SUPPLEMENTAL WATERSHED WORK PLAN

FOR

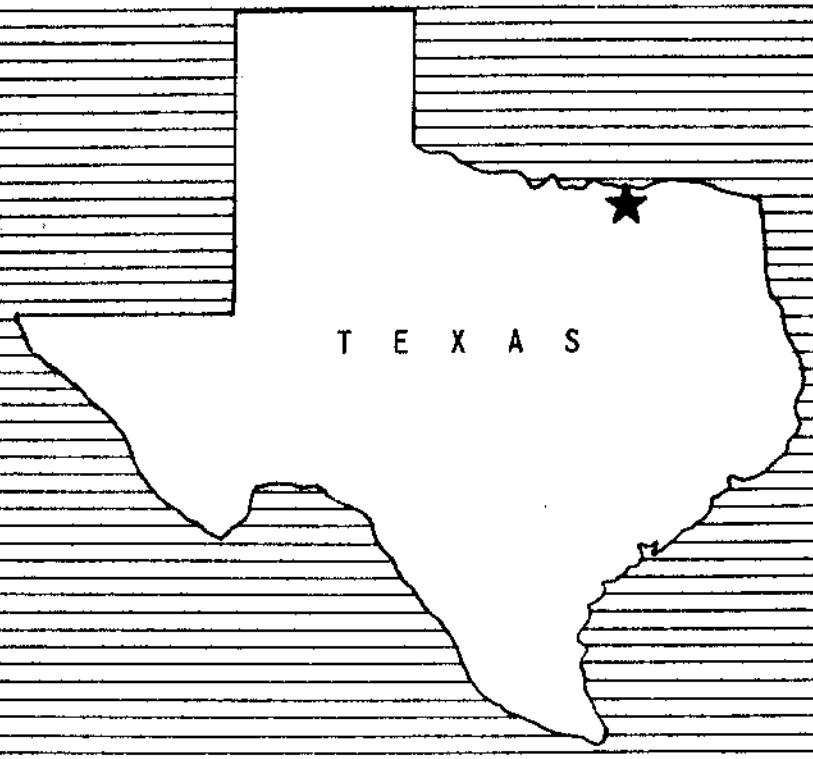
WATERSHED PROTECTION, FLOOD PREVENTION, RECREATION

AND

AGRICULTURAL AND NON-AGRICULTURAL WATER MANAGEMENT

CHOCTAW CREEK WATERSHED

GRAYSON COUNTY, TEXAS



June 1970

TABLE OF CONTENTS

	Page
Problems Relating to Water Management	1
Works of Improvement To Be Installed	1
Explanation of Installation Costs	1
Project Benefits	2
Comparison of Benefits and Costs	2
Installation of Recreational Development	2
Operation and Maintenance of Recreational Development	3
Tables:	
Table 1 - Estimated Project Installation Cost (Revised)	4
Table 2 - Estimated Structure Cost Distribution (Revised)	5
Table 2A - Cost Allocation and Cost Sharing Summary (Revised)	7
Table 3 - Structure Data - Floodwater Retarding Structures (Revised)	8
Table 4 - Annual Cost (Revised)	10
Table 6 - Comparison of Benefits and Costs for Structural Measures (Revised)	11
Figures:	
Figure 10 - Project Map	

SUPPLEMENTAL WATERSHED WORK PLAN AGREEMENT

Between the

Choctaw Watershed Water Improvement District
Local Organization

Upper Elm-Red Soil and Water Conservation District
Local Organization

Grayson County Commissioners Court
Local Organization

City of Sherman
Local Organization

City of Denison
Local Organization

City of Bells
Local Organization

City of Howe
Local Organization

State of Texas
(hereinafter referred to as the Sponsoring Local Organization)

and the

Soil Conservation Service
United States Department of Agriculture
(hereinafter referred to as the Service)

Whereas, the Watershed Work Plan Agreement for the Choctaw Creek Watershed, State of Texas, executed by the Sponsoring Local Organizations named therein and the Service, became effective on the 12th day of October 1966; and

Whereas, in order to carry out the watershed work plan for said watershed, it has become necessary to modify said watershed Work Plan Agreement; and

Whereas, it has been found necessary to modify the Watershed Work Plan to change the scope of the project by replacing single-purpose floodwater retarding structure No. 10 with multiple-purpose structure No. 10A; and

Whereas, a Supplemental Watershed Work Plan, which modifies the Watershed Work Plan dated November 1965 for said Watershed, has been developed through the cooperative efforts of the Sponsoring Local Organizations and the Service, which plan is annexed to and made a part of this agreement;

4-23220 8-71

Now, therefore, the Sponsoring Local Organization and the Service hereby agree upon the following modification of the terms, conditions, and stipulations of said Watershed Work Plan Agreement:

1. Paragraph numbered 3 is modified with respect to Structures 10 and 10A to read as follows:

   The percentages of construction costs of structural measures to be paid by the Sponsoring Local Organization and by the Service are as follows:

Works of Improvement	Sponsoring Local Organization (percent)	Service (percent)	Estimated Construction Cost (dollars)
Multiple-Purpose Structure No. 10A (Sherman)	11.33	88.67	82,360

2. Paragraph numbered 4 is modified with respect to Structures 10 and 10A to read as follows:

   The percentages of the cost for installation services to be borne by the Sponsoring Local Organization and the Service are as follows:

Works of Improvement	Sponsoring Local Organization (percent)	Service (percent)	Estimated Installation Service Cost (dollars)
Multiple-Purpose Structure No. 10A (Sherman	11.33	88.67	19,575

3. The Sponsoring Local Organization and the Service further agree to all other terms, conditions, and stipulations of said Watershed Work Plan Agreement not modified herein.

Choctaw Watershed Water Improvement District
Local Organization

By T. G. McGraw
T. G. MCGRAW

Title President
PRESIDENT

Address Sherman Texas 75090
Zip code

Date Jan 25, 1971

The signing of this agreement was authorized by a resolution of the governing body of the Choctaw Watershed WID
Local Organization
adopted at a meeting held on June 2 1967

F. N. Rogers
(Secretary, Local Organization)
F. N. ROGERS

Address Sherman Tx 75090
Zip Code

Date Jan 25 1971

Upper Elm-Red Soil and Water Conservation District
Local Organization

By J. H. Bayer
J. H. Bayer

Title Chairman

Address Muenster, Texas 76252
Zip Code

Date August 12, 1971

The signing of this agreement was authorized by a resolution of the governing body of the Upper Elm-Red Soil and Water Conservation District
Local Organization
adopted at a meeting held on August 12, 1971

Keith Kemplin
(Secretary, Local Organization)
KEITH KEMPLIN

Address Valley View, Texas 76272
Zip Code

Date August 12, 1971

4-21280 (8-71)

Grayson County Commissioners Court
Local Organization

By L. Tribble
Les Tribble

Title County Judge
County Judge

Address Sherman, Texas
Zip code

Date 7-6-71 75090

The signing of this agreement was authorized by a resolution of the governing body of the Grayson Co
Local Organization
adopted at a meeting held on Dec 10 1968

Paul E. Lee
(Secretary, Local Organization)
Paul E. Lee

Address Sherman Tex 75090
Zip Code

Date 7/6/71

City of Sherman
Local Organization

By S. E. Gillespie
S. E. Gillespie

Title MAYOR
Mayor

Address P.O. Box 1106 SHERMAN, TEXAS 75090
Zip Code

Date JULY 14, 1971

The signing of this agreement was authorized by a resolution of the governing body of the CITY OF SHERMAN
Local Organization
adopted at a meeting held on JULY 13, 1971

J. Spears
(Secretary, Local Organization)
J. Spears

Address P.O. Box 1106 SHERMAN, TEX 75090
Zip Code

Date JULY 14, 1971

City of Denison
Local Organization

By Robert L. Cherry
Robert L. Cherry
Title Mayor

Address Denison, Texas 75020
Zip code

Date July 15, 1971

The signing of this agreement was authorized by a resolution of the governing body of the City of Denison
Local Organization
adopted at a meeting held on July 7, 1971

Louise Blanton
City Clerk (Secretary, Local Organization)

Address Denison, Texas 75020
Zip Code

Date July 15, 1971

City of Bells
Local Organization

By W. Ray Rice
W. Ray Rice
Title Mayor
Mayor

Address Bells Texas 75414
Zip Code

Date July 20, 1971

The signing of this agreement was authorized by a resolution of the governing body of the City of Bells
Local Organization
adopted at a meeting held on July 20, 1971

H. C. Young
(Secretary, Local Organization)
H. C. Young

Address Bells Tex 75414
Zip Code

Date July 20, 1971

City of Howe
Local Organization

By Lloyd W Butts
Lloyd W. Butts

Title MAYOR
Mayor

Address Howe, Texas 75059
Zip Code

Date Aug. 5, 1971

The signing of this agreement was authorized by a resolution of the governing body of the City of Howe
Local Organization

adopted at a meeting held on Aug. 5, 1971

George Barnes
(Secretary, Local Organization)
GEORGE BARNES

Address Howe Texas 75059
Zip Code

Date Aug. 5 - 1971

Local Organization

By

Title

Address
Zip Code

Date

The signing of this agreement was authorized by a resolution of the governing body of the
Local Organization

adopted at a meeting held on

(Secretary, Local Organization)

Address
Zip Code

Date

Soil Conservation Service
United States Department of Agriculture

By M J Spear Acting
State Conservationist

Date AUG 17 1971

4-21280 8-71

SUPPLEMENTAL

WATERSHED WORK PLAN

FOR

WATERSHED PROTECTION, FLOOD PREVENTION, RECREATION,

AND

AGRICULTURAL AND NON-AGRICULTURAL WATER MANAGEMENT

CHOCTAW CREEK WATERSHED
Grayson County, Texas

Prepared Under the Authority of the Watershed Protection and Flood Prevention Act, (Public Law 566, 83rd Congress, 68 Stat. 666), as amended.

Prepared By:

Choctaw Watershed Water Improvement District

Upper Elm-Red Soil and Water Conservation District

Grayson County Commissioners Court

City of Sherman

City of Denison

City of Bells

City of Howe

With Assistance By:

U. S. Department of Agriculture
Soil Conservation Service
June 1970

4-21280 12-70
USDA-SCS-FORT WORTH, TEX. 1970

SUPPLEMENTAL

WATERSHED WORK PLAN

CHOCTAW CREEK WATERSHED
Grayson County, Texas
June 1970

Problems Relating to Water Management

The city of Sherman has had a marked increase in population since the preparation of the work plan. This has resulted in an increased demand for recreational facilities for its new citizens. Floodwater retarding structure No. 10 is located in an area which has been annexed by the city and is currently undergoing development as a residential area. The city wishes to avail itself of the opportunity to include recreation storage in this structure at an extremely reasonable cost. The inclusion of this storage capacity will enhance the benefits obtained per dollar invested over the evaluation period and will benefit a greater number of people. The drainage area controlled by structural measures will remain as originally planned. There will be no change or reduction of damages or in the damage reduction benefits as shown in the November 1965 plan.

Works of Improvement To Be Installed

The Supplemental Watershed Work Plan Agreement provides for the addition of a multiple-purpose structure for flood prevention and recreation at the original location of floodwater retarding structure No. 10. This structure will hereinafter be designated as multiple-purpose structure No. 10A. The total storage in the reservoir will be 866 acre-feet, consisting of 190 acre-feet for sediment, 593 acre-feet for floodwater, and 83 acre-feet for recreation. The recreation pool will have a surface area of 30 acres. Approximately 85 acres will be required for the pool areas, dam, spillway, protective strip around the lake to control access, and for recreation facilities. Recreation facilities will be installed, wholly at the city's expense, as the demand warrants. Sanitary facilities meeting local and state standards will be provided prior to any public use of recreation facilities. Quality and quantity of water will be adequate for the purpose intended.

Explanation of Installation Costs

The installation cost of multiple-purpose structure No. 10A is estimated to be $129,735, of which $90,387 will be paid from Public Law 566 funds and $39,348 from other funds. Public Law 566 costs consist of $73,029 for construction; $10,955 for engineering; and $6,403 for administrative costs. Other funds consist of $9,331 for construction; $1,399 for engineering; $818 for administrative costs; $26,800 for land rights; $500 for water rights; and $500 for administration of contracts.

All additional costs involved for installation of the multiple-purpose structure over the cost estimate for a single-purpose floodwater retarding structure

designed under current criteria are allocated to recreation. The "Use of Facilities Method" of cost allocation was not used because the cost allocated to recreation did not equal the added costs of adding the storage.

The City of Sherman does not desire cost-share assistance for any costs allocated to recreation and will bear all costs, including land rights costs so allocated. The cost sharing summary for multiple-purpose structure No. 10A is shown in the following tabulation:

Item	Total Cost	Estimated Sponsors' Cost		Estimated PL 566 Cost	
	Dollars	Percent	Dollars	Percent	Dollars
Construction	82,360	11.33	9,331	88.67	73,029
Installation Services	19,575	11.33	2,217	88.67	17,358
Land, Easements, and Rights-of-Way	26,800	100.00	26,800	-	-
Water Rights	500	100.00	500	-	-
Administration of Contracts	500	100.00	500	-	-
TOTAL	129,735		39,348		90,387

Project Benefits

The City of Sherman plans to install recreational facilities as needed for the benefit of local residents. Adequate sanitary facilities meeting all local and state standards will be provided before the area is open to the general public. Swimming, picnicking, and fishing are expected to be the primary recreational uses. Peak use will occur between May 1 and Labor Day, but some use will be made of these facilities throughout the balance of the year. It is estimated that these facilities will provide 4,800 visitor-days of recreation annually and will produce $4,159 in net recreation benefits.

Comparison of Benefits and Costs

The total average annual cost of the project is estimated to be $314,582. The project measures are expected to produce benefits amounting to $468,901, resulting in a benefit-cost ratio of 1.5:1.0.

Installation of Recreational Development

The City of Sherman will acquire, at no cost to the federal government, all land rights necessary for the installation of multiple-purpose structure No.

10A and will assume the financial responsibility for the share of construction and installation services costs allocated to recreation. The city will also provide recreational facilities, entirely at their own expense, for public use.

Bonds have been voted to finance their share of the cost for this and other watershed works of improvement, and negotiations are now under way with the Farmers Home Administration for a watershed loan.

Operation and Maintenance of Recreational Development

The recreational development will be available to the public generally, and will not be limited to certain segments or organized groups. The City of Sherman will operate and maintain multiple-purpose structure No. 10A and associated recreational facilities. The estimated cost of operation and maintenance of this structure and related recreational facilities to be installed by the city is estimated to be $2,531. The estimated cost of operation and maintenance for recreational facilities is considered as an associated cost and was deducted from the gross value of recreation benefits. Operation and maintenance responsibilities for all other project measures will be in accordance with provisions of the original work plan.

TABLE 1 - ESTIMATED PROJECT INSTALLATION COST (REVISED)

Choctaw Creek Watershed

Grayson County, Texas

Installation Cost Item	Unit	Number To Be Applied	Estimated Cost (Dollars) 1/ Public Law 566 Funds	Other Funds	Total
LAND TREATMENT					
Soil Conservation Service					
Cropland	Acre	40,138	-	362,586	362,586
Grassland	Acre	92,902	-	1,700,178	1,700,178
Technical Assistance			25,267	170,924	196,191
SCS Subtotal			25,267	2,233,688	2,258,955
TOTAL LAND TREATMENT			25,267	2,233,688	2,258,955
STRUCTURAL MEASURES					
Soil Conservation Service					
Floodwater Retarding Structures	No.	33	2,008,600	-	2,008,600
Stream Channel Improvement	Foot	110,180	391,600	-	391,600
Grade Stabilization Structures	No.	7	15,950	-	15,950
Drainage Main and Laterals	Foot	21,600	5,775	1,925	7,700
Multiple-Purpose Structures	No.	8	1,092,630	1,253,530	2,346,160
Basic Recreational Facilities	No.	2	212,905	212,905	425,810
Diversion Works	No.	2	-	150,000	150,000
SCS Subtotal			3,727,460	1,618,360	5,345,820
Subtotal - Construction			3,727,460	1,618,360	5,345,820
Installation Services					
Soil Conservation Services					
Engineering Services			531,479	154,891	686,370
Other			329,881	123,664	453,545
SCS Subtotal			861,360	278,555	1,139,915
Subtotal - Installation Services			861,360	278,555	1,139,915
Other Costs					
Land, Easements, and Rights-of-Way			223,990	1,968,801	2,192,791
Administration of Contracts			-	39,500	39,500
Water Rights			-	7,700	7,700
Subtotal - Other Costs			223,990	2,016,001	2,239,991
TOTAL STRUCTURAL MEASURES			4,812,810	3,912,916	8,725,726
TOTAL PROJECT			4,838,077	6,146,604	10,984,681
SUMMARY					
Subtotal SCS			4,838,077	6,146,604	10,984,681
TOTAL PROJECT			4,838,077	6,146,604	10,984,681

1/ Price Base: 1970 for structure 10A; 1965 for all other structural measures

June 1970

TABLE 2 - ESTIMATED STRUCTURE COST DISTRIBUTION (REVISED)

Choctaw Creek Watershed, Grayson County, Texas

Structure Site Number or Name	Installation Cost - Public Law 566 Funds					Installation Cost - Other Funds							Total Installation Cost
	Construction	Installation Services: Engineering	Installation Services: Other	Easements and Rights-of-way	Total Public Law 566	Construction	Installation Services: Engineering	Installation Services: Other	Adm. of Contracts	Easements and Rights-of-Way	Water Rights	Total Other	
Floodwater Retarding Structures													
2	60,500	9,075	5,304	-	74,879	-	-	-	500	14,525	-	15,025	89,904
3	70,400	10,560	6,173	-	87,133	-	-	-	500	30,325	-	30,825	117,958
5	57,200	10,296	5,146	-	72,642	-	-	-	500	16,325	-	16,825	89,467
6	53,900	9,702	4,850	-	68,452	-	-	-	500	11,200	-	11,700	80,152
7	51,700	9,306	4,651	-	65,657	-	-	-	500	10,375	-	10,875	76,532
8	53,900	9,702	4,850	-	68,452	-	-	-	500	24,450	-	24,950	93,402
9	84,700	12,705	7,426	-	104,831	-	-	-	500	35,600	-	36,100	140,931
11	104,500	13,585	9,004	-	127,089	-	-	-	500	293,066	-	293,566	420,655
12	56,100	10,098	5,048	-	71,246	-	-	-	500	7,900	-	8,400	79,646
14	41,800	7,524	3,760	-	53,084	-	-	-	500	15,125	-	15,625	68,709
15	58,300	10,494	5,246	-	74,040	-	-	-	500	10,700	-	11,200	85,240
16	45,100	8,118	4,056	-	57,274	-	-	-	500	5,725	-	6,225	63,499
17	67,100	10,065	5,884	-	83,049	-	-	-	500	12,525	-	13,025	96,074
18	89,100	13,365	7,813	-	110,278	-	-	-	500	17,000	-	17,500	127,778
19	70,400	10,560	6,173	-	87,133	-	-	-	500	11,125	-	11,625	98,758
20	52,800	9,504	4,750	-	67,054	-	-	-	500	9,150	-	9,650	76,704
21	38,500	8,470	3,580	-	50,550	-	-	-	500	5,025	-	5,525	56,075
22	74,800	11,220	6,559	-	92,579	-	-	-	500	28,575	-	29,075	121,654
23	45,100	8,118	4,056	-	57,274	-	-	-	500	8,325	-	8,825	66,099
24	74,800	11,220	6,559	-	92,579	-	-	-	500	30,450	-	30,950	123,529
25	44,000	7,920	3,958	-	55,878	-	-	-	500	9,025	-	9,525	65,403
26	100,100	13,013	8,625	-	121,738	-	-	-	500	24,975	-	25,475	147,213
27	48,400	8,712	4,355	-	61,467	-	-	-	500	6,150	-	6,650	68,117
28	56,100	10,098	5,048	-	71,246	-	-	-	500	9,350	-	9,850	81,096
29	61,600	9,240	5,358	-	76,198	-	-	-	500	7,450	-	7,950	84,148
31	85,800	12,870	7,524	-	106,194	-	-	-	500	21,650	-	22,150	128,344
32	35,200	7,744	3,274	-	46,218	-	-	-	500	7,025	-	7,525	53,743
33	55,000	9,900	4,949	-	69,849	-	-	-	500	8,475	-	8,975	78,824
36	66,000	9,900	5,787	-	81,687	-	-	-	500	15,325	-	15,825	97,512
37	64,900	9,735	5,691	-	80,326	-	-	-	500	45,150	-	45,650	125,976
39	39,600	8,712	3,684	-	51,996	-	-	-	500	7,100	-	7,600	59,596
40	35,200	7,744	3,274	-	46,218	-	-	-	500	6,200	-	6,700	52,918
41	66,000	9,900	5,787	-	81,687	-	-	-	500	17,425	-	17,925	99,612
Subtotal	2,008,600	329,175	178,202	-	2,515,977	-	-	-	16,500	782,791	-	799,291	3,315,268
Stream Channel Improvement													
Choctaw Creek	309,100	30,910	25,925	-	365,935	-	-	-	500	108,750	-	109,250	475,185
Post Oak Creek	68,200	10,230	5,979	-	84,409	-	-	-	500	53,750	-	54,250	138,659
Mill Creek	14,300	4,576	1,439	-	20,315	-	-	-	500	6,250	-	6,750	27,065
Subtotal	391,600	45,716	33,343	-	470,659	-	-	-	1,500	168,750	-	170,250	640,909

TABLE 2 - ESTIMATED STRUCTURE COST DISTRIBUTION (REVISED) - Continued

Choctaw Creek Watershed, Grayson County, Texas

Structure Site Number or Name	Installation Cost - Public Law 566 Funds: Construction	Installation Services: Engineering	Installation Services: Other	Easements and Rights-of-Way	Total Public Law 566	Installation Cost - Other Funds: Construction	Installation Services: Engineering	Installation Services: Other	Adm. of Contracts	Easements and Rights-of-Way	Water Rights	Total Other	Total Installation Cost
Grade Stabilization Structures													
101	3,960	792	363	-	5,115	-	-	-	250	325	-	575	5,690
102	5,060	1,012	463	-	6,535	-	-	-	250	275	-	525	7,060
103	1,430	286	131	-	1,847	-	-	-	100	25	-	125	1,972
104	1,210	242	111	-	1,563	-	-	-	100	25	-	125	1,688
105	1,540	308	141	-	1,989	-	-	-	100	25	-	125	2,114
106	1,540	308	141	-	1,989	-	-	-	100	25	-	125	2,114
107	1,210	242	111	-	1,563	-	-	-	100	25	-	125	1,688
Subtotal	15,950	3,190	1,461	-	20,601	-	-	-	1,000	725	-	1,725	22,326
Multiple-Purpose Structures													
1	336,1646	33,616	28,196	-	397,976	382,136	38,214	32,051	5,000	251,500	1,500	710,401	1,108,377
4	166,320	16,632	13,950	-	196,902	295,680	29,568	24,800	5,000	181,500	1,500	538,048	734,950
10A	73,029	10,955	6,403	-	90,387	9,331	1,399	818	500	26,800	500	39,348	129,735
13	77,044	7,704	6,462	-	91,210	133,056	13,306	11,160	1,000	87,125	1,500	247,147	338,357
Diversion Works	-	-	-	-	-	75,000	6,000	3,000	-	-	-	84,000	84,000
30	73,960	9,622	6,373	-	89,955	55,840	7,265	4,812	1,000	34,000	1,000	103,917	193,872
Diversion Works	-	-	-	-	-	75,000	6,000	3,000	-	-	-	84,000	84,000
34	33,947	6,110	3,054	-	43,111	8,953	1,612	806	500	5,600	100	17,571	60,682
Subtotal	760,464	84,639	64,438	-	909,541	1,034,996	103,364	80,447	13,000	586,525	6,100	1,824,432	2,733,973
35	244,116	29,494	24,739	172,590	470,939	353,184	30,236	25,360	5,000	367,160	1,500	782,440	1,253,379
Basic Recreational Facilities	140,800	14,080	11,809	42,500	209,189	140,800	14,080	11,809	1,000	44,500	-	212,189	421,378
Subtotal	384,916	43,574	36,548	215,090	680,128	493,984	44,316	37,169	6,000	2/411,660	1,500	994,629	1,674,757
38	88,050	15,510	9,066	8,400	121,026	15,350	-	-	500	14,400	100	30,350	151,376
Basic Recreational Facilities	72,105	7,211	6,048	500	85,864	72,105	7,211	6,048	500	600	-	86,464	172,328
Subtotal	160,155	22,721	15,114	8,900	206,890	87,455	7,211	6,048	1,000	3/15,000	100	116,814	323,704
Subtotal - Multiple-Purpose Structures	1,305,535	150,934	116,100	223,990	1,796,559	1,616,435	154,891	123,664	20,000	1,013,185	7,700	2,935,875	4,732,434
Drainage Main I and Laterals IA, IB, IC	5,775	2,464	775	-	9,014	1,925	-	-	500	3,350	-	5,775	14,789
TOTAL PROJECT	3,727,460	531,479	329,881	223,990	4,812,810	1,618,360	154,891	123,664	39,500	1,968,801	7,700	3,912,916	8,725,726

1/ Price Base: 1970 for structure 10A; 1965 for all other structural measures
2/ Includes the cost of flowage easements, legal fees, and land surveys which are not eligible for cost sharing ($18,750).
3/ Includes the cost of flowage easements, legal fees, and land surveys which are not eligible for cost sharing ($6,100).

June 1970

4-21280 12-70

TABLE 2A - COST ALLOCATION AND COST SHARING SUMMARY (REVISED)

Choctaw Creek Watershed
Grayson County, Texas
(Dollars) 1/

Item	Purpose: Flood Prevention	Municipal Water Supply	Irrigation	Drainage	Recreation	Total
			COST ALLOCATION			
Single-Purpose						
33 Floodwater Retarding Structures, 110,180 feet of Stream Channel Improvement, 7 Grade Stabilization Structures	3,978,503	-	-	-	-	3,978,503
Multiple-Purpose						
Structure No. 1	518,018	590,359	-	-	-	1,108,377
Structure No. 4	264,042	470,908	-	-	-	734,950
Structure No. 10A	115,072	-	-	-	14,663	129,735
Structure No. 13	123,525	298,832	-	-	-	422,357
Structure No. 30	109,899	167,973	-	-	-	277,872
Structure No. 34	47,939	-	12,743	-	-	60,682
Structure No. 35	232,920	545,119	-	-	896,718	1,674,757
Structure No. 38	95,331	-	-	-	228,373	323,704
21,600 feet of Drainage Main and Laterals	7,395	-	-	7,394	-	14,789
TOTAL	5,492,644	2,073,191	12,743	7,394	1,139,754	8,725,726
			COST SHARING			
Public Law 566	4,241,054	-	-	3,544	568,212	4,812,810
Other	1,251,590	2,073,191	12,743	3,850	571,542	3,912,916
TOTAL	5,492,644	2,073,191	12,743	7,394	1,139,754	8,725,726

1/ Price Base: 1970 for structure 10A; 1965 for all other structural measures.

June 1970

REVISED TABLE 2 - ESTIMATED STRUCTURAL COST DISTRIBUTION

Choctaw Creek Watershed, Texas

(Dollars) 1/

Item	Installation Cost - Public Law 566 Funds					Installation Cost - Other Funds						Total Installation Cost
	Construction	Engineering	Land Rights	Relocation Payments 2/	Total Public Law 566	Construction	Engineering	Land Rights	Relocation Payments 2/	Water Rights	Total Other	
Floodwater Retarding Structures (Constructed) Nos. 12, 16, 17, 20, 21, 23, 27, 33, 39, and 40	3/ 506,575	41,991	-	-	548,566	-	-	76,575	-	-	76,575	625,141
Floodwater Retarding Structures 13A	67,940	4,756	-	-	72,696	-	-	19,400	-	-	19,400	92,096
34A	32,370	3,237	-	-	35,607	-	-	5,950	-	-	5,950	41,557
Subtotal	100,310	7,993	-	-	108,303	-	-	25,350	-	-	25,350	133,653
Floodwater Retarding Structures 22 structures	1,497,029	112,236	-	18,862	1,628,127	-	-	706,216	23,938	-	730,154	2,358,281
Subtotal - Floodwater Retarding Structures	2,103,914	162,220	-	18,862	2,284,996	-	-	808,141	23,938	-	832,079	3,117,075
Multiple-Purpose Structures 1	336,164	15,127	-	4,980	356,271	382,136	17,196	251,500	6,320	1,500	658,652	1,014,923
4	166,320	7,484	-	-	173,804	295,680	13,306	181,500	-	1,500	491,986	665,790
10A	73,029	5,113	-	-	78,142	9,331	653	26,800	-	500	37,284	115,426
30	73,960	4,445	-	-	78,405	55,840	3,356	34,000	-	1,000	94,196	172,601
Diversion Works	-	-	-	-	-	75,000	2,625	-	-	-	77,625	77,625
Subtotal	649,473	32,169	-	4,980	686,622	817,987	37,136	493,800	6,320	4,500	1,359,743	2,046,365
35	244,116	13,706	172,590	11,679	442,091	353,184	14,051	367,160	14,821	1,500	750,716	1,192,807
Basic Recreation Facilities	140,800	6,336	42,500	-	189,636	140,800	6,336	44,500	-	-	191,636	381,272
Subtotal - Site 35	384,916	20,042	215,090	11,679	631,727	493,984	20,387	411,660	14,821	1,500	942,352	1,574,079
38	88,050	7,145	29,250	4,627	129,072	15,350	-	31,450	5,873	100	52,773	181,845
Basic Recreation Facilities	72,105	3,245	750	-	76,100	72,105	3,245	850	-	-	76,200	152,300
Subtotal - Site 38	160,155	10,390	30,000	4,627	205,172	87,455	3,245	32,300	5,873	100	128,973	334,145
Subtotal - Multiple-Purpose Structures	1,194,544	62,601	245,090	21,286	1,523,521	1,399,426	60,768	937,760	27,014	6,100	2,431,068	3,954,589
Stream Channel Improvement	391,600	20,900	-	44	412,544	-	-	168,750	56	-	168,806	581,350
Grade Stabilization Structures (Constructed) 101 and 102	3/ 16,200	2,268	-	-	18,468	-	-	600	-	-	600	19,068
Grade Stabilization Structures 103 through 107	3,930	658	-	-	4,588	-	-	125	-	-	125	4,713
Subtotal - Grade Stabilization Structures	20,130	2,926	-	-	23,056	-	-	725	-	-	725	23,781

(See footnotes at end of table 2)

1/ Includes submerged portion of 100-year sediment accumulation, consisting of 85 acre-feet for first 50 years and 83 acre-feet for second 50 years

2/ Recreation water

3/ Values obtained from routing

4/ Difference in elevation between top of the settled dam and the bottom of the stream channel

5/ Is the average number of times the emergency spillway will be expected to function in 100 years.

6/ Based on Engineering-Hydrology Memorandum TX-1, "Emergency Spillway and Freeboard Hydrograph Development," August 16, 1965.

June 1970

4-21280 12-70

TABLE 4 - ANNUAL COST (REVISED)

Choctaw Creek Watershed

Grayson County, Texas

(Dollars)1/

Evaluation Unit	Amortization of Installation Cost	Operation and Maintenance Cost2/	Total
33 Floodwater Retarding Structures; 110,180 feet of Stream Channel Improvement; Multiple-Purpose Structures 1, 4, 10A, 13, 30, 34, 35, and 38, including Basic Recreational Facilities; and Grade Stabilization Structures 101, 102, 103, 104, 106, and 107	285,447	28,130	313,577
21,600 feet of Drainage Main and Laterals and Grade Stabilization Structure 105	553	452	1,005
TOTAL	3/286,000	4/28,582	314,582

1// Price Base: 1970 for structure 10A; 1965 for all other structural measures.
2/ Long-term prices as projected by ARS, September 1957.
3/ Amortized for 100 years at 3.125 percent, except for multiple-purpose structure No. 10A, which was amortized at 3.25 percent.
4/ Includes replacement costs of $2,016 for basic recreational facilities and for any structure or appurtenance requiring replacement before end of 100-year evaluation period.

June 1970

4-21280 12-70

TABLE 6 - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES (REVISED)

Choctaw Creek Watershed
Grayson County, Texas
(Dollars)

Evaluation Unit	AVERAGE ANNUAL BENEFITS 1/									Average Annual Cost 2/	Benefit-Cost Ratio
	Flood Prevention			Agricultural Water Management		Non-Agricultural Water Management					
	Damage Reduction	More Intensive Land Use	Incidental Recreation	Irrigation	Drainage	Municipal Water Supply	Recreation	Secondary	Total		
53 Floodwater Retarding Structures; 110,180 feet of Stream Channel Improvement; Multiple-Purpose Structures 1, 4, 10A, 13, 30, 34, 35, and 38, Including Basic Recreational Facilities; and Grade Stabilization Structures 101, 102, 103, 104, 106, and 107 3/	197,039		4,236	2,331		67,918	157,737	37,165	466,446	313,377	1.5:1.0
21,600 feet of Drainage Main and Laterals and Grade Stabilization Structure 105		950			950			555	2,455	1,005	2.4:1.0
GRAND TOTAL 4/	197,039	950	4,236	2,331	950	67,918	157,737	37,720	468,901	314,382	1.5:1.0

1/ Price Base:
2/ From table 4.
3/ Interrelated measures.
4/ In addition, it is estimated that land treatment measures will provide flood damage reduction benefits of $8,847 annually.

June 1970

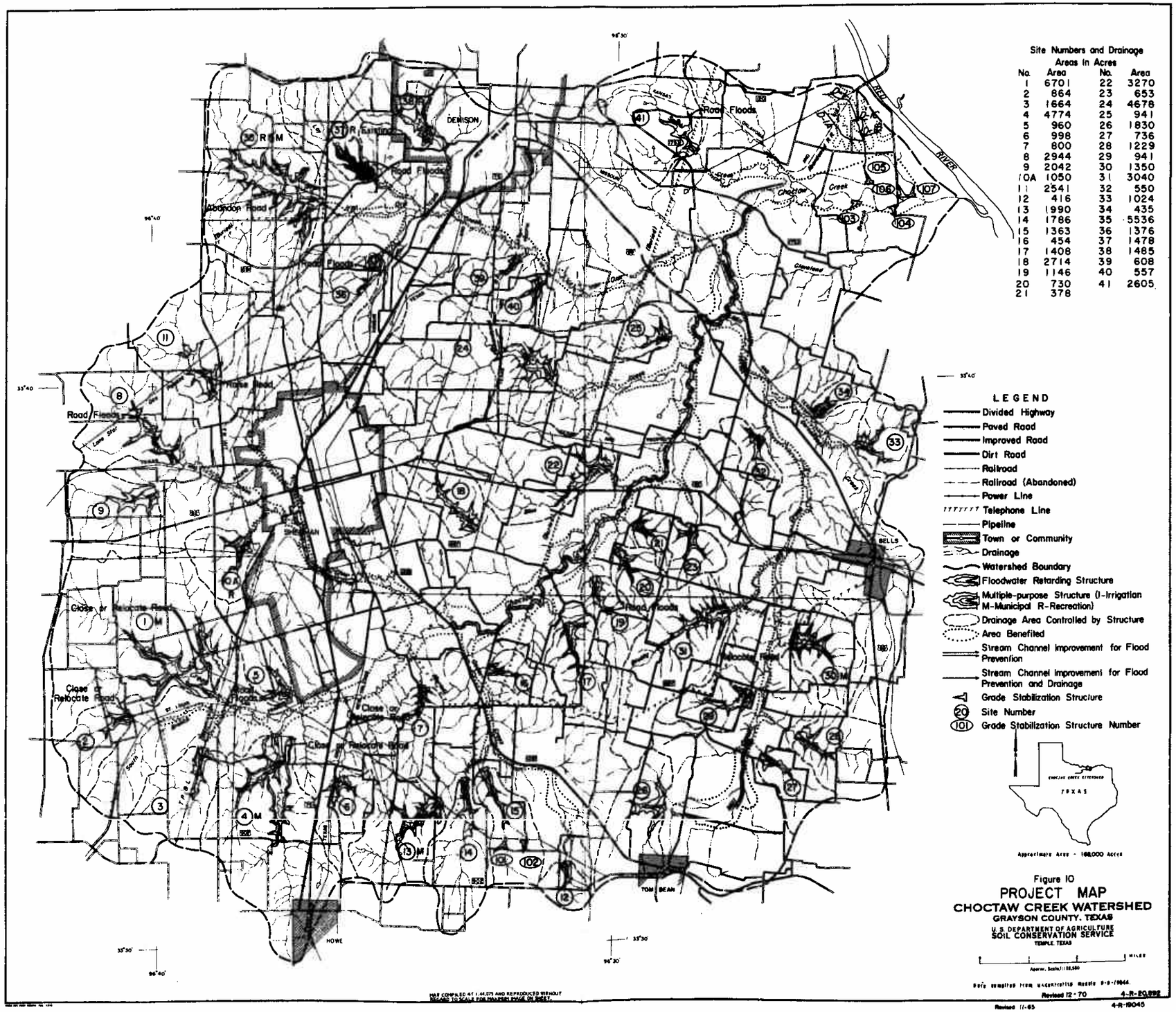


Figure 10
PROJECT MAP
CHOCTAW CREEK WATERSHED
GRAYSON COUNTY, TEXAS
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
TEMPLE, TEXAS

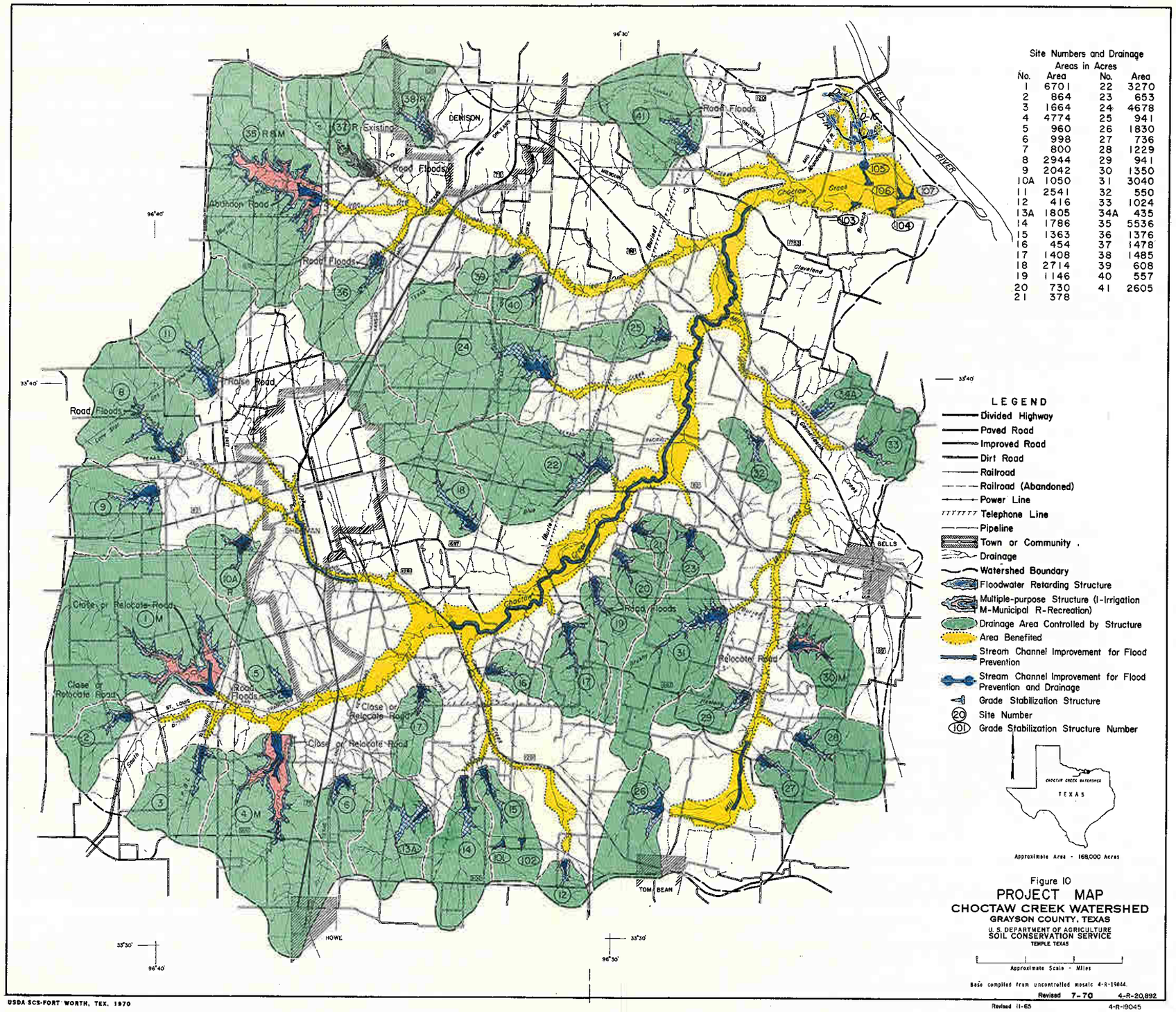


Figure 10

PROJECT MAP

CHOCTAW CREEK WATERSHED

GRAYSON COUNTY, TEXAS

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
TEMPLE, TEXAS