

SUPPLEMENTAL WATERSHED WORK PLAN AGREEMENT NO. II

between the
Karnes-Goliad Soil and Water Conservation District
Local Organization

Escondido Watershed District
Local Organization

City of Kenedy
Local Organization

San Antonio River Authority
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 Escondido Creek Watershed, State of Texas, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 21st day of October, 1965; and

Whereas, the Supplemental Watershed Work Plan Agreement for Escondido Creek Watershed, State of Texas, executed by the Sponsoring Local Organization and the Service, became effective on the 13th day of September, 1971; and

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

Whereas, it has been found necessary to modify the Watershed Work Plan Agreement, as supplemented, to provide for changes in the stream channel work as originally planned to meet current design criteria; and

Whereas, a Supplemental Watershed Work Plan which modifies the Watershed Work Plan dated January 1964 for said watershed has been developed through the cooperative efforts of the Sponsoring Local Organization and the Service, which plan is annexed to and made a part of this agreement;

Now, therefore, the Sponsoring Local Organization and the Service hereby agree upon the following modifications of the terms, conditions, and stipulations of said Watershed Work Plan Agreement, as supplemented;

1. Paragraph numbered 1 is modified to read as follows:

The Sponsoring Local Organization will acquire, with other than Public Law 83-566 funds, such land, easements, or rights-of-way as will be needed in connection with works of improvement.
(Estimated cost \$228,550)

2. Paragraph numbered 3 is changed to read as follows:

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

<u>Works of Improvement</u>	<u>Sponsoring Local Organization</u> (percent)	<u>Service</u> (percent)	<u>Estimated Construction Cost</u> (dollars)
2 Floodwater Retarding Structures	0	100	347,060
2.11 Miles Stream Channel Work	0	100	1,499,700

3. Paragraph numbered 4 is modified as follows:

The percentage of engineering costs to be borne by the Sponsoring Local Organization and the Service are as follows:

<u>Works of Improvement</u>	<u>Sponsoring Local Organization</u> (percent)	<u>Service</u> (percent)	<u>Estimated Engineering Cost</u> (dollars)
2 Floodwater Retarding Structures	0	100	18,730
2.11 Miles Stream Channel Work	0	100	100,000

4. Paragraph numbered 5 is modified to read as follows:

The Sponsoring Local Organization and the Service will each bear the costs of Project Administration which it incurs, estimated to be \$4,500 and \$274,930 respectively.

5. Tables 1, 2, 3A, 4, 5, and 6 referred to in the watershed work plan are modified to conform with revised tables 1, 2, 3A, 4, 5, and 6 attached.

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

Karnes-Goliad Soil and Water Conservation District
Local Organization

By _____

Title _____

Address _____

Zip Code

Date _____

The signing of this agreement was authorized by a resolution of the governing body of the Karnes-Goliad Soil and Water Conservation District Local Organization

adopted at a meeting held on _____

(Secretary, Local Organization)

Address _____

Zip Code

Date _____

Escondido Watershed District
Local Organization

By _____

Title _____

Address _____

Zip Code

Date _____

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

held on _____

(Secretary, Local Organization)

Address _____

Zip Code

Date _____

City of Kenedy
Local Organization

By _____

Title _____

Address _____

Zip Code

Date _____

The signing of this agreement was authorized by a resolution of the governing body of the City of Kenedy adopted at a meeting held on _____
Local Organization

(Secretary, Local Organization)

Address _____

Date _____

San Antonio River Authority
Local Organization

By _____

Title _____

Address _____

Zip Code

Date _____

The signing of this agreement was authorized by a resolution of the governing body of the San Antonio River Authority adopted at a meeting held on _____
Local Organization

(Secretary, Local Organization)

Address _____

Zip Code

Date _____

Soil Conservation Service
United States Department of Agriculture

By _____

State Conservationist

Date _____

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SUPPLEMENTAL WATERSHED WORK PLAN NO. II

ESCONDIDO CREEK WATERSHED
Karnes County, Texas

November 1973

PURPOSE OF THE SUPPLEMENTAL WORK PLAN

It has become necessary to modify the watershed work plan, as supplemented, for Escondido Creek watershed to make the following changes:

1. Redesign the planned channel work on Nichols Creek to assure safe functional operation under super critical flow conditions and redesign the planned channel work on Escondido Creek to meet stability criteria and assure safe transition with the Nichols Creek channel.
2. Update costs to reflect increased price levels and change in channel design.
3. Update damages and benefits:
 - a. To adjusted normalized prices, or to current prices as applicable.
 - b. To reflect projected future development in the flood plain.
 - c. To reaffirm economic feasibility.
4. Reflect current terminology and policy relative to engineering and project administration costs.

The following are changes and modifications made in appropriate parts of the work plan.

WORKS OF IMPROVEMENT TO BE INSTALLED

Stream channel work, involving 2.11 miles, having a total installation cost of \$1,739,700 will be installed to provide the needed floodwater protection to the urban area of Kenedy.

Plate 1A shows a typical cross section of the planned channel work.

The location of the channel work is shown on the Project Map (plate 4-Rev.).

Of the 2.11 miles of stream channel work, 1.76 miles will be on Nichols Creek through the urban area and 0.35 mile will be on the main channel of Escondido Creek to assure an adequate outlet for Nichols Creek. All of the channel work on Nichols Creek will be concrete or rock lined with a security fence. The planned channel work on Nichols Creek will convey safely the peak discharge resulting from the runoff from the 100-year frequency storm event. The level of protection provided by the redesigned channels on both Nichols Creek and Escondido Creek will be the same as planned originally.

Tables 1, 2, and 3A show details on quantities, costs, and design features of the channel work.

EXPLANATION OF INSTALLATION COSTS

The total installation cost of floodwater retarding structures Nos. 12 and 13 and 2.11 miles of channel work is estimated to be \$2,473,470, of which \$2,240,420 will be borne by Public Law 566 funds and \$233,050 will be borne by local interests.

The Public Law 566 cost for project installation includes \$1,846,760 for construction, \$118,730 for engineering services, and \$247,930 for project administration.

The local costs for project installation include \$44,530 for the value of land; \$19,020 for change in location or modification of utilities; \$45,000 for security fence; \$8,000 for ballast, rails, ties, telegraph lines, power lines, signal systems, temporary rerouting of traffic, providing flagmen or other features not directly associated with structural stability of two Southern Pacific Railroad bridges; \$112,000 for two street and two highway bridges; and \$4,500 for project administration.

Construction costs include the engineer's estimate and contingencies. Included are costs for modification of Southern Pacific Railroad bridges numbers 61.06 and 61.80 crossing the improved channel of Nichols Creek. These costs will be borne by Public Law 566 funds. It is not anticipated that any cost not associated with structural stability will be incurred. The engineer's estimate was based on unit costs of structural measures in similar areas modified by special conditions inherent to the site locations. Ten percent of the engineer's estimate was added as a contingency to provide funds for unpredictable construction cost.

Public Law 566 project administration costs consist of construction inspection, contract administration, and maintenance of Soil Conservation Service State Office records and accounts. Engineering Services cost consist of, but are not limited to, detail surveys, geologic investigations, laboratory analyses, reports, designs, model studies, and cartographic services.

The local costs for project administration include sponsors' costs relative to contract administration, overhead and organizational administration costs, and whatever construction inspection they desire to make at their own expense.

Land rights cost consist of legal fees, land surveys, values of easements, and modification of fixed improvements.

The cost of land rights was determined by appraisal in cooperation with representatives of the local sponsoring organizations.

Updated total project costs are shown on Revised Table 1. Updated or actual costs of the structural measures are shown on Revised Table 2.

EFFECTS OF WORKS OF IMPROVEMENT

There is no change in the effects of the project except those of a monetary nature resulting from change in price base and consideration of future development without a project.

PROJECT BENEFITS

The estimated average annual monetary damage (revised table 5) within the watershed will be reduced from \$135,794 to \$20,166, or 85 percent. Crop and pasture damages will be reduced from \$5,043 to \$1,784, or 65 percent. Other agricultural damage, such as loss of fences, farming equipment, livestock, and other property, will be reduced from \$3,147 to \$670, or 79 percent. Road and bridge damage will be reduced from \$4,812 to \$1,099, or 77 percent. Urban damage in the city of Kenedy will be reduced from \$97,187 to \$11,761, or 88 percent. The overbank deposition of damaging sediment upon flood plain soils, now occurring at the rate of \$1,367 annually, will be reduced to \$908, or 34 percent. Flood plain scour damages will be reduced from \$3,058 to \$1,042, or 66 percent.

Incidental recreation benefits will be \$458 annually.

Benefits averaging \$224 annually will accrue from reduction of floodwater damages on the main stem of the San Antonio River below the watershed.

Although not considered pertinent from a national viewpoint, secondary benefits will amount to \$8,887 annually in the immediate locale.

The total average annual benefits from structural works of improvement are estimated to be \$115,397.

COMPARISON OF BENEFITS AND COSTS

The total average annual cost of structural measures (amortized total installation cost and project administration plus operation and maintenance) is \$85,651. These measures are expected to produce average annual benefits, excluding secondary benefits, of \$106,510, resulting in a benefit-cost ratio of 1.2:1.0.

The ratio of total average annual project benefits, including secondary benefits accruing to structural measures, is estimated to be \$115,397, giving a benefit-cost ratio of 1.3:1.0 (revised table 6).

PROVISIONS FOR OPERATION AND MAINTENANCE

There will be no changes in the provisions for operation and maintenance of the structural measures.

The estimated average annual operation and maintenance cost is \$1,500 based on 1973 prices.

REVISED TABLE 1 - ESTIMATED PROJECT INSTALLATION COST
Escondido Creek Watershed, Texas

Installation Cost Item	Unit	Number	Estimated Cost (Dollars) 1/			Total
			Non-Federal	Public Law	Other Funds	
LAND TREATMENT						
Cropland	Acre	9,185	-	-	312,872	312,872
Pastureland	Acre	7,883	-	-	330,028	330,028
Rangeland	Acre	4,182	-	-	49,493	49,493
Technical Assistance			23,270		55,600	78,870
TOTAL LAND TREATMENT			23,270		747,993	771,263
STRUCTURAL MEASURES						
Construction						
Soil Conservation Service						
Floodwater Retarding Structures	No.	2	347,060			347,060
Channel Work (N) 2/	Mile	2.11	1,499,700			1,499,700
Subtotal - Construction			1,846,760			1,846,760
Engineering Services						
Soil Conservation Service			118,730			118,730
Subtotal - Engineering Services			118,730			118,730
Project Administration						
Soil Conservation Service						
Construction Inspection			117,080		2,800	119,880
Other			157,850		1,700	159,550
Subtotal - Project Administration			274,930		4,500	279,430
Other Costs						
Land Rights					228,550	228,550
Subtotal - Other Costs					228,550	228,550
TOTAL STRUCTURAL MEASURES			2,240,420		233,050	2,473,470
TOTAL PROJECT			2,263,690		981,043	3,244,733

1/ Price Base: Actual cost for land treatment and floodwater retarding structure No. 13, and 1973 prices for floodwater retarding structure No. 12 and channel work.

2/ (N) - Unmodified, well defined natural channel or stream

REVISED TABLE 2 - ESTIMATED STRUCTURE COST DISTRIBUTION

Escondido Creek Watershed, Texas
(Dollars) 1/

Item	Installation Costs - P. L. 566 Funds		Installation Costs			Total
	Construction	Engineering	Total	Land	Other Funds	
	: P. L. 566		: Rights			: Installation
	: Engineering		: Other			: Cost
Floodwater Retarding Structures						
12	137,880	8,270	146,150	10,180	10,180	156,330
13	209,180	10,460	219,640	13,370	13,370	233,010
Subtotal	347,060	18,730	365,790	23,550	23,550	389,340
Channel Work						
2.11 miles (N) <u>2/</u>	1,499,700	100,000	1,599,700	205,000	205,000	1,804,700
Subtotal	1,499,700	100,000	1,599,700	205,000	205,000	1,804,700
Project Administration			274,930		4,500	279,430
GRAND TOTAL	1,846,760	118,730	2,240,420	228,550	233,050	2,473,470

1/ Price Base: Actual costs for structure No. 13 and 1973 prices for structure No. 12 and channel work.

2/ (N) - Unmodified, well defined natural channel or stream.

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REVISED TABLE 3A - STRUCTURE DATA
CHANNELS

Escondido Creek Watershed, Texas

Channel Name	Station	Drainage Area (Sq. Ft.)	Capacity (cfs)	Water Surface Elevation (ft.)	Hydraulic Gradient (ft./ft.)	Channel Dimensions		Slopes (ft./ft.)	n Value	Velocities (ft./sec.)	Excavation (Cu. Yds.)	Type of Work		Project Condition	
						Bottom Width (ft.)	Depth (ft.)					Before	After		
Nichols Creek	1+00	5.87	5250	259.0	.00125	24	0.100	2:1	.030	4.46	0	II	L-R	N	
	8+00	5.87	5250	259.2	.00100	24	0.000	2:1	.030	4.65	23,340	II	L-R	N	
	10+00	5.87	5250	259.2	.00275	24	1.450	2:1	.015	4.65	30,834	II	L-C	N	
	14+00	5.87	5250	256.0	.00460	12	0.510	9.3	1.5:1	.015	20.9	40,048	II	L-C	N
	26+60	5.87	5250	261.8	.02133	12	2.053	8.9	1.5:1	.015	23.7	52,730	II	L-C	N
	28+10	4.90	4600	265.0	.00546	12	0.458	9.0	1.5:1	.015	19.8	55,421	II	L-C	N
	55+00	4.90	4600	279.7	.00415	12	0.458	8.9	1.5:1	.015	19.4	70,561	II	L-C	N
	68+50	4.90	4600	285.3	.01160	12	0.560	9.3	1.5:1	.015	17.9	84,937	II	L-C	N
	71+00	4.90	4600	288.2	.00275	12	0.050	10.9	1.5:1	.015	14.9	89,272	II	L-C	N
	75+00	4.90	4600	289.3	.00550	12	0.050	12.5	1.5:1	.015	12.8	94,006	II	L-C	N
	77+00	3.87	3950	290.4	.00571	12	0.050	12.5	1.5:1	.015	10.6	96,426	II	L-C	N
	80+50	3.87	3950	290.6	-.02233	12	0.050	13.0	1.5:1	.015	10.2	102,611	II	L-C	N
	83+50	3.87	3950	283.9	.0256	12	2.200	13.5	1.5:1	.015	27.5	112,628	II	L-C	N
	86+00	3.87	3950	290.3	.0240	12	1.700	7.5	1.5:1	.015	22.6	116,193	II	L-C	N
	89+25	3.84	3950	298.1	.0100	70	-10.00	4.9	1.5:1	.015	11.5	124,500	II	L-C	N
	89+55	3.84	3950	299.5	.00041	100	0.00	9.5	2:1	.030	3.0	125,750	II	L-R	N
	92+00	3.84	3950	299.5	.0050	100	0.00	9.5	2:1	.030	3.0	140,170	II	L-R	N
94+00	3.84	3950	300.5	.0020	100	0.00	5.0	2:1	.030	6.0	150,000	II	L-R	N	
Escondido Creek	10+40	81.97	17,500	258.5	.00019	75	0.32	22.5	3:1	5.5	0	II	L-V	N	
	21+00	81.97	17,500	259.0	.00033	75	0.32	19.3	3:1	6.8	70,500	II	L-V	N	
	24+00	76.10	12,250	258.8	.0006	75	0.32	18.5	3:1	5.3	105,000	II	L-V	N	
	29+00	76.10	12,250	259.1	.0005	75	0.32	17.1	3:1	5.7	116,000	II	L-V	N	

1/ II L-R Enlargement and realignment of existing channel - lined with rock; II L-C Realignment of existing channel - lined with concrete; II V Realignment of existing channel - lined with vegetation.

2/ N - An unmodified, well defined natural urban channel.

3/ E - Ephemeral - Flows only during periods of surface runoff - otherwise dry.

REVISED TABLE 4 - ANNUAL COST
Escondido Creek Watershed, Texas
(Dollars)

Evaluation Unit	: Amortization : of : Installation : Cost 1/	: Operation : and : Maintenance : Cost 2/	: Total
Floodwater Retarding Structures Nos. 12 and 13 and Channel Work	74,614	1,500	76,114
Project Administration	9,537		9,537
GRAND TOTAL	84,151	1,500	85,651

1/ Price Base: Actual costs for structure No. 13 and 1973 costs for structure No. 12 amortized for 50 year at 3.125 percent; and 1973 costs for channel work amortized for 100 years at 3.125 percent.

2/ Price Base: 1973

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TABLE 5 - ESTIMATED AVERAGE ANNUAL FLOOD DAMAGE REDUCTION BENEFITS

Escondido Creek Watershed, Texas
(Dollars) 1/

Item	Estimated Average Annual Damage		Damage Reduction Benefit
	Without Project	With Project	
Floodwater			
Crop and Pasture	5,043	1,784	3,259
Other Agricultural	3,147	670	2,477
Nonagricultural			
Road and Bridge	4,812	1,099	3,713
Urban	97,187	11,761	85,426
Subtotal	110,189	15,314	94,875
Sediment			
Overbank Deposition	1,367	908	459
Erosion			
Flood Plain Scour	3,058	1,042	2,016
Indirect	21,180	2,902	18,278
TOTAL	135,794	20,166	115,628

1/ Price Base: Nonagricultural damages - Current prices (1973);
All other damages - Adjusted normalized prices, April 1966.

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REVISED TABLE 6 - COMPARISON OF BENEFITS AND COST FOR STRUCTURAL MEASURES

Escondido Creek Watershed, Texas

(Dollars)

Evaluation Unit	Average Annual Benefits 1/				Average :	
	Damage Reduction : 2/	Recreation : 3/	Other : 3/	Incidental : 2/	Annual Cost : 4/	Benefit Cost Ratio
Floodwater Retarding Structures Nos. 12 and 13, and Channel Work 5/	105,828	458	224	8,887	115,397	76,114 1.5:1
Project Administration					9,537	
GRAND TOTAL	105,828 6/	458	224	8,887	115,397	85,651 1.3:1

1/ Price Base: Nonagricultural benefits - current prices (1973); All other benefits - Adjusted normalized prices, April 1966
 2/ Benefits from recreation incidental to installation of floodwater retarding structures.
 3/ Benefits from reduction in damages to San Antonio River flood plain.
 4/ From Revised Table 4.
 5/ Interrelated measures.
 6/ In addition, it is estimated that land treatment measures will provide flood damage reduction benefits of \$9,800 annually.