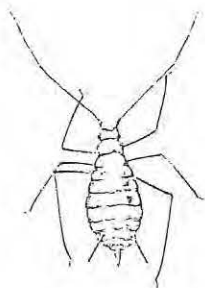
3. Mowing: Mowing in the parks will be supervised by the Ranger assigned to each park. Grass will be mowed to a height of no less than four inches as closer mowing might result in extensive turf damage caused by clumps being pulled from the ground.

D. Pesticide Use:

Pesticide use will be rigidly controlled in accordance to District regulations. Personnel trained and certified in pest management will supervise the application of pesticides. This applies to concessionaires and leasees as well as reservoir personnel. This will prevent the overuse and abuse of pesticides and keep this potential form of pollution to a minimum.

1. Sucking Insects

Aphids or Plant Lice

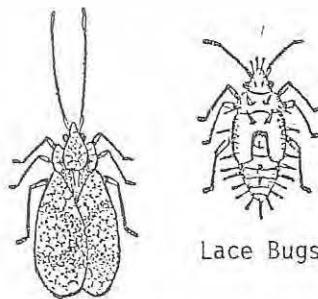


Aphid

There are several species of aphids, and they are seldom over 1/8 inch long. They cause leaves to curl and stunt flower growth. Diazinon, Dimethoate, Lindane, Malathion, or Meta-Systox-R are chemicals that are used to control aphids. Applications of chemicals may be repeated as needed.

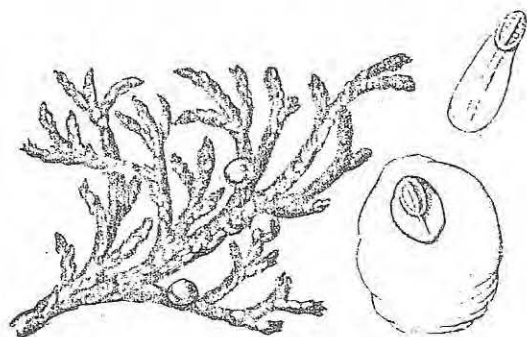
Lace Bugs

These insects suck sap from the underside of leaves, which they cover with specks of excrement. Carbaryl (Sevin), Diazinon, Dimethoate, Lindane, or Malathion may be used for chemical control. These chemicals may be repeated as necessary.



Lace Bugs

Scales and Mealy Bugs

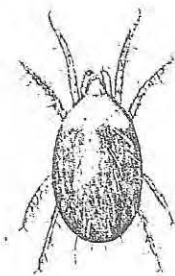


Juniper Scale

These insects are generally inconspicuous but cause plants to look dingy gray or yellowish. Diazinon, Dimethoate, Malathion, or Meta-Systox-R may be used for chemical control. They may be used two or more times at 2-week intervals.

Spider Mites

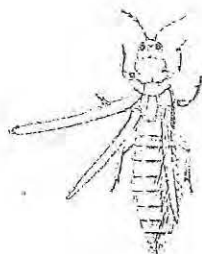
These tiny eight-legged creatures appear as moving specks on the undersides of leaves and may form fine silken webs. Chlorbenzilate, Diazinon, Dicofof (Kelthane), Ethion, Dimethoate, Malathion, Meta-Systox-R or Tetradifon (Tedion) may be used for chemical control. A second application should be made seven days after the initial one.



Spider Mite

Thrips

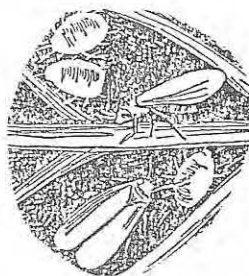
These insects vary in size from less than 1/25 to 1/8 inch in length. Thrips deform flower buds and leave small brownish specks of excrement wherever they feed. Carbaryl (Sevin), Dimethoate, Lindane, Malathion or Meta-Systox-R may be used as a chemical control. Applications should be made every 7-10 days during the flowering period.



Thrip

Whiteflies

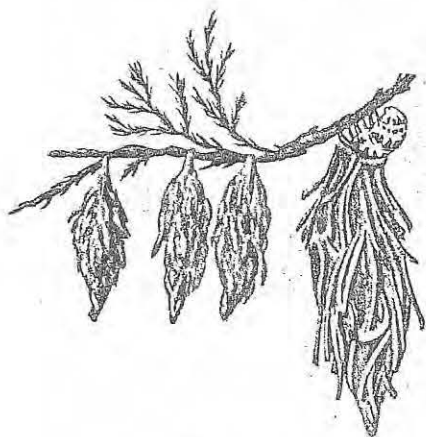
These tiny insects infest leaves to the extent that the plant may eventually turn yellow and die. Diazinon, Dimethoate, Endosulfan, Lindane, Malathion, or Meta-Systox-R may be used as a chemical control. Often, four or five applications of a pesticide may be needed at 5-day intervals.



Whitefly

(enlarged -- nymph and adults on underside of leaf)

2. Chewing Insects



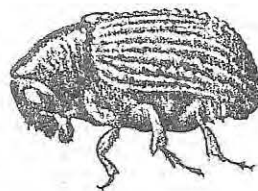
Bagworms

Bagworms

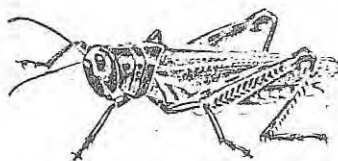
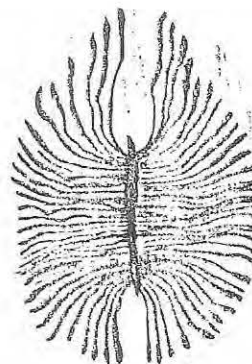
Bagworms are soft, brown caterpillars encased in silken cocoon-like bags, covered with bits of leaves from the host plant. They feed on the foliage of evergreens. Carbaryl (Sevin), Malathion, or Dylox may be used as a chemical control. Apply in May or when they are feeding.

Bark Beetles and Borers

These insects range in size from 1/10 to 3/8 inch in length and enter the tree by boring into the bark. Proper watering and fertilization of possible host plants reduce infestation by these insects. Trees may be protected for 2 to 6 months by spraying with lindane or benzene hexachloride (BHC), after which the tree trunk may be wrapped.



Bark Beetle
and Galleries



Cricket and
Grasshopper

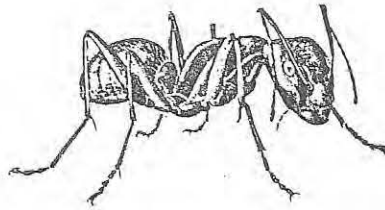


Crickets and Grasshoppers

These insects feed on any available vegetation and may completely destroy plants. Carbaryl (Sevin) is recommended for their control when damaging numbers occur.

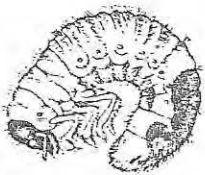
Imported Fire Ant

These insects can damage young plants as well as attack young, unprotected animals, such as newborn calves and pigs and newly hatched quail. Their sting is painful. Surveys, quarantines, and treatment are used to suppress ant populations. Ant-attractive granules, impregnated with Mirex insecticide provides effective control.



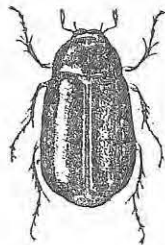
Imported Fire Ant

Leaf Beetles, June Beetles, Tip Moths, Leaf Rollers



Grub and Adult

June Beetle

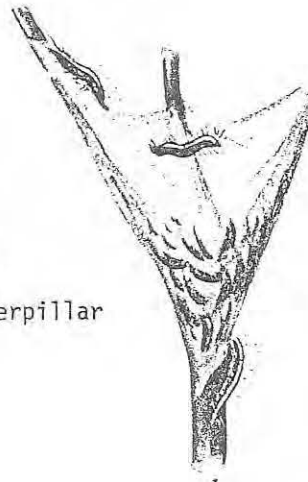


These insects cause various damage to plants. Carbaryl (Sevin), Malathion, or Dylox may be used as a chemical control. Application should be made in late May or when they are feeding.

Webworms, Tent Caterpillars,

Walnut and Pecan Caterpillars

These insects cause unsightly webbed nests in the forks of trees and they eat the foliage. Carbaryl (Sevin), Diazinon, Malathion, or Dylox may be used as a chemical control when damaging numbers occur.



Tent

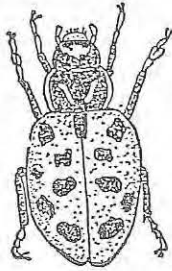
Caterpillar

3. Beneficial Insect

Lady Beetles



Larva and Adult
Lady Beetles



Lady beetles are extremely beneficial. A single larva has been known to consume about 90 adult and 3,000 larval scale insects during it's lifetime.

Illustrations were obtained from:

A manual published by the Agricultural Division, CIBA-GEIGY Corporation, Ardsley, New York 10502, entitled Spectracide Lawn and Garden Insect Control Manual.

A book written by Cynthia Westcott, published by Doubleday and Company, Inc. and entitled The Gardener's Bug Book, Fourth Edition.

E. Grazing Control:

When the grazing leases expire on 31 December 1975, they will not be renewed until various studies have been performed and guidelines established. This period will allow leases to recover from years of grazings and help the vegetative cover to revive as well as return to a more natural condition as opposed to tame pasture. After guidelines have been established, leases may be issued for management purposes and under tighter control. Cross-fences will be constructed as well as perimeter fences. Rangers will check fences periodically to insure compliance and to prevent fence cutting by unauthorized persons.

F. Watershed Protection:

Watershed protection is a basic concern for the reservoir. Areas sensitive to erosion in the reservoir will be restricted in the number of visitors it can receive. Planting of groundcovers will take place as and where needed to prevent or control erosion. By reducing erosion, silting will be held to a minimum. This will insure that the water in the lake is clear and the projected age of 100 years for this reservoir will be reached and possibly surpassed.

G. Wildlife Management:

A detailed plan for the management of fish and wildlife will be found in Appendix D of the Master Plan.

H. Fire Management:

A detailed plan for fire protection will be found in Appendix C of the Master Plan.

3.07 Tree and Shrub Management:

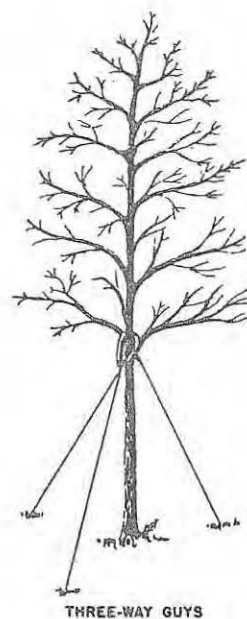
Both the tree species in park areas and those outside the parks on project land must be considered in a management plan. Basically, any tree essential to a park's aesthetic quality must be replaced if the tree is severely damaged or destroyed. Minor bark wounds or cankers can be treated by applying

a pruning paint. This will prevent further rot and entry by insects. Those trees outside parks have successfully regenerated by natural means and this process will be relied upon in the future. Periodic inspections will be made to insure that the natural regeneration is sufficient.

At the present, tree planting will be confined to replacement on an individual basis. When possible replacement will be with a small group of the same species or ones with superior qualities (preferably native to the area). Due to changing conditions (fluctuating water table) many cedars at the 622 feet conservation level have died. These may be replaced with tree species capable of inundation such as cottonless cottonwood (*Populus candicans*), Eastern cottonwood (*Populus deltoides*) or sycamore (*Platanus occidentalis*).

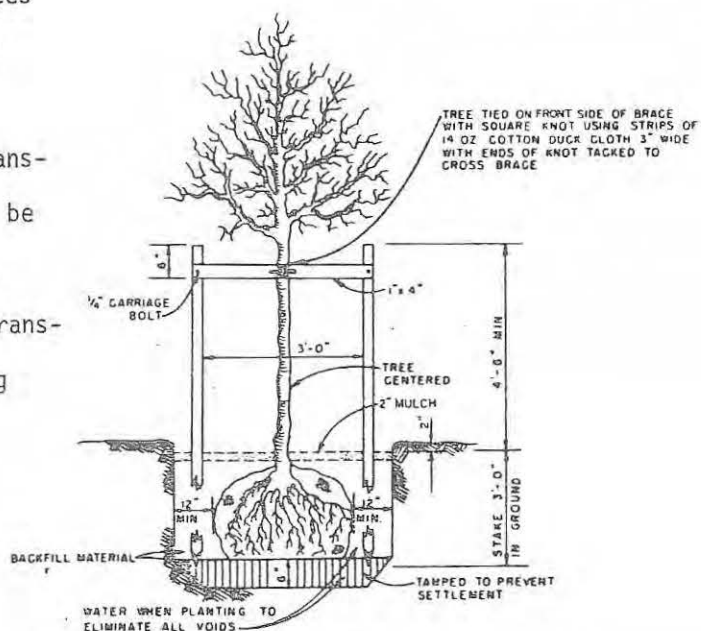
A. Size:

A nurseryman may quote size of a tree either as feet in height or as trunk caliper. Feet in height is the normal designation for small trees, whereas caliper (diameter or thickness) of the trunk, four and one-half feet above ground level, is commonly used for the larger-sized trees.



B. B & B or Bareroot:

The choice between trees, B & B or bareroot, is influenced both by the kind and the season. Evergreen trees (Conifer and broadleaved) are normally moved with a ball of soil about their roots. Deciduous trees, if dug and transplanted during the dormant season, may be moved bare rooted, generally speaking, the larger the tree, the greater the transplanting shock it sustains from digging and transporting.



C. Storage of Seedlings:

Store the seedlings in bundles as received and allow ample ventilation. Avoid their freezing, but if seedlings do freeze, do not handle while frozen. Elevate one end of bundles to allow drainage of excess water, and water every two or three days (do not water in freezing weather). When watering, turn and change ends of bundles to keep all roots uniformly moistened. Plant as soon as possible. Do not hold more than three weeks.

D. Pruning:

Trees in some areas may require pruning in order to open up the stand for ingress and egress for wildlife or humans. Pruning will also enable some air to be circulated through the stand. Good pruning requires that the cuts be made close to the tree trunk and flush with it, leaving no splinters of wood or broken stubs to interfere with callus formation. They should be made without tearing or loosening the bark around the branch stub.

E. Compaction:

Earth with a large proportion of fine particles of mineral soil compacts readily, smaller particles fitting in between larger ones leaving very little pore space. Most plants have difficulty growing in compacted earth for lack of voids to supply air and nutrient soil solutions for the roots. Most problems arise from vehicle and foot traffic.

1. Proper Design:

The best solution is proper design. Roadways and trails should be carefully planned along routes that would minimize the cutting of trees and still serve the purpose of the design. When a graveled or dirt road passes within five to ten feet of a tree it should be recognized that the tree will probably die from soil compaction within approximately 10 to 20 years. If the tree does not present safety or maintenance problems, some method should be used to relieve the soil compaction.

2. Methods to Relieve Compaction:

Relief of compaction around woody plants and trees is important, especially in areas that have extensive foot and vehicular travel. Two methods of combating compaction are outlined in Illustration 1. Other information is available from the Fort Worth District Office, the Soil Conservation Service, and the County Agent. Compaction is a common cause of mortality in heavy use areas. Relief is simple although, as it has been said many times, the best cure is prevention. Keep traffic from around the trees and shrubs and compaction will not occur. The simplest method of relief is a gravel-filled trench 5 to 6 inches deep and 1 foot wide, at least 1 foot from the base of the tree (Illustration 1).

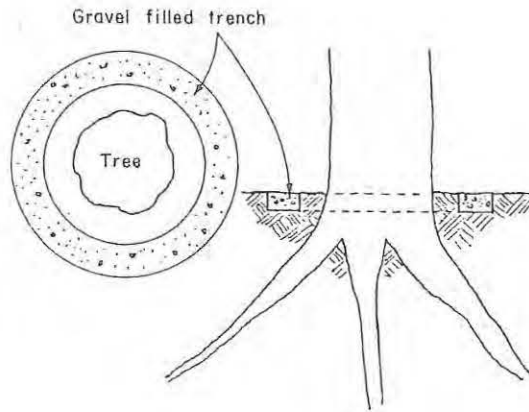


Illustration 1

Another method is to set several 4-inch perforated pipes, approximately 2 feet long, at intervals, more than 3 feet away from the trunk, around the tree. Put the pipe vertically into the ground with the top just below the surface, then fill the pipe with gravel and leave the top open, (illustration 2). There are many variations to these two methods.

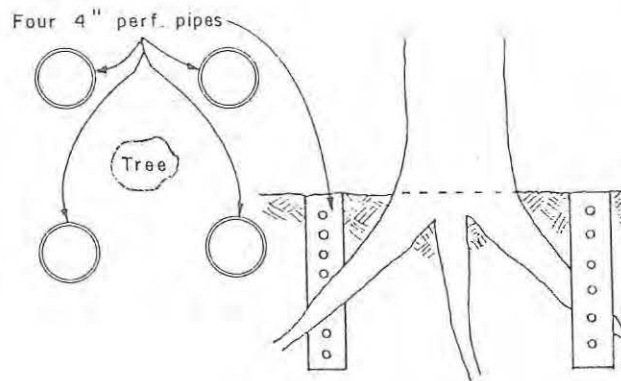


Illustration 2

When control of vehicles in the park areas has been effective, the reestablishment of grass and shrub cover in the impacted areas will also be effective. These impacted areas include those parts of the parks used for unauthorized parking and camping, the impromptu pullouts and turnarounds in picnic and camp areas, motorcycle trails in parks, as well as promiscuous roads.

IV. FUNDING AND COST ESTIMATES

5.01 Funding:

The method of funding will rely upon O&M funds for the bulk of the projects. In addition, wildlife management areas will receive funds from the wildlife budget and the parks will receive money from the recreation fund. Records of all expenses will be kept and reviewed at the project level to insure that the best use is being made of available funds. Funding should begin as soon as possible to help keep encroachment, park abuse and erosion to a minimum.

5.02 Cost Estimates:

The following cost estimates will serve as a basis for budgeting the projects. Due to inflation and various other factors, these prices might change and allowances for an increase in price should be made for the budget.

A. Fencing:

The fence under consideration is to be a four strand barbed wire fence using local cedar for post. Contracted out, the estimated cost of this fence runs from 50¢ to 65¢ per linear foot, (\$2,640 to \$3,432 per mile). With Project personnel, the cost runs from \$1,500 to \$2,000 per mile. With an estimated 31.5 miles of fence for an estimated cost of \$94,500 if contracted.

B. Landscaping:

1. Nursery Trees:

Depending upon size and species, balled and burlapped trees run from \$10.00 to \$50.00 each, not counting planting. The Indian Mound Nursery of the Texas Forest Service can provide seedlings at \$5.00 per 100. Species available that are suitable for this area include catalpa, chinese elm, green ash, honeylocust, mulberry, redcedar, sycamore and oriental arborvitae, Cottonwood cuttings are also available.

2. Transplanting Reservoir Grown Stock:

Transplanting of native species will be done when possible. The oaks and cedars that make up most of the woods on the Reservoir generally do poorly when transplanted. Ash and sycamore will respond more favorable to transplanting. Native shrubs and ground covers will be transplanted and used in understocked areas. This will help to preserve the natural eco-system of the reservoir.

3. Forbs and Grasses:

| | |
|---------------------|------------------|
| hairy vetch | \$ 39.50/100 lbs |
| common vetch | 29.00/100 lbs |
| Madrid sweet clover | 35.00/100 lbs |
| common bermudagrass | 140.00/100 lbs |
| sunflower | 0.40/ lb |
| millet | 0.20/ lb |
| winter rye | 0.40/ lb |
| buffalo grass | 152.00/100 lbs |
| Klien grass | 9.25/ lb |

4. Shrubs

Most species from commercial nurseries cost between \$1.29 and \$4.99 depending upon species and size.

V. SUMMARY

The Corps of Engineers is responsible for the management of the water and land resources held in public trust. In interest of proper management, "People control" as stated in the Master Plan, is a most vital necessity. Fencing and barriers, in conjunction with warning signs and citations issued by Rangers, are necessary to effectively control reservoir visitors. With large grazing leases and the urban buildup around the lake, problems will continue and probably increase in size and number. Each problem should be defined and possible solutions decided upon. After resolution, each problem and related data should be filed for future reference. An annual detailed management plan will be developed and coordinated with the District staff elements. Stillhouse Hollow Lake has great potential for recreation, wildlife management and related fields. With funding and personnel, this lake could become one of the most popular lakes in central Texas. This potential needs to be developed.

TABLE 3

REFERENCE PUBLICATIONSConservation and Ecology

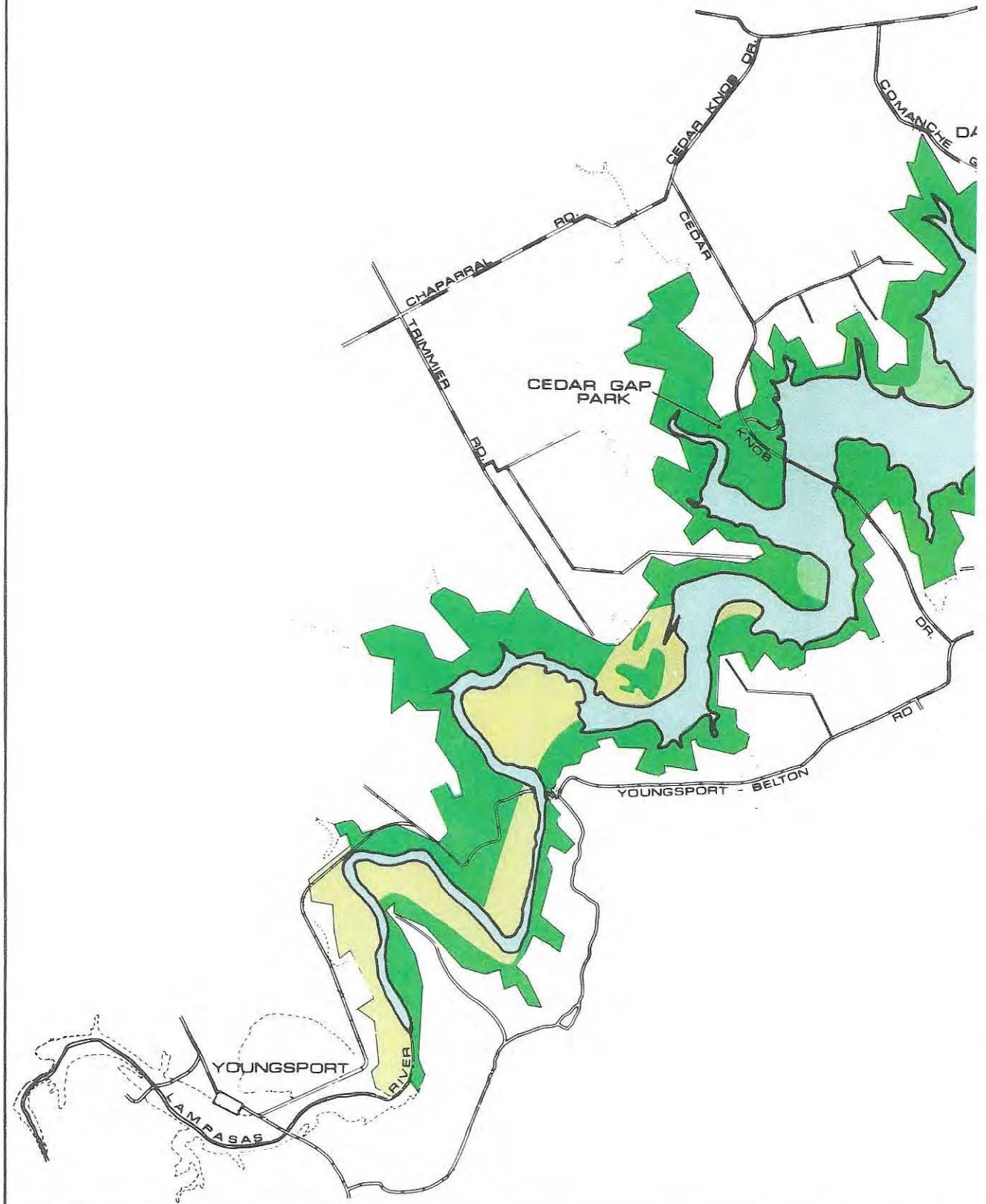
| | | |
|-----------------------------------|------------------------------|--------|
| <u>Environmental Conservation</u> | Author: R. R. Dasmann | 307 p. |
| | Publisher: John Wiley & Sons | 1959 |
| <u>Plant Communities</u> | Author: R. Daubenmire | 300 p. |
| | Publisher: Harper & Row | 1968 |
| <u>Fundamentals of Ecology</u> | Author: E. P. Odom | 546 p. |
| | Publisher: W. B. Sanders Co. | 1959 |

Vegetation Management

| | | |
|---|---|--------|
| <u>Silvics of Forest Trees of the United States</u> | Author: Agriculture Handbook #271 | 762 p. |
| | Publisher: U.S.D.A. Forest Service | 1965 |
| <u>The American Grass Book</u> | Author: Archer & Bunch | 330 p. |
| | Publisher: University of Oklahoma Press | 1953 |
| <u>Soil Erosion and Its Control</u> | Author: W. C. Ayres | 365 p. |
| | Publisher: McGraw-Hill Book Company | 1936 |
| <u>Vegetation and Watershed Management</u> | Author: E. A. Colman | 412 p. |
| | Publisher: Ronald Press Co. | 1953 |
| <u>Apply Pesticides Correctly</u> | Author: U.S. Env. Protection Ag. | 42 p. |
| | Publisher: U.S.D.A. | |

General and Identification Guides

| | | |
|--|---|----------|
| <u>100 Native Grasses in 11 Southern States</u> | Author: Agriculture Handbook #389 | 216 p. |
| | Publisher: U.S.D.A. Soil Conservation Service | 1971 |
| <u>Forest Trees of Texas</u> | Author: Bulletin #20 | 156 p. |
| | Publisher: Texas Forest Service | 1963 |
| <u>Eastern Forest Insects</u> | Author: Miscellaneous Publication #1175 | 642 p. |
| | U.S.D.A. Forest Service | 1972 |
| <u>Pasture and Range Plants</u> | Author: Phillips Petroleum Company | 176 p. |
| | | 1963 |
| <u>Trees, Shrubs, and Woody Vines of the Southwest</u> | Author: R. A. Vines | 1,140 p. |
| | Publisher: University of Texas Press | 1960 |



U. S. ARMY
ENGINEER DISTRICT
FORT WORTH
FT. WORTH, TEXAS

LEGEND

MIXED HARDWOOD
CEDAR BREAK
SAVANNA



LAND AL

MIXED JUNIPER
LIVE OAK
OPEN PASTURE

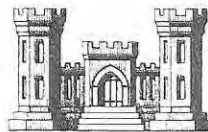
DESIGN MEMORANDUM NUMBER 11C

APPENDIX (C)
FIRE PROTECTION PLAN
REVISED MASTER PLAN

STILLHOUSE HOLLOW LAKE

BRAZOS RIVER BASIN

LAMPASAS RIVER, TEXAS



U.S. ARMY ENGINEER DISTRICT

FORT WORTH, TEXAS

SEPTEMBER, 1974



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

REPLY TO
ATTENTION OF:

SWFOD-M

14 November 1974

SUBJECT: Project Resource Management Plans, Appendix C to Design
Memorandum No. 11C, Stillhouse Hollow Lake, Brazos River
Basin, Lampasas River, Texas

Division Engineer, Southwestern
ATTN: SWDCO-OR

1. Reference Engineer Regulation 1130-2-400 dated 28 May 1971, SWDPL-R letter dated 8 March 1972, subject: Recreation Resource Planning and Management, and 2nd Indorsement thereto dated 17 May 1972.
2. In accordance with schedules previously furnished, seven copies of Appendix C, Fire Protection Plan for Stillhouse Hollow Lake, Brazos River Basin, Lampasas River, Texas are submitted for approval.

FOR THE DISTRICT ENGINEER:

1 Inclosure (7 cys)
As stated


ALLIE J. MAJORS
Chief, Operations Division

SWDCO-R (SWFOD-M 14 Nov 74) 1st Ind
SUBJECT: Project Resource Management Plans, Appendix C to Design
Memorandum No. 11C, Stillhouse Hollow Lake, Brazos River
Basin, Lampasas River, Texas

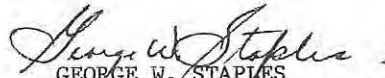
DA, Southwestern Division, Corps of Engineers, 1114 Commerce Street,
Dallas, TX 75202 6 December 1974

TO: District Engineer, Fort Worth, ATTN: SWFOD-M

Appendix C, Fire Protection Plan to Design Memorandum 11C Master Plan
for Stillhouse Hollow Lake, is approved.

FOR THE DIVISION ENGINEER:

wd all incl


GEORGE W. STAPLES
Chief, Construction-
Operations Division

CF: w/incl
HQDA (DAEN-CWO-R) 2 cy

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APPENDIX C

FIRE PROTECTION PLAN
STILLHOUSE HOLLOW LAKE

REVISIONS AND UPDATES

Date

Page

APPENDIX C

FIRE PROTECTION PLAN

I. INTRODUCTION

1.01 Purpose:

The purpose of this fire protection plan is to establish policies, procedures, equipment, and to train personnel in the protection of the headquarters, and grass and woodland areas of Stillhouse Hollow Lake Project.

1.02 Authority:

This appendix to the Stillhouse Hollow Lake Master Plan is prepared in accordance with Engineer Regulation 1130-2-400 dated 28 May 1971.

1.03 Location:

Stillhouse Hollow Dam is located on the Lampasas River 16.0 river miles upstream from the confluence of the Lampasas and Leon Rivers and is in the central part of Bell County about 5 miles southwest of Belton, Texas. The reservoir area lies entirely within Bell County.

1.04 Access:

State Highway FM 1670 crosses the main embankment. This highway intersects U.S. Highway 190 approximately three miles southwest of Belton, and Interstate 35 approximately three miles southeast of the project. In addition to this highway, access to the Government property and public use areas is available over existing improved and unimproved county roads.

1.05 Description of Project Area:

The topography of Stillhouse Hollow Project area is characterized by buttes, mesas, and divides. The terrain in the area ranges from flat in the narrow valley of the flood plains of the Lampasas River to steep slopes and near vertical bluffs in the uplands. At conservation pool elevation 622 ms1,

the lake has a surface area of 6,430 acres. Total project area consists of 15,393 acres of fee owned land and 864 acres of flowage easement. There are approximately 25 subdivisions situated around the reservoir. There are 4642 acres of fee owned land under grazing and agricultural leases. Park areas cover 1925 acres. Of these, 15 acres in Stillhouse Park are leased for development. The dam, headquarters area, and other operational facilities occupy 850 acres.

1.06 Forested and Grass Lands:

Approximately 50% of the project land is under heavy tree cover, 30% is partially covered, and 20% is open. Trees in the river valleys include pecan, American elm, willow, cottonwood, walnut, box elder, sycamore, bur oak, hackberry, and water ash. Slopes and uplands support blackjack, post and live oaks, juniper, hackberry, mesquite, and persimmon. Ground cover includes native grasses such as buffalo grass, blue stem, and gramma and weeds such as bloodweed, broomweed, cockle burr, and Johnson grass. Wildlife in this area include White-tail deer, Rio-Grande turkeys, Mourning dove, Bobwhite quail, squirrels, rabbits, mink, ringtailed cats, raccoons, skunks, opossum, foxes, coyotes, bobcats, armadillos, nutria, and various rodents. Many species of water fowl and other birds either reside or migrate through this area. There are no firebreaks as such, but most areas are easily accessible. A good distribution of various types of roads offer some protection against large fires.

APPENDIX C

FIRE PROTECTION PLAN

I. INTRODUCTION

1.01 Purpose:

The purpose of this fire protection plan is to establish policies, procedures, equipment, and to train personnel in the protection of the headquarters, and grass and woodland areas of Stillhouse Hollow Lake Project.

1.02 Authority:

This appendix to the Stillhouse Hollow Lake Master Plan is prepared in accordance with Engineer Regulation 1130-2-400 dated 28 May 1971.

1.03 Location:

Stillhouse Hollow Dam is located on the Lampasas River 16.0 river miles upstream from the confluence of the Lampasas and Leon Rivers and is in the central part of Bell County about 5 miles southwest of Belton, Texas. The reservoir area lies entirely within Bell County.

1.04 Access:

State Highway FM 1670 crosses the main embankment. This highway intersects U.S. Highway 190 approximately three miles southwest of Belton, and Interstate 35 approximately three miles southeast of the project. In addition to this highway, access to the Government property and public use areas is available over existing improved and unimproved county roads.

1.05 Description of Project Area:

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II. FIRE PROTECTION

2.01 General:

Stillhouse Hollow Project is not heavily forested, but there is a need to prevent grass fires, fires that endanger wooded areas and wildlife habitat, and fires in the headquarters area. This section of the plan presents prevention methods, ways and means to control fires, and indicates fire fighting tools and equipment available.

2.02 Objective:

The objective is to reduce the number of fires and to minimize the extent of damage resulting from fires on Corps land and on adjoining private land.

2.03 Fire Detection:

At the first sign of a fire or smoke that might be either a grass or a wooded area fire, Corps personnel will immediately determine the location and extent of the fire and report by radio or phone to the Reservoir Manager. If fire is reported or noticed after working hours, the nearest fire department will be contacted, and other project personnel notified as necessary to extinguish it. In case of fire in the headquarters area during regular working hours, the employee discovering the fire will immediately sound the fire horn on the south side and outside of the administration building. The fire alarm consists of five short blasts. An employee in the office will notify the Belton Fire Department.

2.04 Fire Prevention:

All project personnel will be fire conscious at all times, especially during extreme dry seasons and when a strong wind is blowing. A dry season can be anytime during the year in this area and a strong wind will multiply the possibility and extent of fire damage. Special fire preventative measures are as follows:

A. Consider weather conditions such as dryness and wind before building a fire.

B. Consider adjacent surroundings such as vegetative cover and natural fire breaks before starting a fire.

C. Extinguish fires before leaving.

D. Extinguish matches and cigarettes completely before disposal.

E. Caution public concerning fire hazards in public use areas, especially during dry windy weather.

2.05 Preparedness - Organization:

Records and reports will be maintained on all sizeable fires. Stillhouse Hollow Project area fire protection and prevention requires continuous observance of fire safety practices, alertness to possible grass or wooded area fires, and an immediate response to extinguish unauthorized fires or fires that get out of control. This involves all project personnel. Reservoir Rangers inspect fire fighting equipment and the water supply to the Project Office. It is the responsibility of the Reservoir Maintenance Worker Foreman to have all fire fighting equipment in operational condition. The Reservoir Manager or Reservoir Ranger will direct fire fighting action. In their absence, the Reservoir Maintenance Worker Foreman or the clerk will be in charge.

2.06 Readiness of Equipment:

Fire fighting equipment will be kept in a ready condition at all times. The fire fighting unit will be filled with water, sufficient gasoline, and be in good operational condition. Shovels, axes, and gunny sacks will be available in a sufficient quantity. Two small dozers at the project will be available for fire fighting if needed. Military equipment and personnel are available from Fort Hood 20 miles away through Civil Defense.

2.07 Reports and Records:

Reporting of all fires will be as directed and records will be maintained of sizeable fires. Information from these will be used and considered in future fires and fire plans.

2.08 Fire Crew Planning:

All project personnel are trained in the use of fire suppression equipment located on the project. Selected employees will attend special training schools in fire suppression when they are offered and authorized. Fire fighting tactics, plans, and procedures are reviewed with project personnel at monthly project safety meetings. Existing fire hazards are brought to the attention of project personnel.

III. EQUIPMENT AND TOOLS

3.01 Type of Equipment and Tools Available:

The following equipment and tools are available for fighting fires at Stillhouse Hollow Project:

- 12 CO₂ fire extinguishers located in office, shop, vehicle bays, and structure
- 1 Forester Fire Fighting outfit, 50 gallon capacity
- 2 Small dozers
- 4 Hand held portable five gallon fire extinguishers
- 5 Vehicles with 2-way radios,
- 4 Vehicles without radios
- 1 Portable 2-way radio
- 2 Chain saws
- Axes, hoes, shovels, and gunny sacks

3.02 Duties - Title of Personnel Assigned

| <u>Duties</u> | <u>Title of Personnel Assigned</u> |
|---------------------|--------------------------------------|
| Fire Chief | Reservoir Manager |
| First Alternate | Reservoir Ranger |
| Second Alternate | Reservoir Maintenance Worker Foreman |
| Equipment Operators | Three Reservoir Maintenance Workers |
| Fire Fighting Units | One Laborer |
| Small Equipment | One Laborer |
| Communications | Two Reservoir Rangers |

IV. Cooperative Agreement

4.01 General:

Texas State fire law, under Articles 1321a and 1321b of Vernon's Penal Code, provides penalties for those persons willingly setting forest and range fires or allowing fire to get out of control.

4.02 Agreement:

This Reciprocal Fire Protection Agreement made this the 24th day of January 1974, by and between the U.S. Army Corps of Engineers, Ft. Worth Engineer District and the Fire Departments of Belton, Harker Heights, Killeen, Nolanville, and Salado, hereby declares that:

a. Corps employees and fire fighting equipment at the Stillhouse Hollow Project Office can be called upon to help suppress fires on Government-owned lands at Stillhouse Hollow Project or on adjacent lands where fires would endanger vegetative resources on Government-owned lands if they were not suppressed.

b. The Fire Departments of the above mentioned cities can be called upon to help suppress fires on Government-owned lands as well as adjacent privately-owned lands.

c. The determination of which of the above mentioned parties will participate in the suppression of any given fire will be made by the Stillhouse Hollow Project Reservoir Manager (or his designated representative) or the Fire Chief of the respective Fire Departments (or their designated representative), whichever is better informed. Factors to be considered in making this determination are size, location, and type of fire, existing weather conditions, and fire fighting capabilities of each department.

d. When Corps employees are engaged in fire suppression on privately-owned lands, they shall be under the direction of the Fire Chief of the Fire Department in charge, or his designated representative. When one or more Fire Departments are engaged in fire suppression on Government-owned lands, they shall proceed according to directives given by the Fire Chief in charge, and agreed upon by the Stillhouse Hollow Project Reservoir Manager.

e. In the event the combined departments or parts thereof are engaged in fire suppression, the party(ies) lending assistance may withdraw on notice to the person in charge of the suppression activities.

f. It is understood and agreed that the Stillhouse Hollow Project, Corps of Engineers, will be under no obligation to furnish aid to the Fire Departments of Belton, Harker Heights, Killeen, Nolanville, or Salado if under the circumstances furnishing such aid will endanger or jeopardize the fire protection for Stillhouse Hollow Project. It is likewise understood and agreed that the respective Fire Departments of Belton, Harker Heights, Killeen, Nolanville, and Salado will be under no obligation to furnish aid to Stillhouse Hollow Project, Corps of Engineers, if the furnishing of such aid under the circumstances will endanger or jeopardize the fire protection for the respective cities of Belton, Harker Heights, Killeen, Nolanville, and Salado.

g. Government-owned land as referred to in this agreement does not include any portion of the Ft. Hood Military Reservation, nor does it include any lands which are accessible only by crossing the Ft. Hood Military Reservation.

h. Each party of this agreement waives all claim against every other party for compensation for any loss, damage, personal injury, or death occurring in consequence of the performance of the agreement.

i. This agreement may be terminated at any time by any member party; provided, however, that such termination shall not be effective until 30 days after the terminating party gives notice of its intentions to terminate and such notice is received by the other member parties. After such termination is effected, the terms, provisions, and conditions of this agreement shall remain in full force and effect for the remaining member parties.

Floyd H. Hent
FLOYD H. HENT, COL, CE

District Engineer
Ft. Worth District
U.S. Army Corps of Engineers

24 Jan 1974
Date

Ronald W. Pivette
J. J. VICTORY

Reservoir Manager
Stillhouse Hollow Project
U.S. Army Corps of Engineers

6 Dec 73
Date

R. G. Parker

Fire Chief
Belton Fire Department
Belton, Texas

10-20-73
Date

Ed. G. Gorman
Fire Chief

Harker Heights Fire Department
Harker Heights, Texas

10/30/73
Date

Harmon D. Hinkle
Fire Chief

Killeen Fire Department
Killeen, Texas

10-30-73
Date

Lu B. Gwalt
Fire Chief

Nolanville Fire Department
Nolanville, Texas

Oct. 30, 1973
Date

Joseph L. Bentley
Fire Chief

Salado Fire Department
Salado, Texas

Oct. 30, 1973
Date

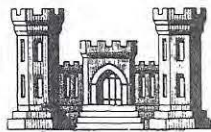
DESIGN MEMORANDUM NUMBER 11C

APPENDIX (E)
PROJECT SAFETY PLAN
REVISED MASTER PLAN

STILLHOUSE HOLLOW DAM

BRAZOS RIVER BASIN

LAMPASAS RIVER, TEXAS



U.S. ARMY ENGINEER DISTRICT

FORT WORTH, TEXAS

NOVEMBER, 1974



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

REPLY TO
ATTENTION OF:

SWFOD-M

3 December 1974

SUBJECT: Project Resource Management Plans, Appendix E to Design
Memorandum No. 11C, Stillhouse Hollow Dam, Brazos River
Basin, Lampasas River, Texas

Division Engineer, Southwestern
ATTN: SWDCO-OR

1. Reference Engineer Regulation 1130-2-400 dated 28 May 1971, SWDPL-R letter dated 8 March 1972, subject: Recreation Resource Planning and Management, and 2nd Indorsement thereto dated 17 May 1972.

2. In accordance with schedules previously furnished, seven copies of Appendix E, Project Safety Plan for Stillhouse Hollow Dam, Brazos River Basin, Lampasas River, Texas are submitted for approval.

FOR THE DISTRICT ENGINEER:

1 Inclosure (7 cys)
As stated


ALLIE J. MAJORS
Chief, Operations Division

SWDCO-R (SWFOD-M 3 Dec 74) 1st Ind

SUBJECT: Project Resource Management Plans, Appendix E to Design
Memorandum No. 11C, Stillhouse Hollow Dam, Brazos River
Basin, Lampasas River, Texas

DA, Southwestern Division, Corps of Engineers, 1114 Commerce Street,
Dallas, TX 75202 31 DEC 1974

TO: District Engineer, Fort Worth, ATTN: SWFOD-M

Appendix E, Project Safety Plan to Design Memorandum No. 11C, Master
Plan for Stillhouse Hollow Lake, is approved subject to the following
comments or inclusions at subsequent revisions, whichever is appropriate.

a. Paragraph 4.01. This paragraph should be revised in accordance
with the requirements contained in ER 1130-2-407.

b. Paragraph 4.01C and paragraph 2.02. A discussion should be in-
cluded on the safe storing, handling, and applying of chemicals and pest-
icides and the disposal of used containers in accordance with current
regulations.

c. Paragraph 6.03. Swimming areas should be monitored in accordance
with SWDR 1130-2-9.

d. Paragraph 6.05. The monitoring of lessees' water systems should
be in accordance with ER 1130-2-407.

e. It is recognized that this plan provides the information as out-
lined in ER 1130-2-400; however, since swimming and boating accidents
are of major concern, it would be more meaningful if the appendix pre-
sented additional information on water safety. The following are some
items that should be covered in greater detail or included in this
appendix.

(1) Establishing with the community a Water Safety Council. Such
organizations as the Coast Guard Auxiliary, Power Squadron, Boy Scouts,
concessionaires, Red Cross, community leaders, etc., are excellent
groups for participating in this type of activity.

(2) The placement of buoys for restricting boats and identifying
hazards should be coordinated with the Texas Parks and Wildlife
Department. This coordination should be indicated in the appendix.

31 DEC 1974

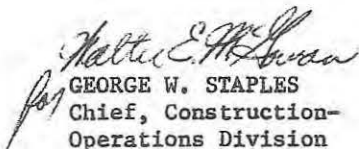
SWDCO-R

SUBJECT: Project Resource Management Plans, Appendix E to Design
Memorandum No. 11C, Stillhouse Hollow Dam, Brazos River
Basin, Lampasas River, Texas

- (3) Procedures for patrolling and identifying hazards.
- (4) Procedures for checking and using the search, rescue and recovery equipment.
- (5) Types of search, rescue and recovery equipment available.
- f. Section VIII, General. An additional paragraph should be provided to discuss safety training of project personnel, including first aid.

FOR THE DIVISION ENGINEER:

wd all incl

for 
GEORGE W. STAPLES
Chief, Construction-
Operations Division

CF: w/incl
HQDA (DAEN-CWO-R) 2 cy

APPENDIX E

PROJECT SAFETY PLAN
STILLHOUSE HOLLOW LAKE

REVISIONS AND UPDATES

Date

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APPENDIX E

PROJECT SAFETY PLAN

I. INTRODUCTION

1.01 Purpose:

The purpose of the Project Safety Plan is to identify common, recurring hazards or unsafe conditions in each major phase or area of operations. Such areas include construction, operation, maintenance, equipment, public use areas, visitor protection, and office operations. Precautionary actions to be taken to discover, prevent, reduce, or control hazardous conditions or situations are planned and set out herein.

1.02 Authority:

This plan is prepared in accordance with the requirements of Engineer Regulation 1130-2-400, dated 28 May 1971.

1.03 Master Plan:

This Appendix is a part of the Revised Master Plan for the development and management of Stillhouse Hollow Dam

II. ADMINISTRATIVE FACILITIES

2.01 Office Area:

Appendix E to FWDR 190-2-14 describes the plan of action in the event of a fire in the administrative area. Office equipment is kept in safe operating condition. The office is kept clean and orderly. Potential hazards are identified and eliminated. First aid supplies, including a respirator, are available in the project office. Trash containers are emptied daily and refuse disposed of by acceptable means.

2.02 Maintenance Area:

A. Tools and Equipment:

Project personnel are frequently reminded of the importance of good safety practices in using all project facilities. The shop area is cleaned daily, allowing no accumulation of trash or debris. Fire extinguishers and first aid supplies are readily available in the shop. All fire extinguishers are serviced monthly. Flammable materials are stored in a metal storage building which is 50 feet away from adjoining buildings and "NO SMOKING" signs are posted.

B. Shop Facilities:

All shop facilities will be utilized in a safe manner. Proper shields, guards and goggles of the recommended shade for filter lenses are employed. Tools are operated with proper safety equipment. Shop equipment is kept in safe operating condition and stored in the proper place when not in use. Safety hats, class B, are worn in designated hardhat areas.

C. Boat Mooring Facilities:

The project work boat "Concho" is stored in a floating covered boathouse at Lakeview Marina in Stillhouse Park. The "Concho" is inspected and operated weekly to insure safe operating condition.

III. STRUCTURES

3.01 Toilet Facilities:

Toilets are cleaned regularly by the cleaning contractor. All toilet seats are scrubbed with soap and water and disinfectants and deodorants applied twice weekly. The cleaning contractor mows around the restrooms at weekly intervals when vegetative growth dictates. Project personnel inspect the facilities weekly to insure cleanliness and safe condition. Pit-type toilets are pumped out and cleaned when needed.

3.02 Concession Buildings:

There is one concessionaire on Stillhouse Hollow Lake. This concession is Lakeview Marina in Stillhouse Park. The facilities at Lakeview Marina are inspected periodically to insure that all structures comply with approved agreements and design standards. In the event a safety hazard is discovered, it is brought to the attention of the concessionaire for appropriate corrective action.

3.03 Overlook Structures:

The Overlook structure in Overlook Park is maintained by project personnel and in good repair at all times. Safety barriers are not necessary due to the fact that the Overlook is situated on a gentle slope.

3.04 Administrative Structures:

There are six well pump houses in the public use areas. The area around each pump is mowed and cleaned when needed. All pump houses are inspected frequently for safe operation. Boat ramps and restrooms are provided with night lights. All electrical facilities (Outlets, breakers, etc.), on project structures are of the approved type.

IV. SANITATION

4.01 Water Facilities:

Potable water is available in all public use areas except Cedar Gap Park. Two wells are equipped with chlorinators and the other four are untreated. Water samples are sent to the Texas State Health Department in Austin frequently for bacteriological analysis.

A. Sewage Disposal Systems:

Septic tanks and field lines serve the headquarters area and the waterborne toilet in Overlook Park. All pit-type toilets are pumped out as needed by a contractor. Chemical bacteriological agents are used as treatment to dissolve solids in the pits.

B. Solid Waste Disposal Facilities:

Trash and litter from the park areas is hauled to the Killeen City Dump by the cleaning contractor. Project personnel pick up trash and litter in areas not covered by contract and disposal is made at the Killeen Dump.

C. Insect and Poisonous Plant Control:

Only approved type pesticides and herbicides, in recommended amounts, are used. All poisonous chemicals are handled with safety in mind.

V. ACCESS

5.01 Roads:

Park roads are maintained in as good repair as possible. Necessary road signs and markers are posted in accordance with the SWD sign handbook. Guard posts on curves are reflectorized for safe night driving.

5.02 Bridges:

Bridges and culverts are marked with guardposts and maintained in good safe repair.

5.03 Parking Areas:

Parking areas are paved and marked with guard posts.

5.04 Traffic Control Devices:

In accordance with SWD sign handbook, speed limit signs are posted on park roads and curves and intersections are marked. Roadside guardrails and guard posts have been erected where needed.

VI. PUBLIC USE FACILITIES

6.01 Camping Areas:

One area at Dana Peak Park has been developed for overnight camping. The area is cleaned regularly. No electrical outlets are available in the camping area.

6.02 Picnic Areas:

All potential hazards in the picnic areas are identified and eliminated. Picnic areas are cleaned regularly and facilities are maintained in safe condition.

6.03 Swimming Areas:

There are swimming areas at Dana Peak Park and Stillhouse Park. These areas are zoned by both can and capsule buoys. A line of 12 inch spherical buoys are set out at each beach at about a five foot depth and marked as such. The buoys denoting the swimming area are alternating White and International Orange capsule buoys. Can buoys are placed on the outer limits of the swimming area to warn watercraft to avoid the area.

6.04 Boat Ramps:

No parking is allowed on the boat ramp turn around. There are night lights at each of the five boat ramp areas. Water safety signs are posted at each boat ramp. Guardrail has been erected as needed.

6.05 Concession Areas:

Approximately 15 acres of land and water have been leased to Lakeview Marina, Inc. at Stillhouse Park. The area is inspected periodically for cleanliness and safe conditions. Recommendations are made to the concessionaire when discrepancies are found.

6.06 Marina Facilities:

Facilities at the Lakeview Marina are inspected periodically. The concessionaire is expected to keep his rental equipment such as boats and motors in safe operational condition. Safe practices are encouraged. Marine gasoline tanks are removed from motorboats and placed on the gasoline tank platform before fulling. Fire extinguishers are readily available in case of fire.

VII. PUBLIC INFORMATION

7.01 Storm Warnings:

In the event of high winds a "high wind" helicopter will be called from Fort Hood. This helicopter is available on call to fly over the lake flying a banner warning of the high wind conditions. Other than this method, the project makes no storm warnings.

7.02 Education Programs:

Project brochures and regulations are available to visitors at the project office and most business concerns adjacent to the lake. Lake Rangers are available to give lectures and safety programs to groups and clubs on request.

7.03 Terrain Hazards:

A chain link fence has been erected at both Overlook and Bluff Park for the safety of park visitors. This fence lies along the edge of the steep bluffs present in both areas. Guard posts have been placed along much of the paved roads in Stillhouse Park due to the steep bluff alongside the road.

7.04 Water Hazards:

The intake structure and stilling basin are marked as danger areas.

7.05 Wind Characteristics and Effects:

Prevailing winds are from the northeast and southwest directions which is perpendicular to the axis of the lake. No caving in of the banks has been noted.

7.06 Designated Public Hunting Areas:

The area immediately behind the embankment is for the use of bow and arrow hunters only. Shotguns or bows and arrows are permitted in other

areas used for hunting. Hunting is prohibited in public use areas or along roads and other similar areas.

7.07 Emergency Instructions:

The telephone numbers of project personnel available during emergencies are posted near the front entrance of the project office. Instructions for the project operation under national emergency are contained in FWDR 190-1-14, dated 1 Feb 72.

VIII. GENERAL

8.01 Crowd Control:

Lack of crowd control results in overuse and deterioration of recreational sites and unsafe conditions. Controlled visitation is not recommended nor is it feasible. Closing off areas for purposes of rejuvenation might be considered. In any event, when crowds become unruly it will be necessary to seek assistance from local law enforcement agencies.

8.02 Hazard Marking:

When terrestrial hazards are discovered, they are eliminated. If terrestrial hazards can not be eliminated, they are properly marked. Water hazards will be sought out and marked with appropriate buoys.

8.03 Safety Meetings:

The Reservoir Manager conducts periodic meetings dealing with aspects of safety for project personnel.

8.04 Safety Equipment:

Safety shoes are issued to appropriate project personnel. Project personnel are provided with proper safety equipment for the job being done. No employee shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety. Project watercraft is equipped with all required safety equipment.

8.05 Vehicle Safety:

All project vehicles are equipped with seat belts and other necessary safety equipment. Operators of government vehicles must have a driver's permit issued by a qualified Driver Examiner. Vehicles and equipment are stored or parked in designated areas when not in use.

8.06 Safety Ranger Designation:

Rangers have been appointed as safety officers by the Reservoir Manager and are responsible for coordinating and enforcing the safety program.